ATLIN LAKE CAMPGROUND RESERVE: IDENTIFICATION OF WILDLIFE VALUES AND SUMMARY OF POTENTIAL IMPACTS OF CAMPGROUND DEVELOPMENT

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Atlin Lake Campground Reserve: Identification of Wildlife Values and Summary of Potential Impacts of Campground Development

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Fish and Wildlife Branch

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Preamble

Yukon has held a campground reserve in the Atlin Lake area since the 1970s. Development of this campground was announced in the 2013-2014 territorial budget address, prompting Environment Yukon to gather information needed to provide input into the environmental screening processes related to the development of the Atlin Lake Campground Reserve ("the Reserve").

Environment Yukon (Fish and Wildlife Branch and Parks Branch) and the Taku River Tlingit First Nation conducted a joint site visit to the Reserve on 15 May 2013. The primary objectives of the site visit were to investigate and document use of the Reserve by woodland caribou, to conduct a preliminary risk assessment for bear-human conflict based on the prevalence of primary forage species, and to provide initial recommendations to mitigate any identified risks. Other terrestrial resources are discussed herein, but fisheries resources are not considered.

Site Description

The Reserve is located in southern Yukon, accessible by the Atlin Road. The Reserve is bounded by the Atlin Road to the east, the British Columbia border to the south, Atlin Lake to the west, and in close proximity to the Camp Yukon access road to the north (112 ha; Map 1). The site is characterized by large mature white spruce trees in low lying areas, with a large aspen stand atop a north-south oriented ridge along the Atlin Road, in the northern half of the Reserve. Aspen dominates a large portion of the shoreline, on steep slopes and rocky outcrops rising from high water mark. Within canopy openings in the spruce stands, the understory is dominated by willow and alder.

Methods

Caribou Use and Lichen Cover – Two crews surveyed the entire reserve along 10 transects of varying length spaced 250 m apart (two transects were 400 m apart), primarily in an east-west orientation (between the edge of the Atlin Road right-of-way and the Atlin Lake high water mark).Observers scanned the ground 1-2 metres on either side of the transect, and noted locations of all caribou sign, specifically pellets and tracks, as well as locations of abundant lichen ground cover.

Preliminary Risk Assessment for Bear-Human Conflict – We used 2x2 m plots at 100 m intervals along the aforementioned transects to quantify the abundance of primary bear forage species. These species included crowberry (*Empetrum nigrum*), soapberry (*Shepherdia canadensis*), low-bush cranberry (*Vaccinium vitis-idaea*), blueberry (*Vaccinium caespitosum*), bear root (*Hedysarum alpinum*), and locoweed (*Oxytropis campestris*). Other focal bear forage species included bearberry (*Arctostaphylos rubra*), high-bush cranberry (*Viburnum edule*), rose (*Rosa acicularis*), horsetail (*Equisetum arvense*), kinnickinnick (*Arctostaphylos uva-ursi*), fireweed (*Chamerion angustifolium*), and river beauty (*Epilobium latifolium*).

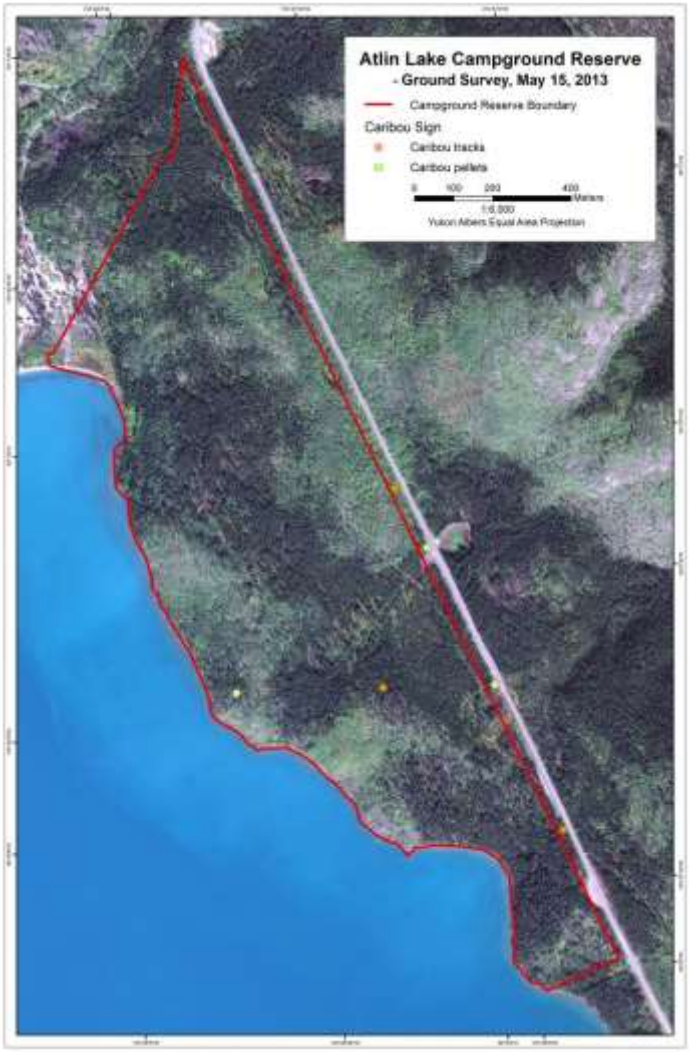
Forage species abundance was quantified by percent cover, using four categories: 1-25%, 26-50%, 51-75%, and 76-100%.

