

YUKON-CHARLEY RIVERS NATIONAL PRESERVE

CENTRAL ALASKA NETWORK

Vegetation Monitoring Program

Summary Trip Report: Upper Crescent Mini-grid

2 July – 11 July, 2008



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PURPOSE:

The purpose of this trip was to establish permanent plots for vegetation sampling at the Upper Crescent mini-grid according to the Central Alaska Network (CAKN) vegetation monitoring protocols. Twenty-two of the twenty-five points were sampled. Three points were not sampled due to lack of sufficient time.

PERSONNEL:

Meg Perdue - crew leader, plot/quadrat variable estimates, soil data, transect data
Rory Nichols - non-vascular collections/id, plot photographs, transect data
Heather Stewart - vascular plant collections/id, quadrat variable estimates, soil data, transect data

ACCESS TO MINI-GRID AND CAMPING POSSIBILITIES:

The Upper Crescent mini-grid is located in a remote portion of the preserve that is only accessible by helicopter. In order to minimize the amount of helicopter flight time required to access this area, personnel and gear were first transported via fixed-wing aircraft from Fairbanks to the airstrip at Coal Creek Camp (approximately 1 hour flight time). A Hughes 500-D helicopter contracted by the Fire Management Program and based out of Coal Creek Camp (CCC) was utilized for the approximately 35-minute flight to the Upper Crescent site. This was the second trip of the field season and it had been possible to leave some of the field sampling gear and camping gear at CCC after the first trip. This made it possible to move all three people and all gear in one flight in a 206 from Fairbanks with Wright Air Service. Two helicopter flights were then required to move people and gear to the site.

After a brief aerial reconnaissance, a camp location was picked within 100 meters of point 8. This site provided good access to water and flat terrain with no obstructing vegetation, thus making it a good helicopter landing area. Our camp spot was located on a small bench near the confluence of two very small stream drainages. (Photo 1, Topographic Map 1). Only the eastern fork is shown on the map with a blue line while the western fork, coming down from the saddle to the northwest of camp, was the water source utilized by our group. Both forks had water and seem likely to have water all season. We placed our tents on the bench between the stream forks and set up our cooking shelter next to the western fork. Each stream was small enough in width and volume to allow us to cross over it easily to access the grid points. This area provided an excellent camp location with no other location offering improvements over this one when considering camps for future sampling trips.

HIKING:

Hiking within the Upper Crescent mini-grid is not overly difficult. The vegetation is very easy to negotiate with no bush-whacking required. The grid contains a number of slopes dominated by rock and boulder fields and talus slopes of various levels of stability. Many of the rocks are covered by large black foliose lichens that can become very slick in wet, rainy conditions. However, because this area is often visited by caribou, trails are common across

the rock slopes. On these trails, the rock is more compacted and free of lichens, thus providing much better hiking. The grid does require a fair amount of elevation gain and loss over the course of hiking between points. Most of this terrain is quite easily negotiated, though some terrain, particularly on the eastern side of the grid, is quite steep and necessitates more circuitous routes for the greatest safety and efficiency of access. All streams in the grid were small and could be crossed easily.



Photo 1. Looking from camp east to point 7 and the stream bed where point 8 is located just outside the frame on the right.

WEATHER AND ENVIRONMENTAL CONDITIONS:

We experienced several days of excellent weather at the start of our trip with the weather becoming unstable and stormy in the later days. The first 5 days were mostly clear and sunny. On day 6 (7/6) clouds began to increase and high cirrus clouds were observed, by that evening it began raining. Clouds persisted the following day and for the last three field days we experienced a fair bit of rain and windy conditions. There was a light to moderate wind most of the time which helped greatly with controlling the mosquitoes. There was no clear trend of afternoon buildup as seen on our first trip. No clear prevailing weather direction was observed. Temperatures ranged from the 40's to the 70's (Fahrenheit).

