DENALI NATIONAL PARK AND PRESERVE

CENTRAL ALASKA NETWORK

Vegetation Monitoring Program

Summary Trip Report: Bear Creek Mini-grid

31 July – 9 August, 2006

Figure 1. Overview of Bear Creek mini-grid showing characteristic mosaic of burned and unburned forest, hardwood knolls, lakes and open sedge meadows.

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Contributors: Carl Roland, Peter Nelson

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PURPOSE:

The purpose of this trip was to install permanent point markers and collect first-year vegetation and soils data. 25 points were visited, installed, and sampled in the span of 8 working plus 2 travel days.

PERSONNEL:

Carl Roland -- vascular collections and crew lead
Peter Nelson -- lichen collections and plot photographs
Sarah Stehn -- bryophyte collections and soils data

ACCESS TO MINI-GRID AND CAMPING POSSIBILITIES:

Bear Creek mini-grid is accessed by helicopter. The center point of the grid (point 13) is 2.7 kilometers south of the northern park boundary. The grid is approximately 50 kilometers north of the Kantishna Landing strip, about a 20 minute helicopter ride. Travel logistics for this grid were combined with another LTEM vegetation crew aiming to complete the Sandless Lake mini-grid. The crew lead from each of the crews was flown out from headquarters in the helicopter and dropped off at their respective grids at the same time as the park airplane ferried one crew and gear out to Kantishna. The helicopter then picked this crew up in Kantishna and ferried them to their grid while the airplane returned to headquarters to pick up the remaining crew members and gear.

Figure 2. Helicopter landing at the Bear Creek campsite.

An excellent campsite is located to the southwest of Point 17 (longitude -150.993844, latitude 63.976296). The helicopter landed on site, between lakeshore and forest, making sure to be not too close to the lake where the moss mat sinks. The campsite provides close

access to water and campsites both in the meadow and in mostly birch forest. There are plenty of nice flat spots in the birch forest but beware of where you put your tent for fear of falling trees.

Figure 3. Point 17 with our camp in the background.

Although we found no flowing water in the entire grid, water availability was not a problem. We pumped out of the large pond right by our camp. It had 3 beaver lodges along its shores but none of them appeared to be active.

Figure 3. Aerial view of Bear Creek camp showing water source, helicopter landing site, and our social trail to the tent sites.

HIKING:

Hiking at the Bear Creek mini-grid was tough. Although almost completely flat, there are many tussock fields and lots of spongy moss carpets. The south and west portions of the grid were burned in 1996 and so there are areas of fallen trees. Some of the unburned areas of the grid were dog-haired (densely covered with spruce saplings) making travel slightly difficult. The grid does have a few knolls covered with birch (*Betula papyrifera*) and aspen (*Populus tremuloides*) trees allowing for easy traveling with little brush and solid ground. It may be wise to seek these knolls out while traveling across the grid. Rubber boots are an absolute necessity as much travel is done on floating moss and Carex mats. We all overtopped our boots at some time or another.

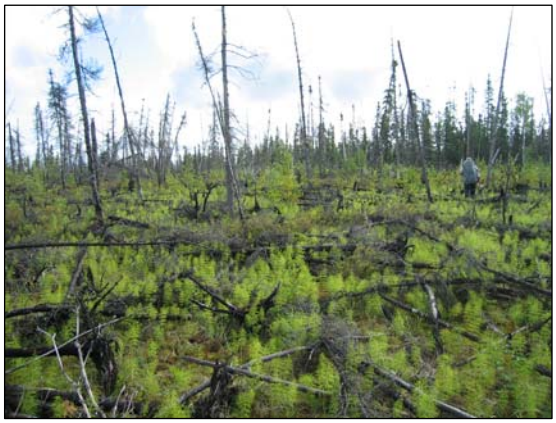


Figure 5. Walking between points 3 and 4 Was difficult due to the high intensity fire.

Figure 5. Plot 13 is an example of the Excellent hiking condition found on the hardwood knolls.

WEATHER AND ENVIRONMENTAL CONDITIONS:

Being early August, we expected much rain and cool temperatures but in actuality we had neither. It was quite warm (highs in the upper 60s) and most of our rain came in one storm during one night. Being such a flat grid, we had a big sky to see fronts sweeping through. We had one afternoon of high winds which blew the bugs away temporarily, but also blew our cook tent down. The morning we left had a hard frost in the meadow areas and a thick fog over the pond. It rained in the headquarters area for the next 10 days - we just missed the August onslaught.

The bugs were quite prolific and we endured mosquitoes, no-see-ums, white socks and horse flies. Both Carl and I were stung by some sort of bee or hornet, once each at different localities. They appeared to be “drive-by” stingings as apposed to related to a disturbed home or nest. In the burned areas of the grid we saw 3 or 4 northern hawk owls. Near camp, on our large pond, we observed as many as 7 common loons at once, 2 swan pairs, redneck grebes, and a sandhill crane pair. The swans and cranes brought us lots of bird calls at all hours of the day and night. Other birds viewed included a northern flicker, short eared owl, gray jays, boreal chickadees, northern harrier, and a large raptor- possibly an osprey. We also observed a river otter at our pond. It was swimming towards us as we walked along the

lakeshore and was very curious. It changed its course to investigate us further and made grunting noises but remained at a distance of 30 meters. We saw moose scat and browse, hare browse, bear scat, fox and wolf scat, none too fresh. Frogs were seen in a few localities throughout the plot.

Table 1. Daily precipitation and temperature highs and lows.