In addition to quantifying the abundance of forage species observed on the Reserve, we will consider the geographic context of the location when assessing the Reserve's potential for bear-human conflict.

Map 1. Atlin Lake campground reserve boundary.

Results

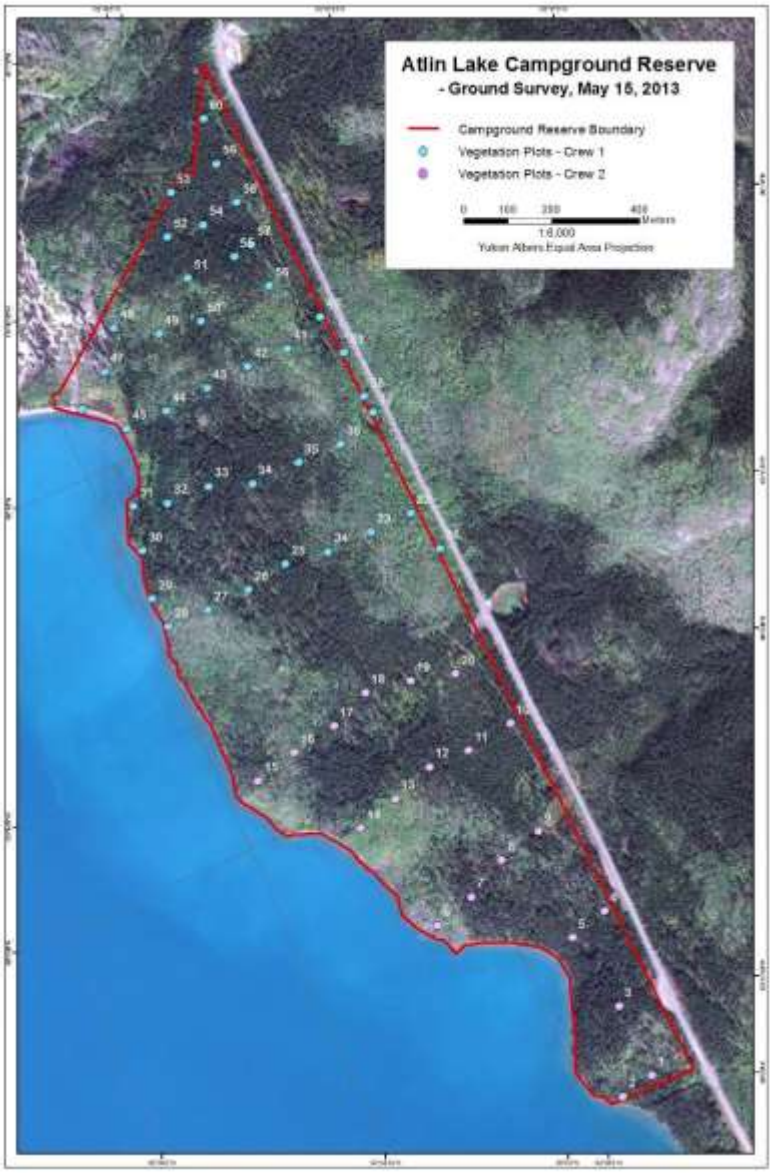
Caribou Use and Lichen Cover – We observed little caribou sign in the Reserve. There was one pellet group and one set of tracks observed in the forested southern part of the reserve, and two pellet groups and multiple tracks observed in the Atlin Road right-of-way adjacent to the Reserve (Map 2). Lichen cover was sparse throughout the Reserve, and was only observed in small patches interspersed with feather moss. The habitat within the Reserve should be considered low quality winter range for caribou. Just north of the Reserve, near the Camp Yukon access road, a group of approximately 25 caribou was observed on multiple occasions by biologists, wildlife monitors, and residents this past winter foraging right-of-way vegetation beneath the snow. The proximity of these observations to the Reserve suggests caribou are in the vicinity throughout the winter, and may use the Reserve as cover or as a travel corridor. However, the lack of sign and the lack of ground lichen suggest the Reserve does not provide for critical caribou life functions.