SAFETY CONSIDERATIONS:

As mentioned in the 'Hiking' section, the major safety concern is the potential for injury while hiking or working in the boulder and rock fields present in parts of the mini-grid, particularly the eastern points. The potential for twisting an ankle or knee while hiking in these areas seems quite high, particularly when conditions are wet as the large, black foliose lichens that cover most of the rocks can become very slick. By maximizing use of the trails established by the caribou and minimizing time on the steepest terrain this risk can be mitigated (Photo 2). Point 11 was not sampled due in part to the steepness of the terrain. While it seems quite possible to reach this site it did not make sense from an efficiency standpoint to sample this and the other likely very rocky points (1 & 6). At point 7 we encountered fairly unstable, slick rocks due to rainy conditions. It is advisable, where possible, to avoid rock slopes, choose lower angle terrain or at least accept that travel will need to proceed at a slower, more careful pace to avoid falls and injury. We had two instances where we observed bears. Both were uneventful and thus positive though they occurred at relatively close proximity. These encounters emphasize the importance of using appropriate travel and camping techniques to avoid bear habituation and thus the problems that result.



Photo 2. Boulder fields dominate some of the terrain, particularly at the higher elevations in the eastern portion of the grid. Note the striations traversing the slope (most visible on the left), these are caribou trails which are ubiquitous in some areas.

PHENOLOGY OBSERVATIONS:

The range of vegetation types found at Upper Crescent was relatively narrow: tundra, herbaceous meadow, and barren rocky areas were represented in the majority of plots. Point 8, the most diverse plot, encompasses a streambed and thus exhibited very different and diverse riparian vegetation. We found an average of 37 plant species per plot. No clear flowering or fruiting patterns were noticed in relation to habitat type, slope aspect, or any other factor. In general, many plants were in flower: *Vaccinium vitis-idaea*, *Hierochloë alpina*, *Carex* spp., *Minuartia yukonensis*, *Dryas* spp., and *Ledum decumbens*. Some of the later flowering species that were in bud were *Polygonum* spp. and *Synthyris borealis*. More species were in seed this trip including: *Empetrum nigrum*, *Salix* spp., *Anemone* spp., *Oxytropis* spp., and *Diapensia lapponica*.

GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:

Heather collected 150 vascular plant specimens from the Upper Crescent mini-grid; she began on collection number HS-08-009 and ended on HS-08-158 (Table 1). Rory collected 117 nonvascular plants (RN-0177 to RN-0293) (Table 1). The number of the first photo taken at Upper Crescent was 100-0255 and the last number was 100-0452 (Table 1). It is important to note that for unknown reasons the camera began the photo numbering at a point that overlaps with the first field trip to Twin Mountain. Thus photos 100-0255 through 100-0280 carry numbers that also exist in the Twin Mountain set. Also a gap exists with no photos assigned to 100-0281 to 100-0289. Numbering for the Upper Crescent photos resumes with 100-0290. Heather or Meg collected soil samples from every plot visited. At points 2, 3, 4, 7, 10, 13, 16, 17, 21, and 22 soil was taken in the vicinity of the plot, but not at the standard locations due to the presence of rocks. There was no sapling or tree data for any of the points at Upper Crescent.

Table 1. Collection series for the Upper Crescent mini-grid.

Collector	Identifier	Series
Stewart	Vascular plants	HS-08-009 - HS-08-158 100-0255 - 100-0280
Nichols	Photos	100-0290 – 100-0452
Nichols	Nonvascular collections	RN-0177 to RN-0293

Approximately 500 caribou were observed over a couple days in the area of the mini grid (Photo 3). Evidence of heavy feeding, trails and scat were observed in or in the vicinity of a number of the plots. Snow patches were observed in the mini-grid on a few north-facing slopes and stream bottoms.



Photo 3. Herd of approximately 500 caribou, points 23 and 18 are in the drainage in the left of the photo.

ACTIVITES:

Wednesday, July 2

We travelled from Fairbanks to the Upper Crescent mini-grid via Coal Creek Camp (CCC) and sampled point 9. We left Fairbanks for CCC at 08:20 with Wright Air Service in a Cessna 206. We arrived at CCC at 09:20 and began the process of weighing and organizing gear for the helicopter flights. The helicopter arrived at 10:55, the pilot, Gary Hall, looked over the gear we had organized and we loaded it on the helicopter. Rory and I took off at 11:45 and were dropped off at the site at 12:20. We organized gear while awaiting the second flight with Heather which arrived at 13:30. We set up our camp and prepped to go do a point that day. We left camp at 15:00 and hiked to point 9 by 15:30. We started the plot at 16:00 and completed it by 20:30. This point can be characterized as alpine tundra with dwarf shrubs dominant. There were a few isolated patches of *Betula nana* less than a meter in height. Dwarfed, isolated trees inhabited a few low spots with isolated rock patches. We hiked back to camp by 20:45.

