

**DENALI NATIONAL PARK AND PRESERVE**

**CENTRAL ALASKA NETWORK**

**Vegetation Monitoring Program**

**Summary Trip Report: Bull River Mini-grid**

**30 July – 7 August, 2007**



**Lead Author: E. Fleur Nicklen**  
**Contributors: Carl Roland, Peter Nelson**

**September, 2007**

**PURPOSE:**

The purpose of this trip was to establish permanent plots for vegetation sampling at the Bull River mini-grid according to the Central Alaska Network (CAKN) vegetation monitoring protocols. We completely sampled 21 points. Four points were incompletely sampled because of steep, rocky terrain.

**PERSONNEL:**

Carl Roland - crew leader, vascular plant collections/ id, soil data, meta-plot description

Peter Nelson - non-vascular collections/id, plot photographs, transect data

Fleur Nicklen - plot/quadrat variable estimates, transect data

**ACCESS TO MINI-GRID AND CAMPING POSSIBILITIES:**

The Bull River mini-grid is accessible via helicopter. Carl and I flew directly from the Denali airstrip to Bull River (~ 30 min), while Peter, the majority of our gear, and the Summit mini-grid crew members drove to Cantwell. After the helicopter dropped us off at our camp spot, the pilot flew to Cantwell and picked up Peter and the equipment. The flight from Cantwell to Bull River was about 10 minutes. The time from when Carl and I flew from Denali to when Peter arrived at the camp location was only 1 hour and 20 minutes.

Our camp spot was located north and between points 7 and 8 on the west bank of the upper middle fork of Bull River (photo 2, ortho image 1). This location was just below a rock glacier and had excellent drinking water. We set up our tents on a narrow strip of vegetated (typical south-of-the-range meadow vegetation) stream terrace that was only modestly sloping. We had a good view of extreme ground squirrel trails that crisscrossed the nearly vertical, bare rock stream bank east of our camp. Because there are more points west of the middle fork, it is best to camp on this side to minimize crossing the stream. The stream crossing is quite doable, but a touch tedious for short-legged people. The climb out of the middle fork is moderately steep, but only about a 250ft climb up. Camping between 8, 9, 13, and 14 might also be a possibility. This area would have less access to pristine glacial water, but would be closer to the grid center. Minimizing hiking distances, however, is not a major concern in this grid because the elevation gradient is not great and completing 25 points in the allotted time is easy.



Photo 1. Looking south towards our camp spot on west side of the middle fork of the upper Bull River. South-of-the-Alaska Range meadow vegetation on right side of photo.

### **HIKING:**

Hiking within the Bull River mini-grid is fairly easy and beautiful (provided you are not encased in swirl of blowing mist for 10 days). Walking across the rock glaciers is slow going, but not hard. Crossing the middle fork of upper Bull River requires some planning and navigation. An easy point up from the gorge to the west is just east of point 8 and a good point up to the east is NW of point 7.

Three points are difficult to access. Point 18 is at the top edge of a rock glacier and requires climbing up large (soccer ball size), loose rocks. The edge of the rock glacier is unusually abrupt: easy walking tundra is suddenly met by 35° rock wall. (I call the large bodies of rocks “rock glaciers” though it is not clear whether there is a glacier beneath the rocks or if a glacier deposited the rocks). Point 19 is on a loose, talus slope with bedrock outcrops. This is a delicate plot that is hard to get to and easily disturbed. Point 25 is also on a loose, talus slope, but with larger rocks. Point 15 is not difficult to get near; however, the center is located on a steep (43°) river bank consisting of only rocks and eroding soil.