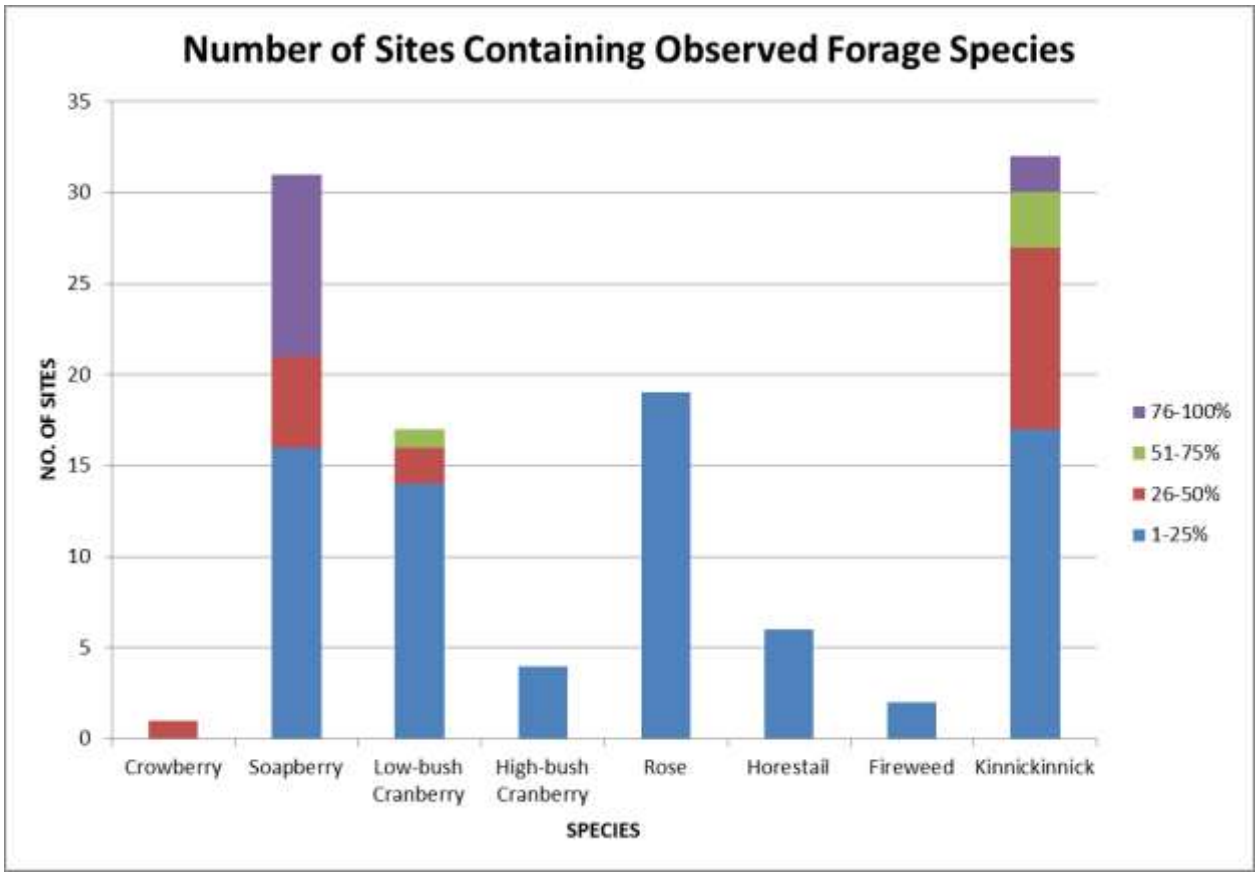
Map 2. Caribou sign observed during the site visit.

