

YUKON-CHARLEY RIVERS NATIONAL PRESERVE

CENTRAL ALASKA NETWORK

Vegetation Monitoring Program

Summary Trip Report: Ben Creek Mini-grid

16 July – 24 July, 2008



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Contributors: Rory Nichols, Heather Stewart

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PURPOSE:

The purpose of this trip was to establish permanent plots for vegetation sampling at the Ben Creek mini-grid according to the Central Alaska Network (CAKN) vegetation monitoring protocols. Twelve of the twenty-five points were sampled. The remaining thirteen points were not sampled due to their being located in the Yukon River (points 6, 11-14, 17-19, 23 and 24) or in lakes (points 2, 21 and 22).

PERSONNEL:

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

ACCESS TO MINI-GRID AND CAMPING POSSIBILITIES:

The Ben Creek mini-grid is located approximately five miles up river of Slaven's Roadhouse on the Yukon River. The mini-grid straddles the river with plot points falling on both the north and south bank and two points located on islands in the river itself. Personnel and gear were first transported via fixed-wing aircraft from Fairbanks to the airstrip at Coal Creek Camp (approximately 1 hour flight time). This was the third trip of the field season and it was possible for us to leave some of the field sampling gear and camping gear at Coal Creek Camp (CCC) after the first and second trips. This made it possible to move all three people and all gear in one flight in a Cessna 206 from Fairbanks with Wright Air Service. From the airstrip at CCC the 'Mule' (a large, golf-cart style off road vehicle) was used to transport personnel and gear to Slaven's Roadhouse; this required two trips. It had seemingly not been possible to schedule boat training during the early season that would have allowed the option of self-transport on the river. As a result, we were dependent on others to be moved to and from the site and across the river on various days in order to complete the sampling work. This assistance came from one of the backcountry ranger staff, Josh Spice, and a Student Conservation Association volunteer working with him, Bill Edwards. They were very accommodating and helpful and their efforts were greatly appreciated. The boat was an 18-foot open skiff with a single outboard motor. The Yukon was experiencing very high water and fast current conditions necessitating three trips to move three crew people and gear up river.

Only the southern bank was considered for camping, as it held the majority of points we would be sampling. After a reconnaissance of the shore line, we chose a piece of beach line that was fairly centered in the plot, had the lowest angle beach and had a gentler slope for access from the shore into the plot. We looked at the area just west of point 14 where a stream flows into the Yukon thinking that would provide better drinking water, however; there was no flat ground on which to put up tents there. The site we chose, while not ideal, in retrospect, I think is the best area to camp for this grid as it does afford the easiest access from the river to the grid points on that side. Most of the rest of the shoreline has very steep terrain and cliffs that prohibit movement from the river's edge inland. We could have

camped off the beach on an upper bank where it was flatter but chose to be out on the beach in hopes of a better breeze to keep down mosquitoes. (Photo 1, Topographic Map 1). Due to the very wet conditions we found a number of small seep-like streams along the beach where we could use a small cup to get clearer water; all water we found contained a large amount of tannins and organic matter.



Photo 1. Looking down river from our camp towards the island where point 20 is located; we placed our cook shelter approximately 75 meters up river from our tents and stored our BRFCs stored 75 meters beyond that.

HIKING:

Hiking within the Ben Creek mini-grid was not overly difficult but required more attention to navigation and use of the GPS since the closed in forested terrain and very steep micro terrain next to the river made it impossible to route-find with the map alone. The vegetation is not very difficult to negotiate with minimal bush-whacking required. The terrain on the southern side of the river is spongy, moss tussocks with a fairly open understory in most areas (Photo 2). The small drainages in the grid were running very high and made for wet feet, whereas at other times they could probably easily be crossed without getting wet. On the north side of the river, the terrain is marshy but surprisingly was not as wet as we would have anticipated given river conditions and what we observed on the southern shore. The grid requires minimal elevation gain over the course of hiking between points, but very steep to cliff-like terrain exists along the shore and at points along some of the drainages which can be problematic in route-finding.



