

WRANGELL-ST. ELIAS NATIONAL PARK AND PRESERVE

CENTRAL ALASKA NETWORK

Vegetation Monitoring Program

Summary Trip Report: Carden Hills 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 Carden Hills mini-grid according to the Central Alaska Network (CAKN) vegetation monitoring protocols. We completely sampled 16 points. All points are accessible in this mini-grid, but we did not have time to sample the remaining 9 points. That we were camped outside of the mini-grid coupled with the intense topography and unavoidable bogs drastically increased the time it took to get to each point.

PERSONNEL:

Fleur Nicklen - crew leader, vascular composition, plot/quadrat variable estimates, transects
Kara Thies - non-vascular collections/id, soils data
Christina Thompson – plot photos, tree and sapling data, tree cores, transect data

ACCESS TO MINI-GRID AND CAMPING POSSIBILITIES:

The Carden Hills mini-grid is accessible via float plane. Originally the plan was to fly with Jim Ellis from the Tetlin National Wildlife Refuge, but because of some issues with Jim's time off, we had to re-schedule our flight out with 40 Mile Air (based out of Tok). We drove from Copper Center to Tok (3 hrs) to meet Jim Ellis and then to Yarger Lake, which is about 7 miles past Northway (another 2 hrs with construction). The flight to Carden Lake was an additional 1.5 hours in a Bush Hawk aircraft (photo 1). We almost could fit the 3 of us and our gear in one flight, but for safety and space reasons chose not to. On the return flight with 40-mile air we flew two trips to Midway Lake in a Cessna 185.



Photo 1. Bush Hawk on which we flew into Carden Lake. Photo taken from our cook tent.

Our camp spot at Carden Hills was far from ideal (map 1). We circled the general area several times and the pilot looked for potentially drier spots. I was rendered helpless and unable to open my mouth because of air sickness. We finally landed about 300m west of point 5. It may be better to camp due south of point 5. There was an interesting rock wall adjacent to an old rocky creek bed SE of point 5. In reality, there are no great camping possibilities in this mini-grid. All around the lake are sedges in standing water. There is a narrow strip of thick white spruce forest bordering the lake where we set up our tents on somewhat lumpy (but very mossy) moist ground. We kept our cook tent just on the edge of the forest in the tall grass (*Calamagrostis*) that borders the sedge/standing water (photo 1). Just beyond the forest strip is the tussock bog (see 'hiking' section for discussion of this). There was a small stream of bog water that emptied into the lake just east of our cook tent. The water was very yellow, but tasted fine (photo 2).

We did have a beautiful view from camp looking SW over Carden Lake to the Nutzotin Mtns (photo 1). Each morning there was at least one moose in the lake. There were several groups of waterfowl in the lake and one lone Mew Gull that would visit at dinner time. (No, we didn't feed it). Another Mew Gull finally showed up around day 9.



Photo 2. Yellow bog water that we drank for 10 days; it tasted fine.

HIKING:

In order to get to any points in the mini-grid from camp we had to cross the bog. We crossed this very wet, tall tussock bog every morning and every evening. The bog spans the entire area between points 4, 5, 9 and 10 (and east of this) (map 2). Walking from point 5 to point 9 should not be tried. Wearing rubber boots is essential for any hope of dry feet, but certainly makes balancing on tussocks and hiking up the steep hills more difficult. There was one way to almost avoid the bog: if we walked along the lake (which is wet walking) to point 5, we only had a short strip of bog to cross before hitting the base of the ridge that runs NW-SE through the mini-grid (right arrow on map 2). Once hiking up the slopes, the vegetation was fairly open. To reach the eastern points you must cross a larger section of bog, but if you aim for the slope that runs along the western edge of the mini-grid it will be easier (left arrow on map 2).