Preliminary Risk Assessment for Bear-Human Conflict – Because this survey was done in May, most non-woody stemmed plants, including bear root, locoweed, and river beauty were not in season, and thus were not identifiable. Although dead fireweed from last year and new horsetail shoots were observed on several sites, these species are likely under-represented in our sampling. Despite the seasonality of the non-woody stemmed plants, the prevalence of woody stemmed forage species still enabled a preliminary risk assessment to be conducted.

Forage species were quantified by percent cover at 60 plots within the Reserve (Map 3). The most frequently observed forage species were kinnickinnick (32 sites) and soapberry (31 sites). Of the 31 sites where soapberry was observed, 10 contained more than 75% cover of this species (Graph 1). In addition to plots where soapberry was prevalent, we observed several locations with large patches of soapberry (estimated at >200m^2) in the Reserve while surveying the transects. Soapberry was typically the most abundant understory species in aspen-dominated or mixed stands (Photos 1 and 2).



Map 3. Locations of the 60 plots surveyed for bear forage species.



Graph 1. Number of sites containing observed forage species. The colours represent the number of sites where each of the four categories of percent cover was observed.

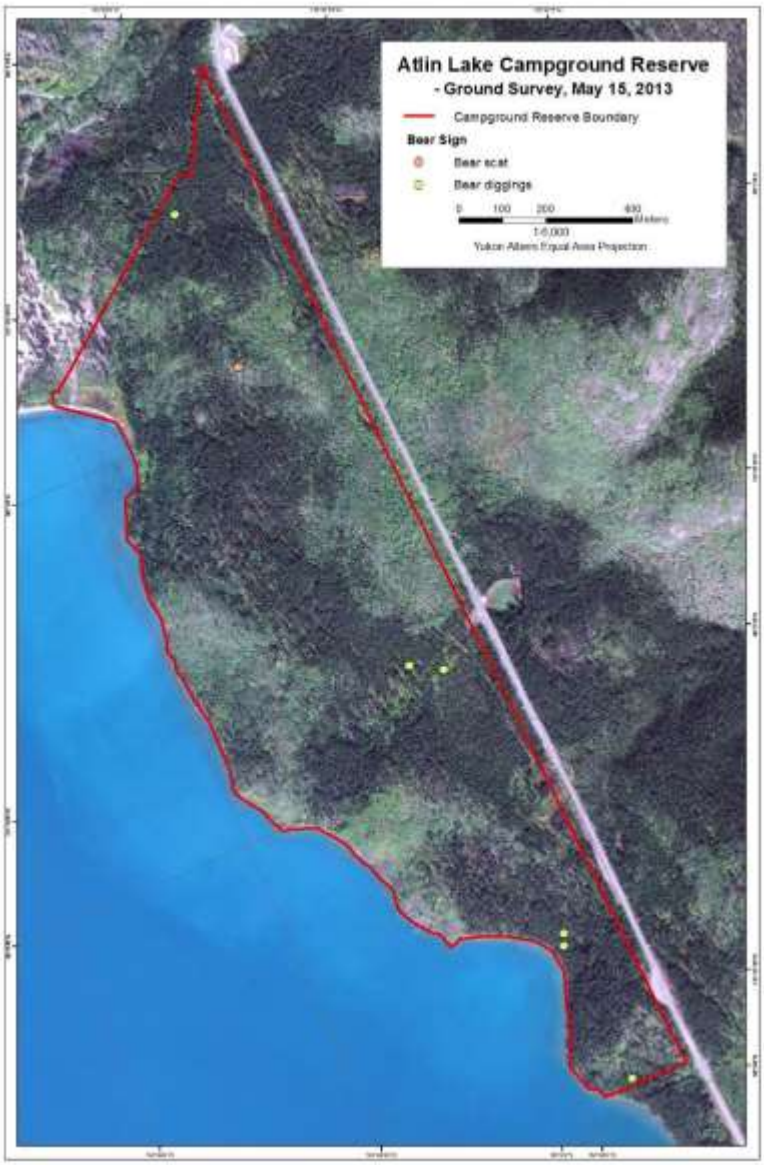
Photo 1. Abundant soapberry present in mixed aspen/spruce forest**.**

Photo 2. Abundant soapberry present in mixed aspen/spruce forest.

In addition to preferred forage species, there are some contextual landscape cues that should be considered as part of the risk assessment. Riparian areas, such as the shores of Atlin Lake, are known to be used by bears as travel routes. Also, there is a local bottleneck effect, as bears will be naturally funnelled between Atlin Lake to the west and the mountains to the east. The Reserve directly overlaps this bottleneck area, likely increasing the probability of people encountering bears in the area.