Photo 2. Typical vegetation found in the southern points of the Ben Creek mini-grid.



Photo 3. High water on the Yukon River; submerged vegetation and eroding banks were observed in numerous places.

WEATHER AND ENVIRONMENTAL CONDITIONS:

We experienced cloudy conditions over most of the trip with rain, sometimes heavy, on 6 of 9 days. Unfortunately, given the type of vegetation, even when it was not raining, walking through the wet brush would produce the same effect. There was almost no wind, which was very different to the almost constant breeze to moderate wind we experienced on our previous two sampling trips in more alpine terrain. Even on the river, it did not feel like there was any wind most of the time. The weather systems we experienced were, for the most part, very persistent and slow moving. No clear prevailing weather direction was observed. Temperatures ranged from the 40's to the low 60's (Fahrenheit).

SAFETY CONSIDERATIONS:

There were no major safety concerns presented by the foot travel in this area. The greater safety concern is likely that associated with the river travel. While we were not handling this and had no problems in this regard, negotiating high, swift-moving water should always be undertaken with caution (Photo 3). The narrow beach conditions caused by the high water were also not a safety concern since we were in a spot where we could easily move uphill if required, but this could become an issue in other areas where there are cliffs. We did have to move our cooking shelter due to rising water. While flash flooding does not seem like a concern, it was interesting

and surprising to observe the water level rise perceptibly just over the course of a day. We had no wildlife problems or encounters.

PHENOLOGY OBSERVATIONS:

The range of vegetation types found at Ben Creek was relatively high while the diversity of species was not. On the southern shore it was fairly consistent with spruce and mixed open forest dominating. The two island plot point presented very different vegetation including closed tall scrub and mature forest on the one and very newly established vegetation on the other. The north shore was very interesting in that the marshy conditions we expected were found in part of the terrain but there was a large area, including point 16, that was completely dried up – a phenomenon that seems like it must have happened very recently. We found an average of 18 plant species per plot. A few plants were still at the flowering phase (*Goodyera repens*, *Salix* spp., *Hedysarum alpinum*), and many were setting seed (*Geocaulon lividum*, *Ledum groenlandicum*, *Rosa acicularis*, *Vaccinium uliginosum*, *Carex* spp.)

GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:

Heather collected 84 vascular plant specimens from the Ben Creek mini-grid; she began on collection number HS-08-159 and ended on HS-08-242 (Table 1). Rory collected 38 nonvascular plants (RN-0296 to RN-0333) (Table 1). The number of the first photo taken at Ben Creek was 100-0579 and the last number was 100-0745 (Table 1). Heather collected soil samples from every plot visited. Tree and/or sapling data was recorded for all points except point 16 which had no trees or saplings.

Table 1. Collection series for the Ben Creek mini-grid.

| Collector | Identifier | Series |
|-----------|-------------------------|-----------------------|
| Stewart | Vascular plants | HS-08-159 - HS-08-242 |
| Nichols | Photos | 100-0579 – 100-0745 |
| Nichols | Nonvascular collections | RN-0296 to RN-0333 |

As mentioned earlier, the Yukon River itself was extremely high and conditions in general were quite wet. This makes even more surprising the fact that the pond supposedly adjacent to point 16 (and in actuality it would have been in the pond) is completely dried up. Given the presence of dead aquatic vegetation and almost no new vegetation this would appear to have occurred very recently. In addition, as we hiked from point 16 towards point 21, we encountered an area shown as marsh on the map that was also completely dry with dead aquatic vegetation and littered with the shells of freshwater gastropods (Photo 4).



Photo 4. Point 16 located in what was depicted on the topographic map as a pond but had completely dried up.