### **WEATHER AND ENVIRONMENTAL CONDITIONS:**

We experienced terrible weather nearly the entire time we were at Bull River (Photo 2). If we had tried to fly into the mini-grid a couple hours later, we may have been misted out for 9 days. Luckily we got into the grid and by mid-day we were completely socked in by a heavy,

soaking mist and chilling winds. On the third day the mist became finer so that we were not dripping wet, but it never really lifted and the wind did not stop. Temperatures hovered in the mid forties and climbed into the fifties during the warm spurts when the mist lifted slightly. On the seventh day when we were nearly finished with the grid and had heard from dispatch that we were not going to get out early, we had the coldest, wettest day of all. The ninth day (when we did fly out a day early) the wind changed from blowing north to blowing south and the skies cleared and it was spectacular!!! Sunny and warm—what a great day for an amazing helicopter ride out. (Likely because I was so blatantly excited about the flight, George gave us a special tour over beautiful aqua-colored glacial lakes (Photo 5).



Photo 2. A typical misty morning at Bull River.

### **SAFETY CONSIDERATIONS:**

The three steep, rocky plots described under “hiking” as well as crossing the middle fork of the upper Bull River present the main safety concerns. One simply needs to be careful climbing up or traversing rocky slopes and attempt to minimize crossing these areas by planning your route. Walking across the rock glaciers also warrants caution as the rocks are occasionally loose and quite sharp. Bears are always a safety concern; however, we only saw one bear and it was about 2 miles south of our grid. There were five points within this mini-grid that we modified out sampling for our safety and to protect easily damaged vegetation.

Point 1 is adjacent to the east fork of the upper Bull River. The east edge of the plot falls on an eroding stream bank. We estimated this end of the transect and did not attempt to climb down the embankment. Point 15 is not hard to get close to, but the center is located on an eroding stream bank. It had no vegetation and sampling would have been dangerous and destructive. Plot 18 is located on the top edge of a rock glacier. Carl climbed up to this point and called down grid point, transect, and vascular/quadrat data. The rocks are large and unstable, but part of the plot is more level and has a descent amount of vegetation. Point 19 was located on a scree field with bedrock outcrops. This point had very loose rocks (watch for falling rocks!) and was easily damaged. I estimated the grid point data and Carl called out transect and quadrant data from this point. Point 25 had larger rocks, but was also quite steep and loose. Carl went to this point for the grid point data.

### **PHENOLOGY OBSERVATIONS:**

There were four main vegetation types at Bull River: tundra, herbaceous meadow, medium to tall scrub and barren rocky areas. We found an average of approximately 37 plant species per plot. Plots with a mix of herbaceous vegetation and tundra had the highest vascular diversity. The herbaceous meadows still had many plants flowering (*Heracleum lanatum*, *Senecio triangularis*, *Epilobium latifolium*, *Delphinium glaucum*), and a few that were setting seed (*Viola langsdorfii*, *Veronica wormskjoldii*, *Epilobium anagallidifolium*, *E. hormemannii*). Much of the tundra and rocky ground plants were setting seed (*Draba spp.*, Caryophyllaceous plants, dwarf willows, *Astragalus spp.*, *Oxytropis spp.*, *Llodia serotina*, *Parnassia spp.*, *Gentiana spp.*). Though it was late in the season, we could still find enough flowers and seeds for proper identification and no plants appeared to be near senescence.



Photo 3. *Botrychium lunaria* at point 9.

**GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:**

Carl collected 100 vascular plant specimens from the Bull River mini-grid; he began on collection number CR-07-046 and ended on CR-070145 (Table 1). Peter collected 224 nonvascular plants (PN-07-516 to PN-07-739) (Table 1). The number of the first photo taken at Bull River was 149-4931 and the last number was 152-5343 (Table 1). These collection/photo numbers include data from the auxiliary point. Carl collected soil samples from every plot, including the auxiliary plot, except the rocky or talus points (15, 16, 18, 19, 22, 25). At point 22, soil was taken in the vicinity of the plot, but not at the standard locations due to piles of rocks. There were no trees or saplings in the plots at Bull River.