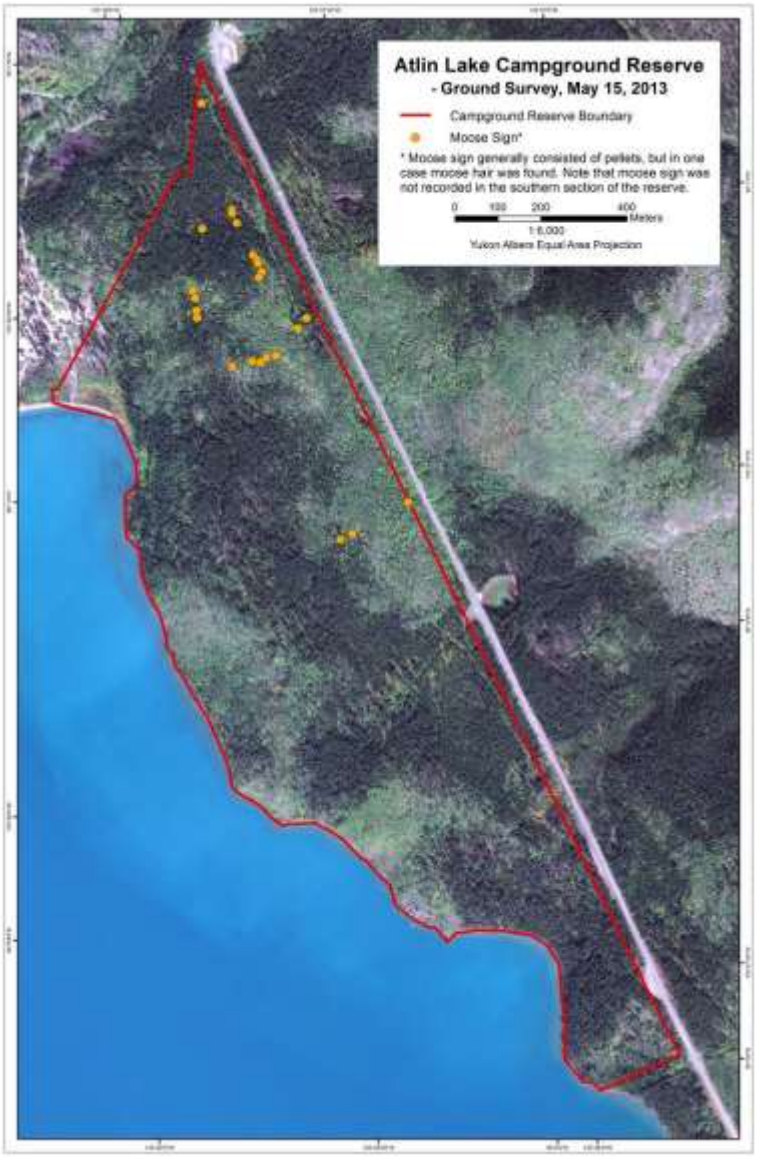
Bear digs, presumably from accessing bear root the previous fall, were observed during transects at several locations throughout the Reserve. (Photo 3). We also observed old bear scat (Map 4).

Photo 3. Bear digs observed in southern portion of the Reserve.