ACTIVITIES:

Wednesday, July 16

We travelled from Fairbanks to the Ben Creek mini-grid via Coal Creek Camp (CCC) then Slaven's Roadhouse. After finalizing gear in the morning, we left Fairbanks for CCC at 12:15 with Wright Air Service in a Cessna 206. We arrived at CCC at 13:20 and began the process of ferrying personnel and gear. Backcountry Ranger Josh Spice met us with the 'Mule' (a golf-cart style off road vehicle) and we began moving our gear out to Slaven's Roadhouse on the river, this required two trips. By 15:00 we had all the gear and crew at the river and began loading up for the five mile trip upriver to the study site. Here we met Student Conservation Association intern Bill Edwards who was on patrol with Josh. After initially loading two people and gear Josh tried to head up river but because of the strong current decided he would have to leave part of the gear. We were underway a second time by 15:30. After doing reconnaissance up and down the shoreline encompassed by the mini-grid a camp area was chosen upriver of point 13. After dropping Heather and I off, Josh and Bill returned to Slaven's Roadhouse and picked up Rory. They arrived back at our location at around 17:15. Josh and I tentatively discussed a pick up on June 19 to do the plots on the islands as that would give us a couple days to become familiar with the vegetation in the area prior to going further afield. We proceeded to set up

camp and were done for the day at 18:30. While choosing a spot for the cooking shelter I observed an adult wood frog along the shoreline. Rory made two additional sightings at our camp, likely of the same individual, on subsequent days.

Weather: The morning was mostly clear and sunny in Fairbanks; by afternoon at CCC and Ben Creek, it was partly cloudy with no wind and temperatures in the 60's F.

Thursday, July 17

Thursday we sampled points 5 and 4. We left camp at 08:00 headed for point 5 arriving there at 09:00. Due to the denser vegetation, we relied much more on the GPS to travel. We began work on point 5 at 09:20 and completed it by 13:45. This plot is a very slight, even hill slope. The ground cover was dominated by moss with a fairly sparse under story made up primarily of *Rosa acicularis* and *Vaccinium vitis-idaea*. The upper story was closed mixed forest containing *Picea mariana* and *Betula papyrifera* and a few tall *Salix* spp. shrubs. We hiked to point 4 by 14:15, set the monument by 14:30 and then had lunch. Plot work began at 15:00 and was completed by 19:15. This plot is located on a gentle, undulating hill slope. The vegetation is similar to point 5 with moss dominating the ground cover and a fairly sparse understory of *Ledum Groenlandicum*, *Rosa acicularis* and *Vaccinium vitis-idaea*. This plot had fewer *Betula papyrifera* and the *Picea mariana* were shorter in stature, 3 to 6 meters. We hiked back to camp by 20:30.

Weather: In the morning conditions were partly to mostly cloudy and very humid with no wind and temperatures in the lower 60's F. By afternoon, it had become overcast with intermittent rain showers, still no wind and temperatures in the upper 60's F.

Friday, July 18

Friday we sampled plots 3 and 8. We left camp at 08:00 and hiked to point 3 by 08:40. We set the monument and began the plot work by 09:00. This plot is on essentially flat terrain and is part of a very large plateau. The vegetation could be characterized as black spruce woodland; the ground cover was dominated by moss and lichen with an understory of *Ledum groenlandicum*, *Vaccinium vitis-idaea*, and graminoids. There was a single, large *Alnus viridis* shrub and a few tall *Salix* spp. We completed the plot by 12:30 and hiked to point 8 by 12:50 where we set the monument by 13:05 and had lunch. Plot work on this site began at 13:35 and was completed by 17:20. This point is also black spruce woodland on an essentially flat plateau. There were a number of standing dead *Betula Papyrifera* along with a very few live individuals and a few *Salix* spp. The understory was minimal and dominated by *Ledum groenlandicum* and *Vaccinium vitis-idaea*. The groundcover was again moss and lichen. We hiked back to camp by 17:45. At the afternoon check-in, we confirmed our plans to do the island plots on the following day with a scheduled pick-up (start time) of 08:30.