**Table 1. Collection series for the Bull River mini-grid.**

Collector	Identifier	Series
Roland	Vascular plants	CR-07-046 - CR-07-145
Nelson	Photos	115-1508- 120-2034
Nelson	Nonvascular collections	PN-07-516 to PN-07-725

**ACTIVITIES:**

**Monday, July 30**

Monday we travelled to our site and sampled plots 21 and 22. Carl and I left Fairbanks for Denali at 6:20am. At the Denali airstrip I weighed our gear and we left for the mini-grid in the helicopter at 9:35am. Peter and most of our equipment drove with the other Denali crew to Cantwell. The helicopter dropped us off at our campsite at 10:05am. It was cloudy and becoming misty. The helicopter headed off to Cantwell to pick up Peter and returned at 10:56am. We set up our camp and ate lunch on a narrow strip of vegetation on the west side of the upper middle fork of the Bull River between and a little north of points 7 and 8. After lunch we crossed the middle fork and headed out for plot 21, which is on a rock glacier. At 2:30 we walked for 15 minutes over to point 22 for sampling. At 5:30pm we headed back to camp and we were finished at 6:00pm.

Weather: The morning was overcast. By the time we reached point 21 it was heavily misting, windy, and cold. This weather continued through the night.

**Tuesday, July 31**

On Tuesday we sampled plots 12, 17, 16, and 11. We left camp at 7:55am and headed towards point 12 (20 minute walk). At 11:00 we walked to point 17 (15 minute walk). We did transects, soils, and photos and then stopped for lunch. At 2:20 we set out to plot 16 (20 minute walk). The Garmin said low battery, so we used the Trimble once we were ¾ of the way to the point. After 16 we had a 20 minute walk over to point 11. Point 11 had a mix of herbaceous meadow plants and tundra—71 vascular species. We finished at 8pm and were back at camp by 8:30pm.

Weather: It was misty/drizzling most of the day and quite cold and windy.

### **Wednesday, August 1**

Wednesday we sampled plots 2, 1, and 6. Because the previous day was long and wet and we were already ahead of schedule, we started an hour later. We left camp at 8:55am for point 2 (25 min walk). At 12:15 we headed towards point 1 (10 minute walk), where we ate lunch. We left plot 1 at 3:25 and arrived at 6 at 3:35. This was very flat, easy walking along a stream terrace. At 6:20 we headed back to camp (40 minute walk). Walking up the middle fork of the Bull River is a little tricky—you get cliffed out on both sides and this requires multiple crossings. I would suggest walking above the river as much as possible and dropping down only when you need to cross back to camp. Because the mist lifted a little, we saw herds of caribou on the hills around us at point 1. We also saw robins between point 2 and 1.

Weather: The day began misty, cold, wet, and windy, but the mist began to lift around 10:30am. It never cleared, but we did dry out and get a bit of a view around.

### **Thursday, August 2**

On 2 August we completed plots 4, 5, and 3. At 8am we headed for point 4. We walked down the middle fork (couple crossings) even though point 4 was on our side of the river. It is much better to head straight up the hill from camp. At point 4 we saw a golden eagle gliding in and out of the mist. At 11:50 we headed towards point 5 (25 minute walk), which we finished at 3:30pm. We headed back across the west fork of the upper Bull River to point 3 which we finished at 7:30pm. Back to camp at 7:30pm.

Weather: It was misty and cold in the morning again. At point 4 we were briefly protected from the wind. We saw an incredible wall of mist slithering down the west fork while at point 4. The mist lifted a little in the afternoon.

### **Friday, August 3**

Friday we sampled plot 13, 19, 20, and 25. We headed straight up the hill to the west of camp at 7:50am and crossed a small snow bed on our way to point 13 (15minute walk). We finished point 13 at 10:50 and headed up to point 19, which was an active talus slope. I estimated the grid point and Carl called out transect and quadrat data from above. Peter did not collect non-vascular data, but he did take photos. We ate lunch at 12:15 and then side-hilled over to point 20 (10 minute walk). At 3:45 we walked towards point 25 with only the gear in our vests. Point 25 was steep with large, loose rocks. Carl walked to point center and collected grid point data and nothing else. At the base of the hill where point 25 is located we found 3 caribou antler sheds. At 4:50pm we walked down to point 15, which was on an eroding, steep (43°) stream bank. We took grid point data and photos. We arrived back to camp at 6pm.