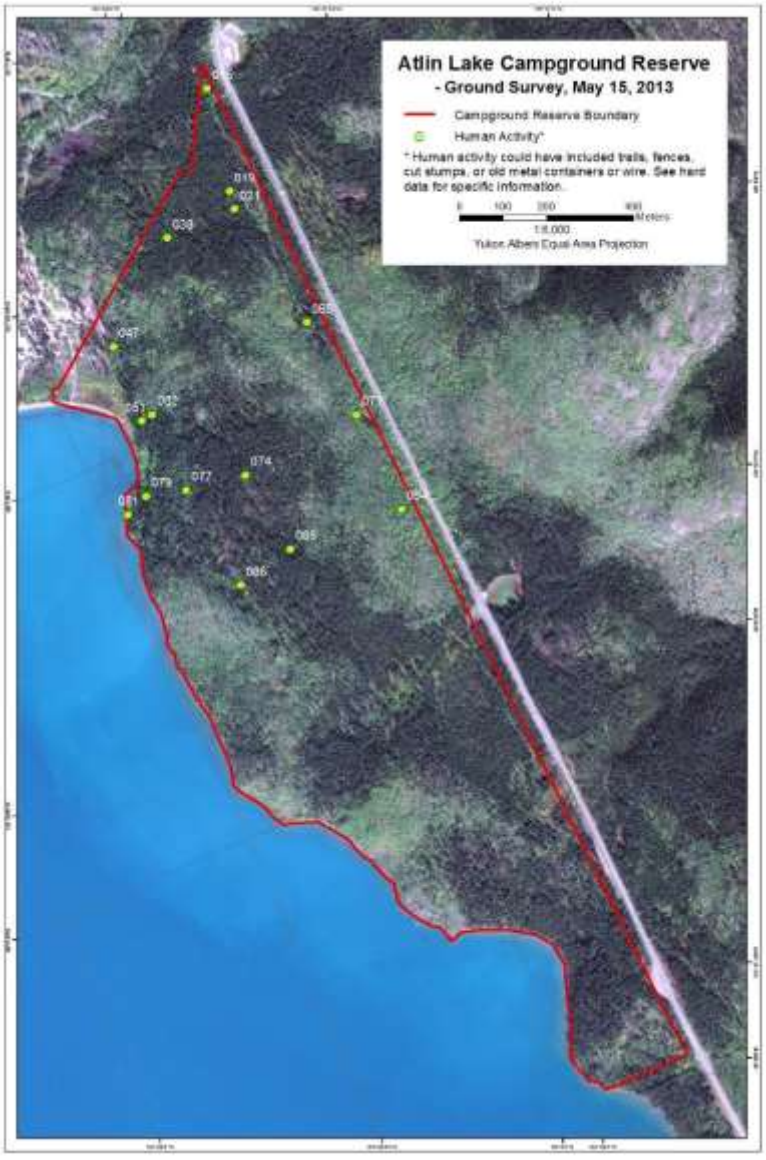
Map 4. Bear sign observed during the site visit

Moose Use – While moose were not the primary focus of the site visit, some incidental moose information was collected. We found ample moose browse species, including abundant aspen and willow, present on the Reserve. These stands contained a high density of moose pellets from the previous winter (Map 5). Typical of riparian areas in Yukon the Reserve is also comprised of mature white spruce trees. The spruce trees provide thermal cover for moose, as well as reducing ground snow cover. The combination of available forage and thermal cover results in high quality late-winter moose habitat. Due to the access of forbs, sedges, and aquatic vegetation along the lake shore, moose likely also use this area during the summer and fall.



Map 5. Moose sign observed within the Reserve. Observations were only collected by the crew in the northern portion.

Human Use – We found multiple trails cutting across the Reserve, mainly in a north-south direction. Additional signs of human use of the area included a Russell fence accompanied by an old road paralleling the Atlin Road but not in the right-of-way, and lichen covered stumps, some of which may have been axe-felled trees. We found heavy gauge wire on the lakeshore near the north end of the Reserve, but we do not know if this wire has historical significance as part of the old telegraph line. There were placer claim posts in the southern half of the Reserve as well as a recently used trail, presumably cut for snowmobile, which started in the Atlin Road right-of-way and headed towards Atlin Lake. Spatial data corresponding with these observations was collected by only one crew (Map 6).



Map 6. Sign of human activity within the Reserve. Numbered labels correspond to GPS waypoints (Appendix 1). Human activity information was collected only in the northern portion of the Reserve**.**

Discussion and Recommendations

Caribou Use – The Reserve contains low quality caribou winter range, and minimal caribou sign was observed within the boundaries of the Reserve. Development of this land parcel into a territorial campground will result in largely seasonal use, as tourists and residents will use the facilities during the camping season (late May to early September). Development will result in clearing of some of the forest to accommodate campground infrastructure, however, vegetation clearing and associated disturbance should have minimal impact on caribou in the area, assuming annual winter habitat use by caribou is representative of the minimal caribou sign observed from the 2012-2013 winter. Winter use of this site and the general surrounding area will likely increase after campground development, as Yukon residents will be able to easily access Atlin Lake via snowmobile for recreational uses, such as ice-fishing. Snowmobiles have been shown to displace caribou from areas of suitable habitat (Seip *et al.* 2007). While habitat within the Reserve is low quality winter range, caribou use of high quality winter range adjacent to the Reserve may be impacted by increased snowmobile traffic in the general area.

Recommendation:

- The access road to the campground should be gated, and the gate should be locked during the non-camping season to deter snowmobile use during the winter months.