Weather: The morning was mostly clear and sunny in Fairbanks with increased clouds at CCC. The Upper Crescent site was mostly clear and sunny with a light wind and temperatures in the 60's F.

Thursday, July 3

Thursday we sampled points 24, 19 and 14. We left camp at 08:00 headed for point 24 arriving there at 08:40. On our hike two caribou were seen in the southwest corner of section 30 of the topographic map. We began work on point 24 at 08:55 and completed it by 13:10. This plot is on a fairly steep hill slope with a micro runnel in Quadrants C & D giving rise to both wet and dry vegetation types. There were scattered small rocks and several bare patches in the plot. There are no trees in the plot or vicinity. A ground nest and bird were observed in quadrant D; assistance with identification based on field notes suggests it was likely an American Pipet. We hiked to point 19 by 13:30; we could see approximately a dozen caribou on the slope above point 14 and in the area of the saddle below where they were resting on a snow patch. Rory then had another half a dozen caribou surprise him from behind as we neared point 19. The monument was set by 13:40 and we then had lunch. Plot work began at 14:10 and was completed by 17:15. This plot is located on an undulating hill slope with a number of benches. There were no trees in the plot or vicinity and almost no shrubs, only *Ledum decumbens*. Another single caribou approached to within 50 meters as we were working on the plot. We hiked down the slope and across the pass to point 14 arriving there at 17:30. We set the monument and started work on this point at 17:40 and completed it by 20:45. This point is located at the bottom of a hill slope as it begins to level off into a pass very near the pass apex. Wetter conditions existed here and the vegetation was characterized by more graminoids and a diverse number of forbs. We hiked back to camp by 21:00.

Weather: Clear or mostly clear all day with light to moderate winds, temperatures in the 60's F.

Friday, July 4

Friday we sampled plots 16 and 21. We left camp at 08:00 intending to sample point 11 as well. Once we reached the ridge above camp we could look down this ridge and see approximately 500 caribou spread out along the slope and in the valley (the area is defined by points 22, 23, 17 and 18 forming the corners). Looking across to our destination I realized that it would not be prudent or efficient to traverse around the drainage due to the steepness and rockiness of the slope. Instead we stayed on the ridgeline and continued up almost to the top of peak 5520' and then dropped down the ridge line leading to the saddle at the center of section 29 on the topographic map. In looking at the terrain where point 11 is situated I determined it would not be efficient to sample this plot due to the seeming lack of vegetation and steepness. We continued on to point 16 arriving there at 09:45. We began work on the plot at 10:00 after setting the monument. Work was completed by 13:30. This plot is located on a mostly vegetated hill slope with patches of rock, some sizable. The dominant vegetation types included *Ledum decumbens*, *Vaccinium uliginosum*, *Vaccinium vitis-idaea*, *Empetrum nigrum*, *Dryas* spp., *Arctostaphylos* spp. and *Diapensia lapponica*. At 12:50 I looked up

from the plot and observed a large single grizzly bear approximately 200 meters below (west) of the plot. The bear did not appear to notice us, though it seems unlikely he was unaware of us given the openness of the terrain and the close proximity. The bear never looked at us and continued on its way down and across the slope in a southwesterly direction. We could observe the bear as it reached the bottom of the drainage and proceeded up the other side where several dozen caribou from the herd we saw earlier in the day were visible. The caribou moved back over the ridge as the bear followed them and left our sight after about fifteen minutes. We hiked to point 21 (twenty minutes), set the monument marker by 14:00 and had lunch. Work began at 14:30 and was completed by 17:45. This site has very similar topography and vegetation as point 16. *Dryas* spp. was dominant with more graminoids than seen at other points thus far. *Ledum decumbens* was also present. We hiked back to camp by crossing over the drainage and gaining the ridge where the caribou were seen in the morning. We were confident that the grizzly bear seen earlier would have caused them to move so that we would not be disturbing them ourselves. Indeed, we saw no caribou on our hike back to camp; we arrived there at 19:00.

Weather: Clear to mostly clear and sunny all day, winds were light in the morning increasing slightly through the day, temperatures in the 60's F.