The mostly S facing slopes are a mix of tall open spruce stands and spruce-birch mix. The E and NNW facing slopes have stunted black spruce with sphagnum. Drainages and seeps are filled with thick alders. Avoid drainages. The northern-most line of points falls on the north side of Carden Hills and is in the alpine. Points 16 through 20 do not quite reach the alpine, but are in a mix of rock slides, brushy dwarf birch and alder, and scattered white spruce. This area is fairly difficult to walk through; it is steep and brushy enough to slow you down and prevent you from seeing all the loose rocks on which you are stepping. Since we knew the hiking was going to be difficult, we eliminated the eastern column of points right off the bat. As it turned out we could realistically only complete 2 points a day. We could have done 4, 5, and 9 in one day, but the day we did those points it was raining very hard, so we only did two.

WEATHER AND ENVIRONMENTAL CONDITIONS:

Carden Hills, located in the interior close to the Yukon border, is supposed to be hot and dry in July. However, it rained seven out of ten days and was the wettest of all our plots. There was also no wind at Carden Hills, not even a slight breeze, which contributed to the persistent rain and heavy clouds that hung over us for days. The lack of wind also enabled the flying insects to swarm without resistance, even in the rain. The first two days were quite warm and sunny with highs in the 70s. The next seven days were wet with on-and-off rain ranging from heavy downpours to light drizzles. Temperatures were typically in the 50s during the day and dipped down into the 40s at night. There was a lovely thunderstorm the night before we were picked up, and we were concerned about getting out. Luckily, the clouds lifted just in time and the pilot was able to get us without trouble.

SAFETY CONSIDERATIONS:

The steep rocky slopes around points 16 to 20 are potentially hazardous. It is a substantial hike up to points 20 through 25 and on the way back you need to be extra careful on the loose rocks and small drop-offs because you will be tired. In addition, walking through the bogs invites twisted ankles and moments of potentially unsafe rage following muddy face-plants between tussocks.

We saw very little evidence of bears in this area. The mosquitoes seemed more dangerous.

Radio contact to Slana or Gulkana is not possible from Carden Hills. Satellite phone is the only means of contact.

PHENOLOGY OBSERVATIONS:

Most plants were at their peak phenology when we sampled this mini-grid. *Rosa acicularis*, *Calamagrostis* spp., *Ledum groenlandicum*, *Linnaea borealis*, *Oxycoccus microcarpus* (photo 3), *Spiraea stevensii*, *Potentilla fruticosa*, *Pedicularis lanata*, *Minuartia* spp., *Cardamine purpurea*, *Lagotis glauca*, and *Papaver macounii*, were all flowering. *Mertensia paniculata* and *Vaccinium vitis-idaea*, *Senecio atropurpureus*, and *Arctostaphylos* spp. were starting to fruit.



Photo 3. *Oxycoccus microcarpus* flowering.

GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:

I collected 63 vascular plant specimens from the Carden Hills mini-grid; I began on collection number EFN-08-059 and ended on EFN-08-122 (Table 1). Kara collected 190 nonvascular plants (Table 1). The number of the first photo taken at Carden Hills was 100-0238 and the last number was 100-0468 (Table 1). Kara collected soil samples from every

sampled plot. Christina measured trees at points 3, 5, 7, 10, 12, 13, 14, 15, and 19, and saplings at all sampled points save 14 and 25. Christina cored trees at all sampled plots except for plots that lacked large, close trees (8, 9, 24, and 25).

Table 1. Collection series for the Carden Hills mini-grid.