Weather: Misty in the morning, but a little brighter. The sun came out for 23 seconds at 12:50pm.

## **Saturday, August 4**

This day we sampled plot 8, 9, and 10. We headed up the hill from camp at 7:50am for point 8 (10 minute walk). At 10:55am we walked down to point 9 (10 min), which was in a swale teeming with *Botrychium* (Photo 3). Next we headed across the west fork at 2:20pm for point 10 (20min). We finished point 10 at 5pm and were back at camp by 5:45pm. We saw ptarmigan in the evening on our way back to camp.

Weather: Of course it was misty in the morning, but began to get brighter by noon. We even had a little bit of sun at lunch.

## **Sunday, August 5**

Because we were nearly done with the mini-grid, we tried to get an earlier helicopter flight out (6 Aug). It is possible to do 4 points in a day, especially when one is on a rock glacier. However, this morning we found out the helicopter could not come early to get us. We sampled points 14, 18, 23, and 24. We left camp at 8am for point 14. At 11am we walked to point 18, which was on the edge of a steep rock glacier. Carl called out grid point, transect, and quadrant data from above. Peter did not do non-vascular collections or take photos. After 18, we walked to point 23, which was also on a rock glacier, but was not steep and had a respectable amount of vegetation. At 3:15pm we continued up the mountain to point 24. Point 24 was on a flat bench below the ridge between points 24 and 25. After this we headed back to camp (5-5:45pm) and saved point 7 for the next day.

Note: we put monument # 7 at point 24.

*Weather:* The day began with heavy mist, rain, and wind. This continued for the entire day. The temperature did not rise above the 40s. We were soaked and cold!

## **Monday, August 6**

We only had point 7 to do today. We left camp at 10am and arrived at 7 at 10:30am. We forgot the monument stake, so Peter ran back to camp for it. We finished the plot at 1:15pm and Carl and Peter headed back to camp. I headed north towards the rock glacier to spread a piece of a friend's brother's ashes (Photo 5). For the rest of the day we entered data on the tablet.

Weather: It rained all night and was still drizzly in the morning. There was little mist and little wind (a few mosquitoes arrived). We could see the tops of some of the mountains for the first time (photo 4)—there was fresh snow! By mid-morning the wind started again, but for the first time it was from the north and not the south.



Photo 4. Looking north between point 7 and 12.