Saturday, July 5

On Saturday, we completed points 10 and 5. At 08:00 we left camp headed for point 10 arriving there at 08:35. We set the monument and began work on the plot by 08:50. This point is located on a fairly steep hill slope with small patches of exposed rock generally a few meters square in size. Some of these rock patches look like streams about a meter wide and oriented with the fall line of the slope. The vegetation is dominated by *Dryas* spp. with some *Vaccinium* spp. and other heaths. Almost no shrubs were present in the plot or vicinity and there were no trees anywhere in proximity. Point 10 was completed by 12:10. We then hiked to point 5 (twenty minutes) and set the monument by 12:45. We had lunch and worked on the plot from 13:15 to 16:20. This point is on an undulating slope with almost no exposed rocks and the plot is centered on a micro drainage feature. There are wetter and drier areas resulting from this and the vegetation was characterized by low shrub vegetation including *Spiraea Stevenii* which had not been seen previously and *Betula nana*. The plot contained one *Picea glauca* seedling but no other trees were visible in the area. We then hiked past point 4 and set the monument at 16:45 on our way back to camp. We arrived at camp at 17:15.

Weather: Mostly clear and sunny all day with moderate winds, temperatures in the 60's.

Sunday, July 6

Sunday we sampled points 23, 18 and 13. We left camp at 08:00 and traveled up over the saddle north of camp and into the valley where the approximately 500 caribou were seen the previous day. There was much evidence throughout the area of the caribou's presence including heavy feeding, kicked up patches of ground and scat. We reached point 23 at 08:40, set the monument and began plot work at 08:50. This point is located at the bottom of a hill slope leveling off into a terrace above a small stream. The vegetation was

predominantly *Vaccinium uliginosum*, *Cassiope tetragona* and other heaths with a few *Salix* spp., *Betula nana* and *Ledum decumbens*. *Papaver* spp. and *Dodecatheon frigidum* were in high prevalence here as well. We completed this point by 12:10 and then hiked to point 18, setting the monument by 12:50. We had lunch then started work on this point at 13:20 completing it by 16:30. This point is on an undulating hill slope with only a few exposed, isolated rocks; it contained fairly equal amounts *Vaccinium uliginosum*, *Vaccinium vitis-idaea*, *Empetrum nigrum*, and *Dryas* spp. We then traveled to point 13 by 16:50, set the monument and started plot work by 17:10. This was the first instance where I had problems acquiring the location of the point with the Trimble. Though there were seemingly enough satellites available their alignment was such that the unit display showed 'poor geometry' and would not give coordinates. Decreasing the precision did not have any effect. This happened on a number of subsequent occasions, usually it was possible to acquire the point once plot work began but the plot center sometimes had to be established with the Garmin unit. This point is on an undulating hill slope near the top of the pass, patches of vegetation were scattered throughout the plot. The vegetation was dominated by *Dryas* spp. with very few shrubs. A well established caribou trail is present just northeast of the plot. We completed this plot by 19:20 and hiked down to camp by 19:30.

Weather: The morning began partly cloudy with cirrus clouds and light winds, by afternoon clouds were increasing and included cumulus clouds with continued light winds. By evening skies were overcast with occasional rain showers and slightly stronger winds. Temperatures were in the upper 50's to low 60's F.

Monday, July 7

This day we sampled points 4, 3 and 2. We hiked from camp at 08:00 and arrived at point 4 at 08:25. Having already set the monument, plot work began immediately and was completed by 10:55. This plot is located on an undulating hill slope forming micro benches. This plot contained larger rock patches that, like point 10, in some cases appear as rock 'streams' oriented with the fall line. The vegetation is dominated by dwarf shrubs (*Cassiope Tetragona*, *Vaccinium vitis-idaea*, *Empetrum nigrum*, *Arctostaphylos alpina* and *Loiseleuria procumbens*); patches of *Betula nana* and *Vaccinium uliginosum* are in the plot and scattered on the surrounding slope and a few dwarfed (50 cm) *Picea glauca* are also in the vicinity. We hiked to plot 3 across the stream which was easily crossed and hiked up the boulder and rock dominated slope reaching this point at 11:20. The monument was set by 11:40 and work began. We completed work at 14:45 with a half hour taken off for lunch. This plot is located on a very rocky hill slope containing boulders, rocks and patches of talus. The plot and the surrounding slope are interspersed with patches of tundra heath vegetation (*Cassiope Tetragona*, *Vaccinium uliginosum*, *Vaccinium vitis-idaea*, *Diapensia lapponica*, and *Ledum decumbens*). We hiked to point 2 by 15:10 and set the monument. Work on the plot began at 15:25 and was completed by 18:45. Rock covered approximately 40% of this plot while the surrounding hill slope on which it is located is more generally vegetated with rocks still present but not dominant. The plot forms a micro ridge feature, it is a convex shape dropping off on either side to rock patch depressions. One *Picea glauca* and one *Salix pulchra* shrub are present in the plot are the only ones visible in the area. Other shrubs are present but in minute amounts. We hiked back to camp at 19:15.