Collector	Identifier	Series
Nicklen	Vascular plants	EFN-08-059 to EFN-08-122
Thompson	Photos	100-0238 to 100-0468 KT-08-057 to KT-08-084, 090-
Thies	Nonvascular collections	176, 543-545

ACTIVITIES:

Wednesday, July 2

We began loading our gear into the Suburban around 6:30am at Copper Center. By 7:20 we were headed to Slana to pick up Jordan (fish weir crew) who would drive us to Tok and return the vehicle for us. At 9am we arrived in Slana. We spoke with Thelma and gave her a map of the area where we would be working. Next we drove to the Tetlin National Wildlife Refuge just outside of Tok to meet Jim Ellis, the pilot. He turned out to be in the hanger across from 40 mile air. We drove to the hangar, weighed our gear and confirmed our return flight with 40 mile air (\$475/hr). Then we drove 7 miles past Northway to Yarger Lake—this took 2 hours with road construction. Jim was already at the lake and was giving some refuge workers a ride out and back to one of their bird sites. At 3pm Jim was back and we loaded our gear into the Bush Hawk. We were 10 pounds under the limit with all of us and our gear, but decided to take 2 flights for safety and space reasons. At 3:40 Kara and I took off; the flight was about 45 minutes. We set up camp and waited for Christina who arrived around 5:45. We finished setting up camp at 6:30.

Weather: Spectacular day; very warm and clear. The plane ride was quite bumpy.

Thursday, July 3

On our first day of sampling we did points 12 and 13. We left camp at 8:30 for point 12. Because we were still naïve to the horrors of the bog and the difficulties of alder-filled drainages, we may have taken the worst route possible to point 12; it took us 2 hours to get there. Point 12 was a moderately alder-y birch plot. After point 12 and lunch we sampled point 13. We finished plot work at 7pm and were back to camp at 8pm.

Weather: It was a beautiful, warm day. Typical interior weather.

Friday, July 4

This morning I could not get through to either Gulkana or Slana via satellite phone. I called Denali dispatch to relay the message that we were okay. All WRST phones were down from Friday to Sunday.

On July 4th we completed points 24 and 25. We crossed the bog north of camp and headed up the ridge on the western side of the mini-grid. This ridge has a wonderful open *Hylocomium splendens* understory with tall white spruce in the overstory. We came to depend on this ridge as an access point to other points because of the open walking (photo 4, left arrow on map 2).

The hike to point 24 was pretty brutal; it took us 3 hours. It began with the bog, transitioned to the nice spruce forest (photo 4), then to a brushy saddle, then a very steep, brushy, unstable, rocky slopes until we finally reached the alpine as we passed point 19. The view from the ridge between points 19 and 24 was spectacular (photo 5).

We ate lunch before starting 24. At 4:20pm we hiked over to point 25. Both points were really nice open alpine plots. There were many new plants. We finished at 8pm and were back to camp at 9:30. We were very tired and had to be careful hiking down the steep unstable slopes.



Photo 4. Open spruce forest on the S facing ridge on the west side of the Carden Hills mini-grid.



Photo 5. Looking towards Canada on the ridge between points 19 and 24.

Weather: The weather was partly cloudy with some light drizzle in the afternoon. We saw thunderstorms to the north, but they never reached us.

Saturday, July 5

Because of the intense hike the day before, we decided to do two closer points: 10 and 9. Point 10 is in a nice open, tall spruce forest (photo 4). After lunch and a bunny plot, we headed to point 9, which is located in a black spruce alder thicket. Once finishing this point, we did another bunny plot and returned to camp at 6pm. There was no bunny poop found anywhere in this mini-grid.

Weather: Overcast, but nice in the morning. In the afternoon what we thought was just a thundershower, turned into a heavy downpour.

Sunday, July 6

On Sunday we completed point 7 and 2. Point 7 was in a really nice black spruce sphagnum area. A thicket of alder separates point 7 and 2, but amazingly point 2 is not located in alders. It is on a steep slope with very thick sphagnum and even some *Drosera* (photo 6). We finished plot 2 at 7pm.

We made an error on our way back to camp. From point 2 it looked like you could just head a little south and over a saddle back down to camp. As we crossed the saddle a mist moved in that obscured our view and I didn't realize that we were walking down the drainage south of the one that leads back to our camp. Because of this detour we did not get back to camp until 9pm



Photo 6. Point 2. East facing slope with thick sphagnum and mostly black spruce.