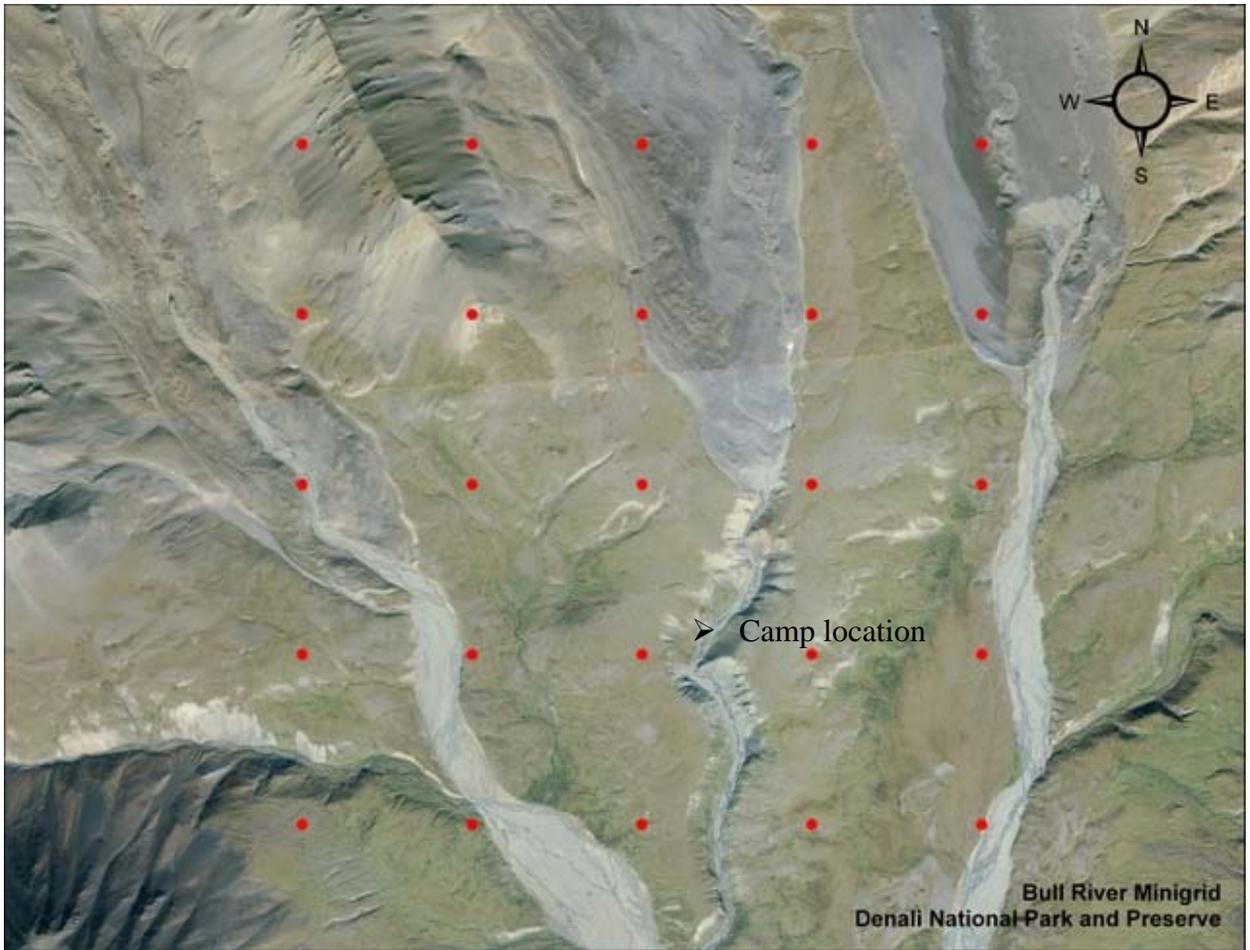
### **Tuesday, August 7**

This morning we found out that the helicopter could pick us up this afternoon, which was good since we were finished with the grid! We headed up the hill to the west of camp and down into the most willowy area we could find to do a brushy auxiliary point 27A (near upper west fork of Bull River). Peter spotted a bear 2 miles south of camp and a gyrfalcon on our way to the auxiliary point. After the extra point, we ate lunch, packed up camp and waited for the helicopter. While waiting for the helicopter we finally saw the ground squirrels that were making trails across barren and nearly vertical scree slopes across from our camp. Around 4:30 the helicopter picked up Peter and most of the gear and brought him out to Cantwell where Larissa was waiting for him. The helicopter then picked Carl and I up and brought us to the Denali airstrip. Because I had my camera clutched in my hands and a big smile, Carl and I got an extra good flight out of the mini-grid. George flew us up to see the glaciers we were working below and then over a series of high elevation, aqua-blue lakes (Photo 5). We got back to the panabode around 7pm and arrived in Fairbanks at 10pm.