Weather: Overcast with rain all day, no wind and temperatures in the lower 50's F

Saturday, July 19

On Saturday, we completed points 20 and 25. We checked in with Eagle at 08:00 in case there were any messages from Josh (there were none) and were ready for pick-up at 08:30 as had been planned. At 08:40 we were contacted by Josh who said he would be delayed 30 minutes. I offered to revise our plans if it was inconvenient for him to do it that day, he said no. We then spent our time identifying shoreline plants that we anticipated might be present at point 25 in particular. Josh and Bill did not arrive until 10:00 at which point they ferried us in two trips over to the island where point 20 is located. We told Josh we anticipated needing a pick-up around 14:30 and we would call him 30 minutes prior, if he had not heard from us he was going to be back at 15:00. We started hiking to the plot by 10:20. We reached the plot by 10:40 set the monument and began plot work by 10:55. The Trimble would not acquire the location; four separate attempts were made throughout the period of time we were working. The point was established and the only lat/long available is from the Garmin unit. This point is located on relatively flat ground in the middle of a large well vegetated island. A football field size pond lies to the west southwest of the plot and a broad shallow inlet or outlet from this pond pass by the south edge of the plot. There is a slight rise in the middle of the plot running parallel to the east-west transect with the ground dropping off slightly to either side. Litter, *Equisetum* spp. and moss dominated the ground cover with an understory of *Rosa acicularis* and *Rubus* spp. Tall (2-3 meter) *Alnus viridis* dominate throughout the plot with a swath of very mature, large *Picea glauca* (20+ meters tall) on the southern side of the plot. Due to the dense vegetation, it took us longer than anticipated to complete the plot. I radioed to Josh that we would need additional time. We completed the plot by 15:30 and hiked back to the shoreline where Josh and Bill picked us up at 16:00. They then transported us in two trips to the second island where point 25 was located. By 16:30, we were all on the second island with the plot point a short distance away. We set up the monument and began plot work at 16:50. Due to the minimal diversity of vegetation, we anticipated needing a pick-up no later than 20:00, Josh planned to return then if he had not heard from us by then. Point 25 is on a low sandbar island, there are no mature trees or vegetation above 2 meters in height and there is no real ground cover. It is exposed sand with virtually no organic soil mat, moss or lichens. The dominant vegetation was *Salix* spp. and *Hedysarum alpinum*, with a few graminoids and forbs. There were also a large number of seedling size and some just barely sapling size *Populus balsamifera*. We radioed Josh we would be ready for pick-up by 19:30. We completed the plot work by 19:20. Josh picked us up at 19:30 and we were all back to camp by 20:00.

Weather: Rain ending overnight, overcast in the morning with the clouds breaking up through the early afternoon and then becoming mostly cloudy again by evening, no wind and temperatures in the mid to upper 50's F.

Sunday, July 20

Sunday we sampled points 10 and 9. We left camp at 08:00 and reached point 10 at 08:50, set the monument and began plot work at 09:05. Again, the Trimble was not working and the point could not be acquired with it. This site is located on a very gentle hill slope. The vegetation can be characterized as open black spruce forest with a few *Betula papyrifera*. *Ledum groenlandicum* and *Rosa acicularis* dominated the understory with *Vaccinium vitis-idaea*, moss

and lichen for groundcover. We completed this point by 12:10 and then hiked to point 9 (20 minutes), setting the monument by 12:45. We had lunch and then started work on this point at 13:15 completing it by 17:00. This point is on a fairly steep hill slope and appears to have been burned but I am uncertain how recently. It was much more open than the slopes on either side within a few hundred meters. And while those slopes contain more mature deciduous and spruce trees, the plot and immediately surrounding slope only contains *Picea mariana* averaging a few meters in height and many of these appear to have charred bark. The understory was dominated by *Salix* spp. and *Ledum groenlandicum*. Some graminoids, *Vaccinium vitis-idaea*, moss and lichens made up the ground cover. We hiked back to camp arriving there at 17:30.