Weather: Conditions started out mostly cloudy, decreasing to partly cloudy with light winds; cumulus clouds increased again in the afternoon with winds increasing slightly. The smell of smoke was detectable for much of the afternoon. Temperatures were in the upper 50's to low 60's F.

Tuesday, July 8

Rory advised me that he was not feeling well; he decided he still wanted to try to go out and work. Due to this situation and poor weather (overcast and very foggy), the sampling plan was revised to begin with the point closest to camp, point 8. After reassessing Rory's symptoms and taking some medication, we left camp at 08:15 and hiked five minutes to the plot. We set the monument at 08:25 and began work. This plot overlays the stream and both banks and has very diverse conditions represented as a result. The streambed itself is in quadrants A & D with the northwestern bank (south-facing) being very lush with vegetation and the southeastern bank (north-facing) having mostly standing dead graminoid vegetation as if it was recently snow-covered. Some shrubs (*Betula nana*, *Salix pulchra*, *Vaccinium uliginosum*) are present on the bench of the northwestern bank while the terrace on either side of the stream is dominated by graminoids. Several forbs, particularly *Dodecatheon frigidum* were in high abundance. We completed the plot at 12:50 and hiked the five minutes back to camp to make a hot drink for lunch. While in our cooking shelter with the door unzipped, I looked out and observed a sow with two older cubs (they were only slightly smaller in size to the female). They appeared to be at the location of our BRFCs, which were cached approximately 75 meters down stream of our cooking shelter. As soon as I looked up and alerted Rory and Heather to their presence, they began to turn and move in a downstream direction away from us. A few seconds later one of the cubs turned and looked in the direction of the cooking shelter, after a tense few seconds where it looked like it might turn and move towards us, its mother turned and looked at it and all three continued moving down stream. We had no further sighting of them. It did not appear that they had actually touched the BRFCs and we cannot be certain they were investigating them, though I am confident where we saw them initially was where the BRFCs were located. We left camp by 13:25 and hiked to point 7 by 14:00. The hike to the plot and the plot itself were dominated by boulders and rocks and due to the rain the travel was slow. The rocks in the plot seemed particularly unstable, almost as if they had slid there recently; it did appear that the rocks in the plot and immediately surrounding slope did not have as great a number of large black macro lichens as seen on surrounding rocks. The Trimble, as at point 13, had difficulty giving a location and it took until 14:30 to set the monument. Plot work began then and was completed by 18:00. Approximately 75% of the plot was covered with rocks and boulders. In the small pockets and patches of vegetation interspersed, *Boykinia richardsonii*, *Cassiope tetragona*, *Dryas* spp., and *Dodecatheon frigidum* made up about three-quarters of the vegetation. A snow patch at the same elevation of the plot was located about 50 meters over to the north. We hiked back to camp arriving there at 18:15.

Weather: Overcast with heavy fog in the morning and no wind. Rain began falling mid-morning and continued most of the day with the fog persisting and becoming very heavy at times, temperatures in the 40's.

Wednesday, July 9

On this day, we completed points, 25, 20, and 15. Rory was feeling somewhat better, but we chose the set of remaining points in closest proximity to camp in case we needed to come back early. We hiked up from camp to about the 4500-foot elevation and then contoured around to point 25; the hike took until 08:45. We set the monument and started plot work at 08:55. This point is located on a vegetated hill slope with only scattered exposed rocks. The vegetation was dominated by *Dryas* spp., graminoids and lichens with lesser quantities of *Vaccinium uliginosum*, *Vaccinium vitis-idaea* and *Empetrum nigrum*. We completed this point at 11:55 and hiked to point 20 by 12:15. The monument was set by 12:30 and we had lunch. Work started on point 20 at 13:00 and was completed by 16:00. This plot is located on an undulating hill slope with a few isolated exposed rocks, a micro depression exists in quadrant A. Both the slope and the plot have noticeably more moss cover than other points sampled to that point. Along with moss, *Cassiope tetragona*, *Dryas* spp. and lichen were the dominant vegetation. The only shrubs were some *Vaccinium uliginosum* and *Ledum decumbens*. There were many *Papaver* spp. in flower. We hiked to point 15 by 16:40 (we had to call in and change the batteries in the Garmin GPS). The Trimble unit again had problems acquiring the location, after getting a starting point for the randomization process the final plot center and monument point could not be saved on the Trimble. Plot work began at 17:00 and was completed by 20:00. This plot was also a vegetated hill slope with a few exposed, isolated rocks. The vegetation was dominated by *Dryas* spp., *Cassiope tetragona*, and graminoids. We hiked back to camp arriving there at 20:30.