Weather: Overcast with threatening clouds in the morning. As we finished point 7 it began to pour. It rained so hard that we waited before heading into the alder thicket. Unfortunately, it just kept pouring. It let up a bit at point 2, but we had a steady drizzle and mist mixed with very heavy rain for the rest of the night. It made slogging through the bog at night much more intense than anything Frodo Baggins experienced crossing “The Dead Marshes.”

Monday, July 7

Because of the long, wet previous day and the continued rain on this morning, we started late and did only points 4 and 5.

Weather: Socked in with heavy, wet clouds all day! Persistent rain and no wind at all. Temperatures in the low 50s.

Tuesday, July 8

On Tuesday we completed points 15 and 14. Point 15 was in a moderately open seep with alder, willow and white spruce. Point 14 was on the other side of the ridge and in a drainage as well.

Weather: We had sun in the morning, but all the vegetation was soaked. We were soaked at point 15, but hopeful it would clear. Unfortunately, it started to rain again. We had a little more sun in the evening, but it rained throughout the night.

Wednesday, July 9

I called 40 Mile Air this morning to make sure our pick-up was still on. We were told we were supposed to get an earlier pick up. This was confusing, so I called Gulkana dispatch to see what they knew. Apparently, it had been very cold in addition to being wet in Copper Center and people there thought we might need to come out early and had communicated this with 40 Mile Air. Luckily, our weather was just wet and we were doing okay even if we were pretty uncomfortable.

This day we sampled points 20 and 19. It was very wet walking up to point 20, but we all rejoiced when we realized the point fell directly on a large boulder field! After lunch we fought our way across dwarf birch and alder on unstable, rocky and steep slopes to point 19. Point 19 was in an open patch of dry, almost steppe vegetation (*Arctostaphylos uva-ursi* and *Zygadenus elegans*). We heard a small plane in the distance; this was only the second aircraft we had heard since our plane left. We were back to camp by 7:30.

Weather: It rained all night, but held off until we were sampling point 20. It was quite cold until the clouds finally broke in the late afternoon and the sun emerged.

Thursday, July 10

Thursday was our last sampling day and we did points 3 and 8. We followed the lake east until we only had a small strip of bog to cross to get to the ridge at the NE corner of the lake. We took the ridge up to point 3, which was in a nice open tall spruce/birch stand. Afterwards we ate lunch and did a bunny plot, finding no evidence of poop. Then we headed to point 8, which was in an open stunted black spruce forest.

Weather: It rained in the morning, but by midday the sun emerged. The weather held until the night, when it rained again.