Weather: Rain resuming overnight, overcast conditions and rain throughout the day, no wind and temperatures in the low 50's F.

Monday, July 21

This day, we sampled points 1 and 7 and made sample estimates for point 2 which was found to be located in a lake. We hiked from camp at 08:00 and arrived at point 1 at 08:55. We set the monument using the Garmin unit and began work on the plot at 09:05. While working later in the morning the monument location was saved in the Trimble unit. This plot is located on an essentially flat plateau. Again, the vegetation can be characterized as open black spruce forest with a very few *Betula papyrifera*. The understory was dominated by *Ledum groenlandicum* with moss and lichen cover on the ground. We completed work on this point at 11:55 and hiked to point 2 (20 minutes). Approximately 100 meters away as we were hiking to point 2, Rory observed a single wood frog which he described as noticeably smaller than the individual seen around our camp, so it may have been a juvenile; the habitat was open mixed forest. As we approached point 2, the Garmin unit gave an estimate of 40 meters to the plot when we were on a bench just up from and approximately 10 meters away from the water's edge. We could not acquire the point with the Trimble unit. We gathered the estimated plot data for the point from 12:15 to 12:30. We then hiked to point 7 (30 minutes) and established the monument by 13:20. We had lunch and began work on this plot at 13:50. This point is located on essentially flat terrain just at the top of a hill slope dropping down towards the Yukon River. The vegetation here can be characterized as open mixed forest with fairly large *Betula papyrifera* and *Picea mariana* forming the upper story. The understory was a mixture of *Rosa acicularis*, *Ledum groenlandicum* and *Geocaulon lividum* with *Vaccinium vitis-idaea* and moss dominant in the ground cover. There was one large live *Picea mariana* that appeared to have been heavily fed on by a porcupine, with several of the standing dead *Betula papyrifera* also exhibiting evidence of feeding. Within the plot and surrounding area, there were patches of downed sapling-size *Picea mariana*, some still alive others not. The possible cause of this was unknown. We completed work on the plot at 17:30 and hiked back to camp by 18:00.

Weather: Intermittent rain overnight and early in the morning with overcast skies changing to mostly cloudy in the early afternoon. Rain was again falling by evening, no wind and temperatures in the 50's F.

Tuesday, July 22

On this day, we completed points 15 and 16 and took plot estimate data for points 14, 21 and 22, after establishing that they were all in water. We left camp at 08:00 intending to sample point 15 and 14 that day. Knowing that topography right next to the river would be potentially be more difficult, we started out on a heading towards point 9 until we reached the slope above the stream and then switched paths to head towards point 15. This worked well, and we arrived at point 15 at 08:50. We established the monument and started work on the plot by 09:10. This point is on a gentle hill slope and is located approximately 60 meters from the edge of the Yukon River. It was very open-growing woodland black spruce forest with most of the trees less than 8 meters in height but with a few more mature *Picea mariana*. There were a few standing dead *Betula papyrifera* and the only live individuals were barely sapling size. Taller shrubs were also generally absent with the understory comprised of *Ledum groenlandicum*, *Spiraea stevenii*, and *Rubus chamaemorus*; moss and lichen comprised the ground cover. We completed this point by 13:00 and hiked to point 14. The bench we were currently on seemed to provide a good route, so we hiked fairly directly to point 14 but trended slightly inland and upwards following animal trails so we would not be 'cliffed out' by the river bank. The stream just west of point 14 at its mouth was very swollen and deep due to the heavy rains. Recent mud slide activity and vegetation falling into the water made it possible to cross but otherwise we would have had to hike back up stream, likely some distance, to get across. At this stream, Rory observed up to three wood frogs, possibly juveniles. We hiked up the bank on the other side but soon realized the GPS was directing us closer to the river's edge. By 13:40, we established that the point was in fact in the river. By walking up and down the bank our shortest distance to the point was 36 meters. I took a data point with the Trimble at this point. Since this was the last plot point on the south side of the river we decided to try and reach Josh on the radio to see if by any chance he might be able to transport us to the north bank for the afternoon. We were unable to reach him but did talk with Eagle, who said he was out on the river and they thought (mistakenly) he was headed up river. We decided to have lunch there in hopes he might be headed our direction and we could reach him on the radio when closer. We finished lunch at 14:10 and did the data estimates for point 14; while in the process of completing that we heard a boat and were able to contact Josh by radio. Within a few minutes (14:30), he and Bill were picking us up to go across the river (two trips). Apparently, he had heard our original radio traffic but could not respond. And though they were headed down river on a project assignment he felt obliged to turn around and come back up river to contact us to ensure everything was alright. He agreed to take us across the river; he would then go do his project and so did not think he would be able to return for us any earlier than 21:00. We figured this would give us time to do one point and likely a second. We were all ferried to the north bank by 15:10 and began to hike to point 16 (20 minutes). We discovered that what had been shown as a pond adjacent to point 16 on the map had indeed been a pond that was now completely dried up, and in actuality, the plot point fell within the area of this former pond. As a result, we completed it quickly (15:45 to 17:40) since it was almost completely covered with dead aquatic vegetation with only a very few plants established in the plot. We then hiked towards point 21 and found that another pond just north of point 16 was also dried up with dead vegetation and freshwater gastropod shells littering the ground. The marsh lands we then crossed were fairly wet and contained standing water in areas. The vegetation seemed normal and healthy. Upon arriving at point 21 at 18:00 we discovered that the point is located in a pond that is full of water. By standing (in knee boots) on the