Weather: Low overcast (4500') with rain, fog and light winds through the morning and afternoon with rain stopping and some clearing by evening. Temperatures in the 50's F.

Thursday, July 10

On this day, we sampled points 22, 17, and 12. We left camp at 08:00 and hiked to point 22 by 08:45. The monument was set and plot work begun by 09:00. This point is located on a fairly rocky hill slope and the plot itself has about 20% cover of rock patches the size of the quadrat or slightly larger. *Vaccinium uliginosum*, *Arctostaphylos alpina* and *Dryas* spp. were equally represented with *Ledum decumbens*, *Hierochloe alpina*, and *Minuartia Yukonensis* also present. We observed a pika in the plot as well. We completed point 22 at 12:00 and hiked to point 17 (25 minutes) where the monument was set by 12:40. We had lunch and began work on this point at 13:10. This plot is similar in topography and vegetation to point 22 with slightly more bare ground and gravel and fewer shrubs. This point was completed at 16:00; we hiked to point 12 by 16:20 set the monument and started plot work at 16:30. This point is on a broad, fairly flat ridgeline, there are lichen covered rocks scattered throughout and several patches of gravel. The vegetation was dominated by *Dryas* spp. and lichen with some graminoids and minimal shrubs. We returned to camp by 19:15. The camp location was saved in the Trimble as the fourth file for that day.

Weather: Mostly cloudy with very light winds becoming clearer as the morning progressed; rain showers and clouds traded off with sunny periods throughout the afternoon and evening. Temperatures in the 50's F.