Preliminary Risk Assessment for Bear-Human Conflict – There is a combination of several factors that suggest development of the Reserve into a territorial campground will create a high potential for bear-human conflict. These factors include the natural tendency of riparian areas to be movement corridors for bears, the landscape features that may naturally funnel bears between Atlin Lake and the mountains to the east (and thus through the Reserve), and a high prevalence of preferred forage species present on the Reserve, namely soapberry. In addition, the presence of several areas where extensive digging was observed suggests that bear root may also be present, but was not in season during the site visit. The high potential for bear-human conflict may result in increased bear mortality. This is of particular concern for grizzly bears in the southern lakes, where current mortality rates may already be at an unsustainable level.

Recommendations:

- A thorough campsite risk assessment should be conducted by a trained professional to assist in planning the campground infrastructure to minimize bear-human conflict, including assessment and actions that may be needed to address natural attractants.
- Attractant management should be a priority. This could include providing infrastructure such as bear-proof garbage containers, bear-proof lockers for tenting visitors, a centralized fish cleaning station

designed to minimize attractants and associated odours, and closed-in cook shelters.

- Educational material, such as interpretive panels and take-away brochures, about bear-safe camping practices should be developed and provided to visitors

Moose Use – Information collected during the site visit suggests the Reserve is well used by moose over the winter and likely during the summer and fall. Development of the campground will result in canopy openings that will promote secondary species growth, such as willow and other shrubs. While there will be net habitat loss created by the clearings, new growth created by canopy openings will still provide forage. Due to the seasonal use of the campground, moose will be largely undisturbed in this area over the winter months. Access to the lake will be dramatically improved through the development of the campground, which will provide more opportunities for hunters in the fall to launch boats and hunt from the lake. The north end of Atlin Lake is within Game Management Subzone 9-07, where moose harvest is regulated by a Permit Hunt Authorization, meaning harvest will not increase for licensed hunters. Harvest opportunities from Atlin Lake may increase for First Nation hunters due to the improved access through the proposed campground and a maintained boat launch.

Recommendation:

- The access road to the campground should be gated, and the gate should be locked during the non-camping season to cease use of the boat launch between the end of the camping season and lake freeze up.

References

SEIP, R. S., C. J. JOHNSON, AND G. S. WATTS. 2007. Displacement of mountain caribou from winter habitat by snowmobiles. Journal of Wildlife Management 71(5): 1539-1544.

Appendix 1. All data collected during site visit.

WPT	Site	Crowberry	Soapberry	Low-bush Cranberry	Highbush Cranberry	Blueberry	Bear Root	Oxytropis/Locoweed	Bearberry	Rose	Horsetail	Fireweed	River Beauty	Kinnickinnick	Comments / habitat	Other Observations	Photos
006	1		26-50							0-25				26-50		Diggings between highway and Wpt 006	N
007																Possible bear diggings	N
008																Dead hare	N
009	2		76-100							0-25	0-25			0-25			1-5
010	3																6-7
011																Caribou pellets	8-9
012	4		0-25							0-25							10-11
013	5		0-25								0-25						16-17
014																Bear diggings	18-20
015																Bear diggings	21-23
016	6		26-50							0-25				26-50	Some juniper		24-27
017	7																28-29
018	8		76-100											0-25			30-32
019	9										0-25				moss / Labrador tea / small amount lichen		33-35
020																Caribou tracks, deer tracks nearby	36-37
021	10	26-50	0-25												0-25 caribou lichen		38-40
022	11													0-25	0-25 British soldiers lichen		41-42
023	12														25-50 lichen	Caribou pellets	43-45

WPT	Site	Crowberry	Soapberry	Low-bush Cranberry	Highbush Cranberry	Blueberry	Bear Root	Oxytropis/Locoweed	Bearberry	Rose	Horsetail	Fireweed	River Beauty	Kinnickinnick	Comments / habitat	Other Observations	Photos
024	13				0-25					0-25		0-25			Fireweed dead - underrepresented.		46-48
025	14				0-25					0-25							49-51
026	15		0-25		0-25					0-25		0-25		26-50	Fireweed dead - underrepresented.		52-53
027																Caribou track	**54-56**
028	16		76-100		0-25					0-25				0-25			57-58
029	17		0-25							0-25				0-25			59-60
030	18													0-25			61-62
031	19		0-25								0-25						63-65
032																Bear diggings	
033																Bear diggings	
034	20										0-25						66-68
035																deer tracks	
013															Spruce	Start	
015															Spruce	Fence (Russell)	
016															Spruce	Moose pellet	
017	60														Small lichen patches between 017 and 018		
018	59																
019																Trail	
020	58		0-25											26-50			
021																Trail, lots of moose sign	