vegetation mat extending out from the pond edge, I was able to get a reading of 5 meters further out into the pond as plot center. I took a GPS location at that point and did the estimated plot data (18:10 to 18:30). We then hiked to point 22 (30 minutes), again, through seemingly normal vegetation comprised of drier ground open forest and marshy areas with standing water. We reached point 22 and found that it is located in a much larger pond or lake. Here again, by walking out as far as I could on the vegetation mat I was able to establish a GPS point that was 38 meters away from plot center. We completed the estimated data for the plot point from 19:00 to 19:20 and began to hike back to the river. We reached the shoreline by 19:40. We attempted to reach Josh on the radio to let him know that we had finished early and were ready for pick-up. We got no response and assumed he was likely still far down stream completing his project there. At 20:15 we tried again and reached him, he said he would be headed to our location after re-fueling at Slaven's Roadhouse. He and Bill did not pick us up until 21:40 and we were all back at camp at 22:00. Since we had completed the grid we arranged for a pick up the following morning. Due to other scheduling issues he could either pick us up at 08:30 or around noon, we opted for 08:30.

Weather: Rain ending overnight, mostly cloudy in the morning with no wind and temperatures in the lower 50's F. Becoming partly cloudy in the afternoon with light wind; temperatures in the mid to upper 60's F.

Wednesday, July 23

We were packing up camp starting at 07:30 to be ready for pick up at 08:30. We turned on the radio at 08:00 and checked in with Eagle who advised us that Josh would be delayed to 09:00. He arrived at 09:05 and took Heather with the majority of gear back to Slaven's Roadhouse. He was back to pick up Rory and I at 10:15 and we arrived back at Slaven's at 10:45. We moved our gear up to the roadhouse and reorganized in preparation for sampling the Coal creek sites. I decided, based on Josh's other commitments and a desire to be on our own schedule, that we would do the inland points today and get a ride downriver the following day for points 21 & 22. (In retrospect, this was a fortuitous decision, as Josh's boat broke down later that evening 8 miles downriver and he had to call in assistance that came all the way from Eagle to pick him up and bring him back to Slaven's at around 01:00.) We left Slaven's at 12:00 and hiked on the upper ORV trail out to where it crosses Pendergast Pup creek where points 3 to 5 form a line paralleling the drainage. Prior to heading up the drainage we decided to have lunch (13:00 – 13:30). It was at this point that I realized playing with the Garmin that the points for which we had coordinates did not seem to be the same points that still required sampling. Though we were not entirely certain from the information available, it seemed that an error in the numbering of the points originally had not been corrected (or the correction was not accounted for properly) in generating the coordinates for the points still needing sampling. As a result, we decided to sample point 3 since its location as the midpoint meant that regardless of the direction of the numbering it would still be numbered correctly and thus the coordinates would be correct. The hike to point 3 was relatively difficult due to the downed trees from a fire in 2004. It took us 1.5 hours to hike 2.4km to the point. A hawk, possibly a Red-tailed, was calling and flying above the area as we approached. I again had problems with the Trimble acquiring our location so the plot center was established using the Garmin. Later in the afternoon I was able to save a data file of the point on the Trimble under 'BENCR02'. We began work on the plot at 15:20 and