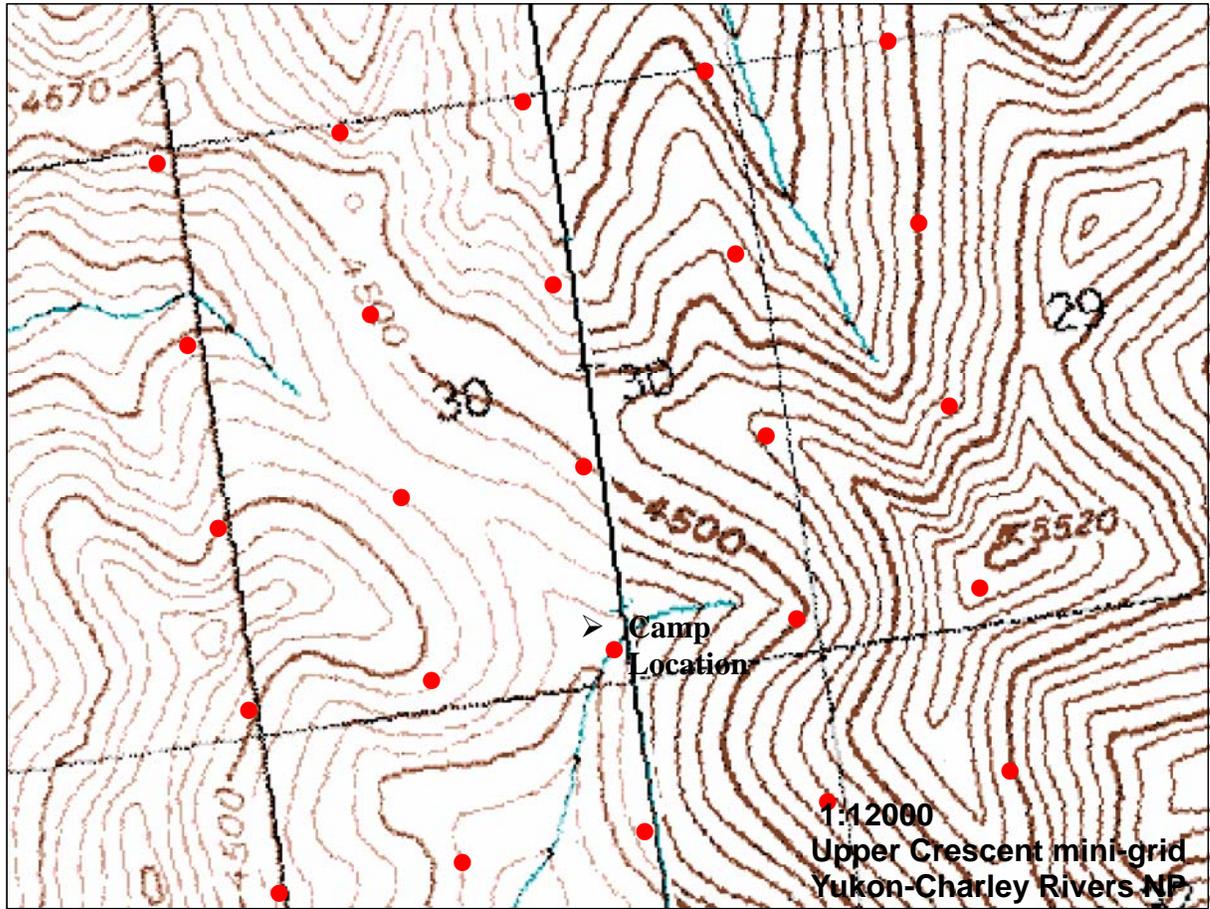
Friday, July 11

This was our fly-out day and the helicopter was scheduled for 10:00 – 10:30. The weather was not initially promising but we began organizing gear and samples and checked in with Eagle at 09:00 as instructed with our weather which was overcast with light winds. We were advised that the intent was still to pick us up but to call back at 09:30 for further instructions. Originally, we were supposed to all be flown back to CCC to then fly back to Fairbanks with Wright Air Service. This plan changed when the helicopter's duty station was changed from CCC to Fairbanks. At that point, it was decided that one person would return to CCC and flying from there to Fairbanks with gear while the two remaining people flew from Upper Crescent direct to Fairbanks in the helicopter. When I called back at 09:30, I was told that the plan had been changed back to all three of us flying out from CCC in a fixed-wing; the time of the helicopter's arrival was not completely fixed but if it did not arrive by 11:30 I was to check back in with Eagle. The helicopter did arrive with pilot Gary Hall at 10:30. Rory then left with gear for the flight to CCC by 11:00. The helicopter returned to Upper Crescent by 12:15 and Heather and I loaded the remaining gear and got on the ship for what I believed was a flight to CCC. It was only once we were airborne that I realized the plan had been changed back (or had never been switched) from the second plan and so Heather and I were headed for Fairbanks. I asked the pilot to try to call and let Rory know at CCC not to wait for us to arrive. Gary said he could not call anyone until we were back in Fairbanks. When we did land at 13:30, he did call someone (I don't know who) and it seemed it had been worked out so that the Wright's flight was on its way back already. It was only after going to Wright Air Service and waiting for the flight to arrive and then a couple subsequent calls from the office trying to locate them that it was determined the plane was still waiting on the ground at CCC for Heather and I to arrive. A message was finally relayed to Rory and the pilot and they took off from CCC around 14:30 and arrived back in Fairbanks around 15:30.

Weather: Overcast with light winds in the early morning improving to partly cloudy by noon, temperatures in the upper 50's F.

CONCLUSIONS AND FUTURE CONSIDERATIONS:

Again, given that all three crew members were new to the project and two were new to Alaska this was a very successful sampling trip. While there was some overlap in species composition with the first trip, many new species were encountered. While three points were not sampled, the twenty-two points that were sampled represent all aspects, elevations and vegetation types seen in the mini-grid. The use of the Fire Management helicopter for access became problematic on this second trip when the decision was made to base it out of Fairbanks rather than CCC, thus greatly increasing the transportation costs for the sampling trip. This problem led, in part, to the cancellation of the final field sampling trip of the season. Researching other aircraft options or contingency plans might help to avoid this situation in future. Also be aware that there was no radio reception at the Upper Crescent site. We used the satellite phone to check in once a day with the Eagle office.



Map 1. Topographic map of Upper Crescent Mini-Grid