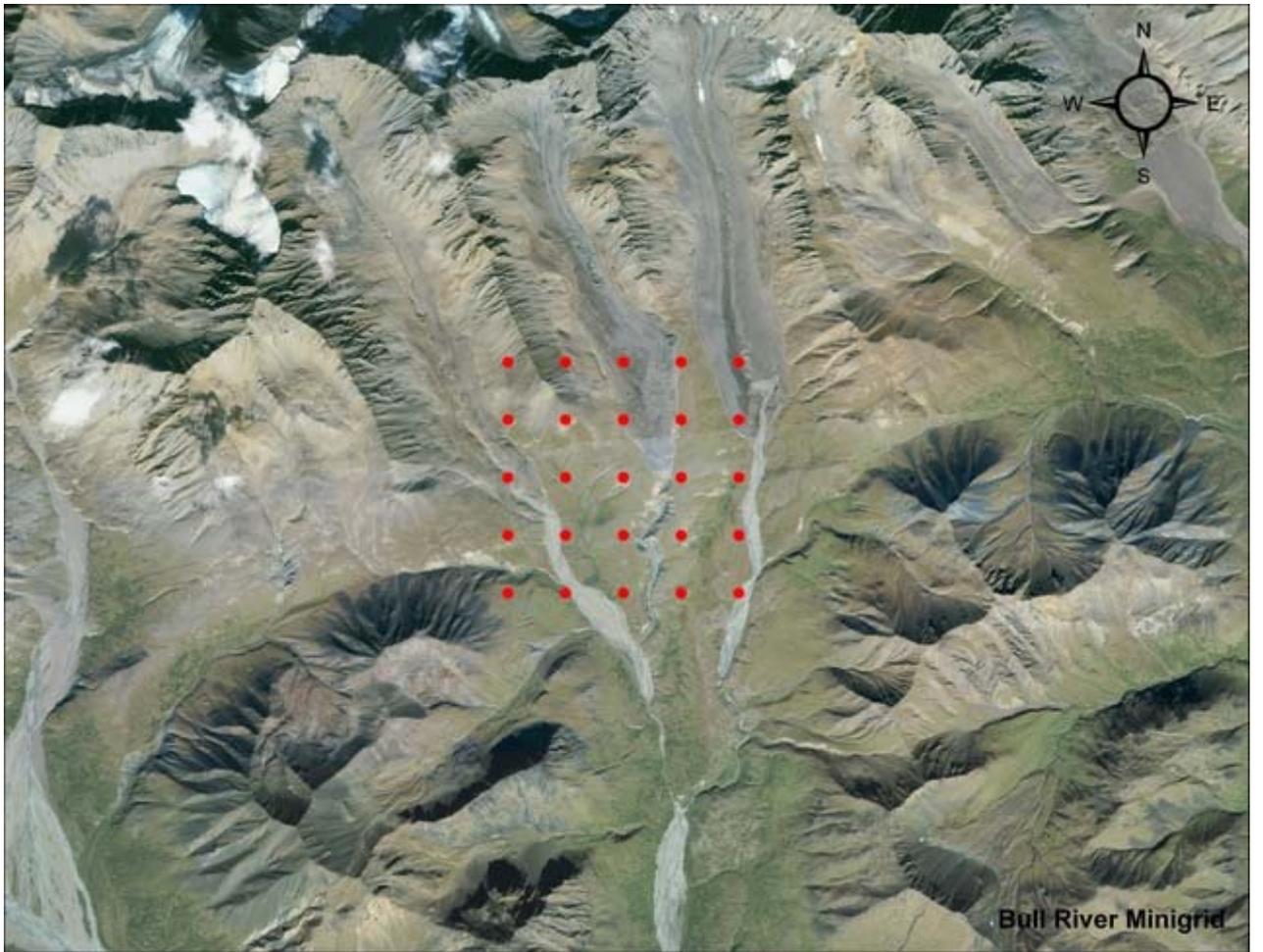
Weather: Spectacular!!! Clear and cold in the morning, but by the afternoon the sun was strong and warm. I highly recommend doing this mini-grid on sunny days—it is very beautiful. The weather stayed perfect for our helicopter ride out.