Friday, July 11

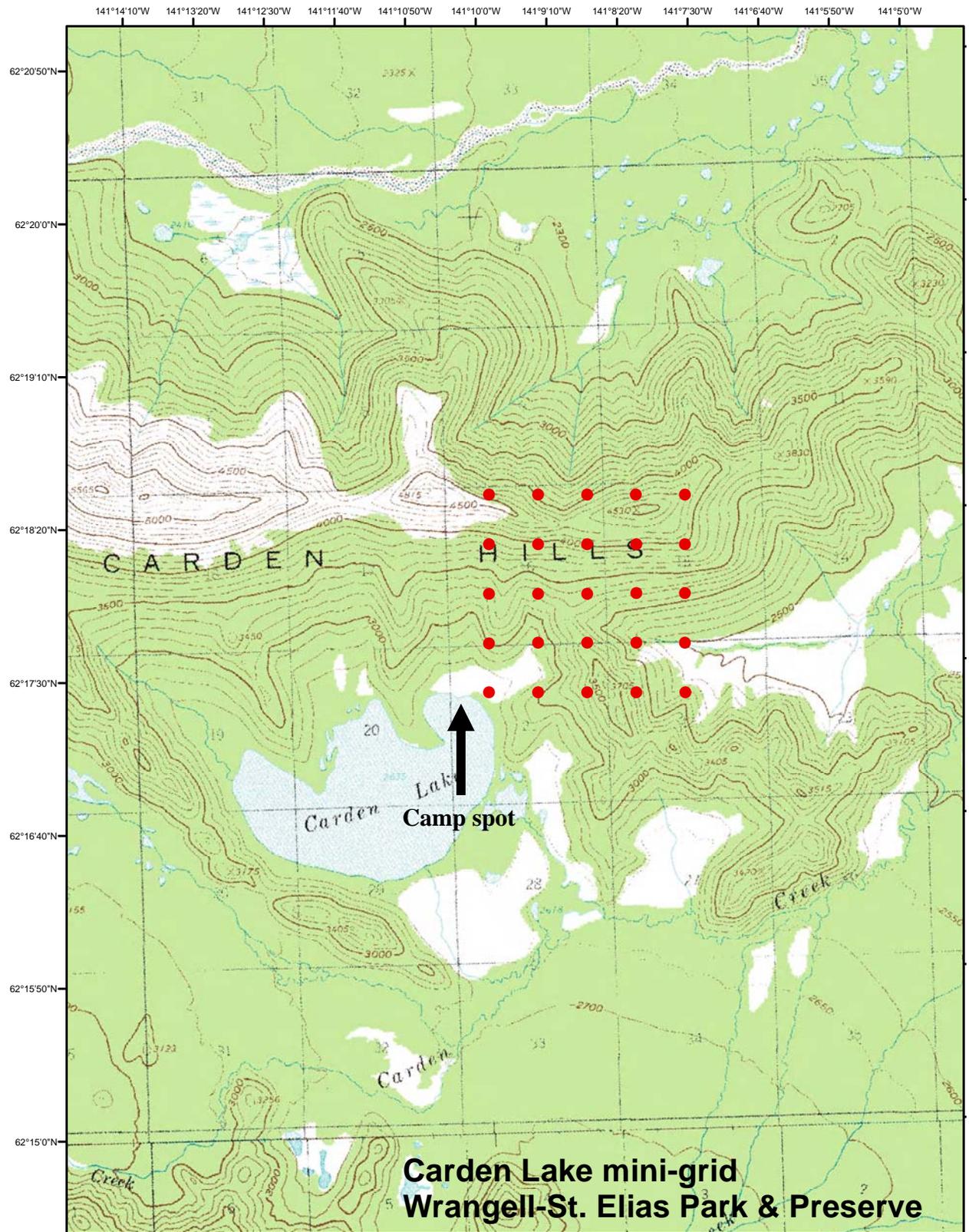
The weather was good enough for a pick-up at 12:00. We packed up all our gear and were ready to go at noon. I requested that 40 Mile Air bring me and Christina some Dramamine and indeed our dashing pilot arrived with the drugs in his hand. We had 2 shuttles in the 185; the flight to Midway Lake was about 45 minutes. At 3pm we were all at Midway Lake and two SCAs from Slana were there to pick us up. First we drove to Tok and got the receipt from 40 Mile Air, then got some gas and snacks and headed to Slana to drop off the SCAs. From there Kara drove the rest of the drowsy crew to Copper Center. We were home at 7pm.