completed work by 18:50. The plot is in the burned area and so it contains a number of downed trees as well as several very large standing dead trees that must have been *Picea glauca*. Interestingly no sapling sized standing dead trees were in the plot and seemed to be minimally present on the surrounding slope. The only live trees were a few sapling and seedling sized *Populus tremuloides* and one seedling *Picea glauca*. *Epilobium angustifolium*, *Rosa acicularis*, and *Salix* spp. dominated the understory with burned material, litter and some moss comprising the ground cover. When we hiked back to the road, we decided to stay in closer proximity to the stream in hopes that this area would have fewer downed trees to scramble over. This worked well and was faster and definitely easier than our route into the plot. We were back to the road by approximately 19:45 and back at Slaven's by 20:30. That evening I attempted to reach Carl Roland through the Denali Communications Center (DCC) and at home as well as leaving a message on his work phone in an attempt to clarify whether the Coal Creek point coordinates we had were the correct ones or not.

Weather: Mostly cloudy in the morning becoming overcast by afternoon with rain, no wind and temperatures in the upper 50's to low 60's F.

Thursday, July 24

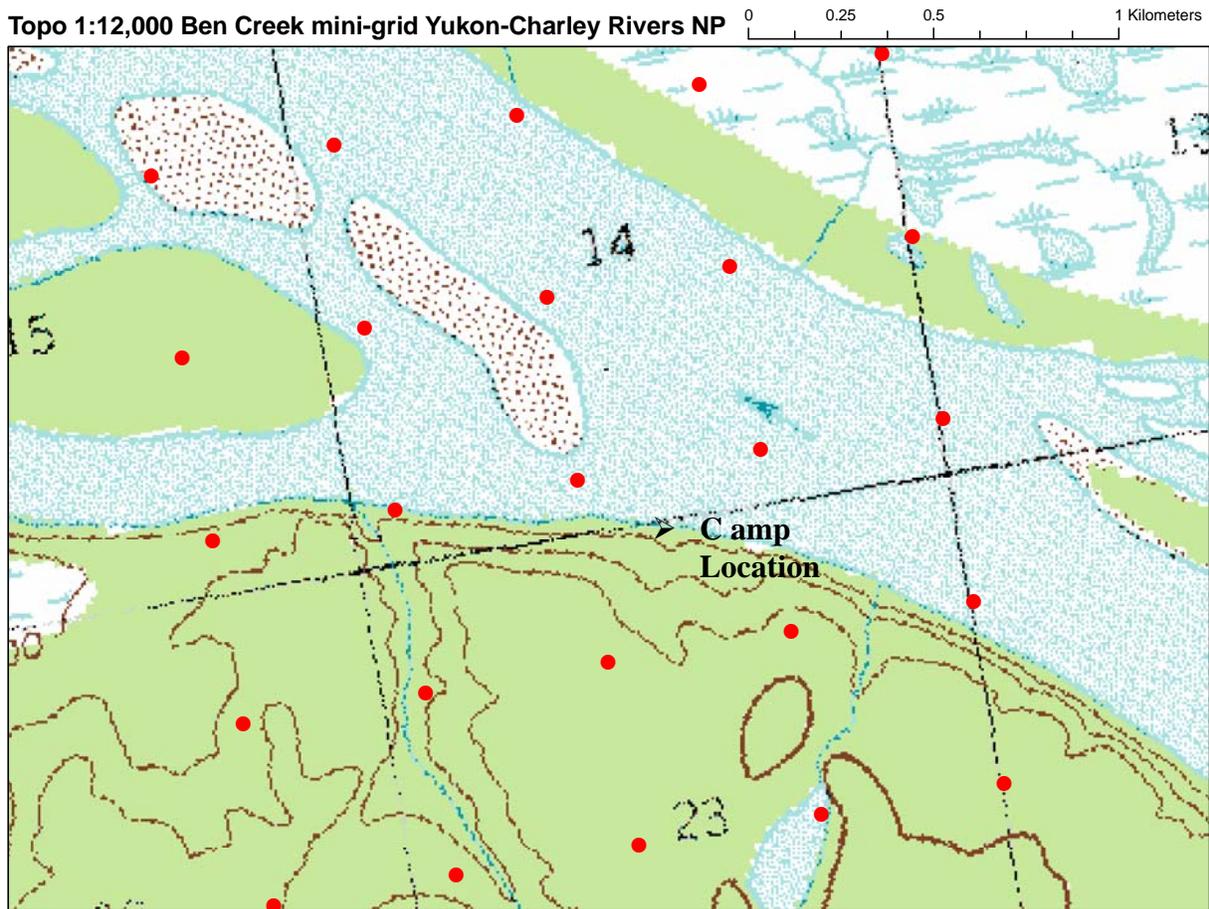
Due to the boat break-down the previous day, Josh and Bill were leaving to head back to Eagle with Scott Sample and Seth McMillan who had boated down to pick them up where they had been stranded. This left no option for boat support for sampling. When I checked in with Eagle at 08:00 there was no message from Carl and so I asked them if he did call to raise me on the radio which I would monitor. I talked again to DCC and confirmed Carl was out of the field. I then tried both his office and home phone but did not leave a message. At 09:00, I tried again and this time reached Carl at home. After discussing the problem with the point coordinates and learning that logistics problems existed for