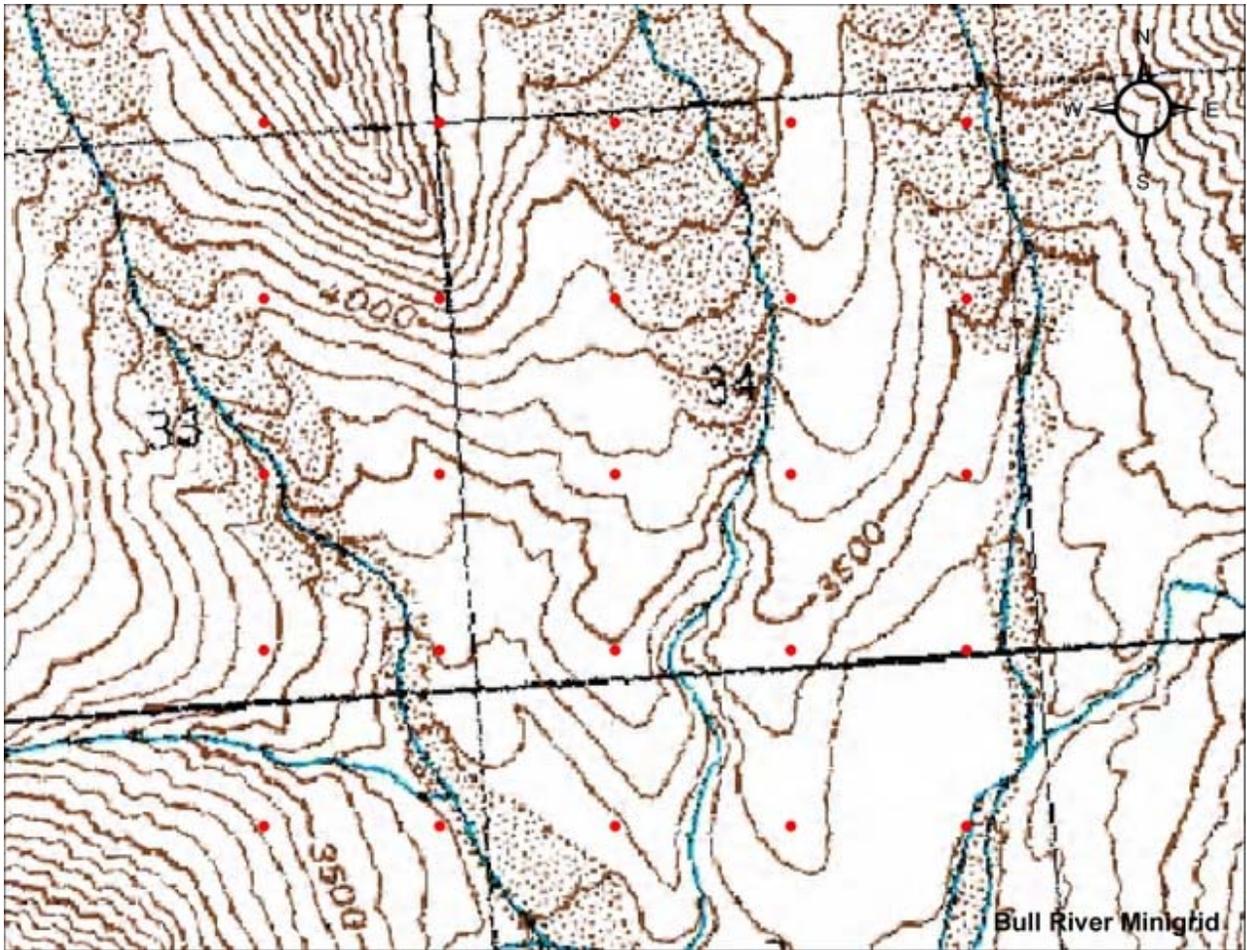
Photo 5. View of high elevation lakes on our helicopter ride out of Bull River.



Ortho Image 1. Bull River Mini-Grid (zoom). Our approximate camp location is marked.



Ortho image 2. Bull River mini-grid.



Map 1. Topographic map of Bull River Mini-Grid

### **CONCLUSIONS AND FUTURE CONSIDERATIONS:**

The sampling of this mini-grid went very smoothly and I would suggest doing basically what we did. If you camp at the same spot we did, I would recommend hiking up the hills adjacent to the camp to access the sampling points rather than walking along the creek first and then up.