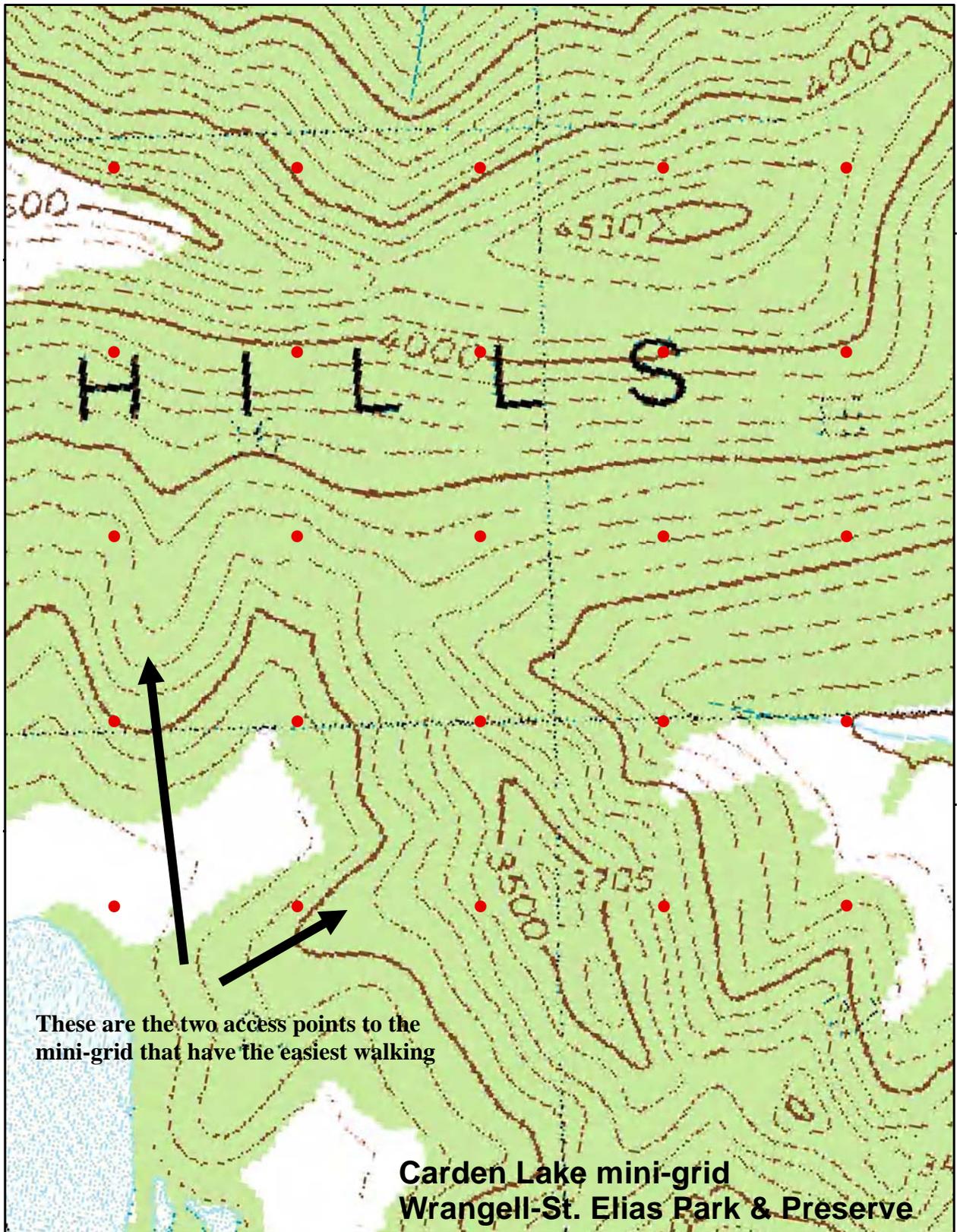
Photo 7. Mist rising over Carden Lake on one of our early clear days.

CONCLUSIONS AND FUTURE CONSIDERATIONS:

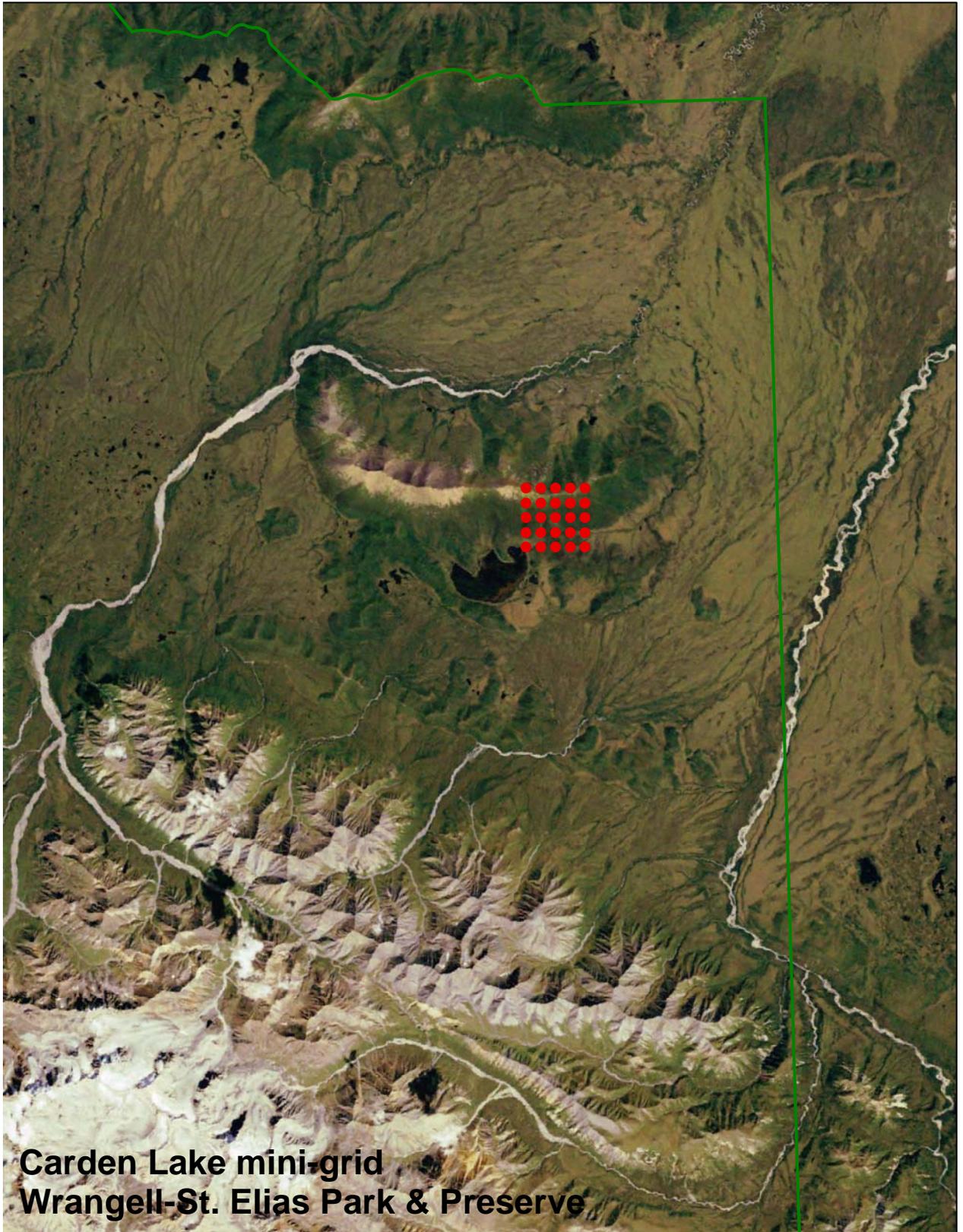
I would recommend searching a little longer for a better camp spot in the future. Bringing rubber boots is an extremely good idea for this mini-grid. Even if you don't hike in them, you can wear them at camp around the lake and have dry feet then. I would also recommend better weather, which shouldn't be too hard since this is a very interior mini-grid.



Map 1. Carden Hills topo map. Note camp spot and bog area marked with white.



Map 2. Carden Hills mini-grid. Note access points to mini-grid



Carden Lake mini-grid
Wrangell-St. Elias Park & Preserve

Map 4. Satellite image of Carden Hills mini-grid. Green line is the park and US-Canada border.