the upcoming sampling trip, it was decided to finish the trip a day early if a flight could be arranged. I was able to move up our flight with Wright Air Service to that afternoon at 14:00. We packed up our gear, cleaned up Slaven's and ferried our gear to the CCC airstrip by 12:00. The last stream crossing the road before Slaven's was so high that the 'Mule' could not make it across, so we had to hand carry gear across this and then make two trip with the 'Mule' to get us and all of our gear to the airstrip. Once at the airstrip we took advantage of the now sunny conditions to dry out our gear. It was decided to bring out everything possible as it was unclear where the next sampling trip would be. Wright arrived with a HelioCourier at 13:30. We loaded the plane and took off for Fairbanks at 14:00 arriving there at 15:10.

Weather: Partly cloudy in the morning with fog and no wind becoming mostly clear by afternoon, temperatures in the upper 60'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. We were able to complete the Ben Creek grid and while this is maybe not as impressive as it otherwise would be since half the points are located in water it is still an accomplishment given the logistical challenges presented by relying on others for

river transport. The problems with the boat availability and the information we had for the Coal Creek points were beyond our control and adversely affected what we could accomplish in the field. While it worked out well enough to use outside personnel for river transport and we are very grateful for the support and assistance provided by Josh Spice and Bill Edwards; they were both very accomodating and helpful. It was still not as efficient and introduced more potential for loss of work time than training the crew members to be boat operators. This is especially born out by the fact that the entire last sampling trip had to be cancelled after scheduling changed for the helicopter and no option could be worked out for a boat supported trip.



Map 1. Topographic map of Ben Creek Mini-Grid