WPT	Site	Crowberry	Soapberry	Low-bush Cranberry	Highbush Cranberry	Blueberry	Bear Root	Oxytropis/Locoweed	Bearberry	Rose	Horsetail	Fireweed	River Beauty	Kinnickinnick	Comments / habitat	Other Observations	Photos
022															Willow / aspen	Moose pellets	
023															Willow / aspen	Moose pellets	
024	57														Willow / aspen		
025															Willow / aspen	Moose pellets	
026															Willow / aspen	Moose pellets	
027															Willow / aspen	Moose pellets (x2)	
028															Willow / aspen	Moose pellets (x2)	
029	56		26-50	0-25										0-25	Willow / aspen		
030															Willow / aspen	Moose pellets	
031	55														Spruce		
032															Spruce	Moose pellets	
033	54			0-25										0-25	kinnickinnick beside trail		
034	53		26-50	0-25										26-50	kinnickinnick beside trail		
035																Surface digs in willow	
036																Canid scat (coyote)	
037	52		0-25												Spruce / willow		
038																Trail	
039	51													0-25	Aspen / willow / spruce		
040																Moose pellets	
041															Large soapberry patch (~200m2)		
042																Moose pellets (x2)	

WPT	Site	Crowberry	Soapberry	Low-bush Cranberry	Highbush Cranberry	Blueberry	Bear Root	Oxytropis/Locoweed	Bearberry	Rose	Horsetail	Fireweed	River Beauty	Kinnickinnick	Comments / habitat	Other Observations	Photos
043																Moose pellets	
044	50		26-50	0-25										0-25	Spruce	Moose pellets	
045	49									0-25				51-75	Aspen		
046	48			0-25										0-25			
047																Trail - Camp Yukon?	
048	47		0-25											0-25	Willow / Spruce		
049	46									0-25	0-25			0-25	Lake shore		
050	45														Lake shore / willow		
051																Trail - wide	
052																Trail	
053	44		0-25											0-25			
054	43			0-25						0-25					Spruce / Asp		
055																Moose pellets	
056																Old bear scat (white)	
057	42		0-25							0-25				26-50	Aspen / willow / spruce	Trail / Moose pellets	
058																Moose pellets	
059																Photo of soapberry	Y
060																Large clump moose hair	
061																Moose pellets, large patch soapberry on slope to N	Y
062																Moose pellets (x2)	
063	41									0-25				76-100	Aspen slope		

WPT	Site	Crowberry	Soapberry	Low-bush Cranberry	Highbush Cranberry	Blueberry	Bear Root	Oxytropis/Locoweed	Bearberry	Rose	Horsetail	Fireweed	River Beauty	Kinnickinnick	Comments / habitat	Other Observations	Photos
064																Moose pellets	
065																Fence and Trail	
066																Moose pellets - fresh	
067	40																
068	39			0-25						0-25				51-75	Roadside		
069	38		0-25	0-25										51-75	Roadside		
070	37			26-50											Roadside		
071																Fence Trail	
072	36		76-100	0-25						0-25							
073	35			26-50													
074																Old trail with regrowth, old cut trees (maybe axe), lichen on stumps	
075	34																
076	33		0-25	51-75												Moose pellets, lots of stumps between 074 and 076.	
077																Old rusty metal containers, lots stumps nearby	
078	32			0-25											Spruce slope, beside trail		
079																Wide trail, wolf scat, deer tracks	
080	31		0-25												Lake shore		
081																Wire on shoreline	

WPT	Site	Crowberry	Soapberry	Low-bush Cranberry	Highbush Cranberry	Blueberry	Bear Root	Oxytropis/Locoweed	Bearberry	Rose	Horsetail	Fireweed	River Beauty	Kinnickinnick	Comments / habitat	Other Observations	Photos
082	30		76-100														
083	29		76-100												Lake shore		
084	28		76-100							0-25				0-25	Lake shore		
085	27			0-25										26-50			
086																Trail, old stumps	
087	26		26-50											26-50			
088	25			0-25										26-50			
089																Old trail, lots of old stumps	
090	24		76-100											0-25	Aspen		
091															Aspen	Moose pellets (x2)	
092															Aspen	Moose pellets (x2)	
093	23		76-100	0-25						0-25				26-50	Aspen		
094															Aspen	Fence, trail	
095	22		0-25											76-100	Aspen		
096																Moose pellets	
097																Caribou pellets	
098	21		76-100	0-25						0-25				0-25			
099																Caribou tracks in ditch	