Date	Precipitation	High	Low
Tuesday, August 1st	1mm	71°F	45°F
Wednesday, August 2nd	2.7mm	63°F	51°F
Thursday, August 3rd	0.0mm	70°F	41°F
Friday, August 4th	0.0mm	73°F	45°F
Saturday, August 5th	0.0mm	68°F	52°F
Sunday, August 6th	2.5mm	71°F	50°F
Monday, August 7th	0.0mm	67°F	53°F
Tuesday, August 8th	9.3mm	63°F	50°F
Total Precip/Average Temp	15.5mm	68°F	48°F

PHENOLOGY OBSERVATIONS:

Phenology at Bear Creek in early August was just barely past. Actively flowering heads on the grasses were few but mostly able to be found. A week or two earlier would have been optimum but due to the other grids we completed this season early August worked best for Bear Creek.

GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:

We completed 3 plots a day. One day we were able to do 4 and the last two days were shorter but we definitely required 8 days of sampling. Vascular diversity was high in some of the plots (many sedges and non-vascular diversity neared 40 species a few times. The tussock walking slows things down a bit as do the number of trees and saplings (a few points with over 200).

Table 2. Collection series for the Bear Creek mini-grid.

Collector	Identifier	Series
Roland	Vascular plants	CR-06-160 to CR-06-225
Nelson	Photos	IMG_3880 to IMG_4341
Stehn	Bryophyte	SES-06-380 to SES-06-560
Nelson	Lichen	PRN-06-252 to PRN-06-378
Stehn	Soil	45 samples collected
Roland&Nelson	Tree Cores	53 cores collected

There are a few things going on with succession at Bear Creek that make it interesting. There are areas with many large dead larch (Larix laricina) that were killed in a native sawfly outbreak sometime in the 90s. Larch seedlings are coming back in most of these areas. Other interesting succession stories are pond fill in and fire. The burned plots in the south and west portions of the grid are very different than the others. By traveling through the grid

and through areas of different fire intensity, you get a sense of the effects of fire on the landscape. Boreal forest is on an approximate 100 year fire cycle. The fires burn off the moss layer allowing the permafrost to melt leaving lots of standing water and deep soil depths so the grasses come in. High lichen abundance or diversity was an indication that the plot had not been burned in awhile.

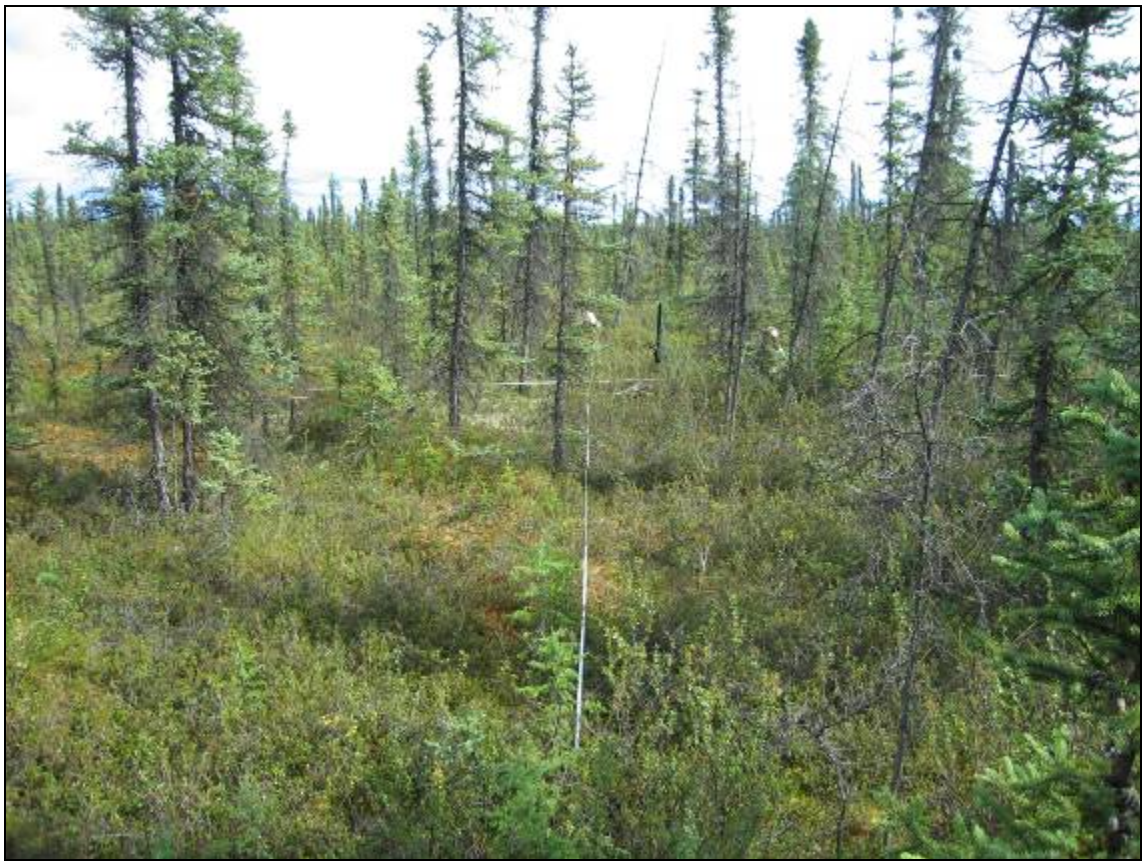


Figure 8. Plot 7 shows a forest that has not been burned in recent years.

ACTIVITIES:

Table 3. Summary of daily activities for the Bear Creek mini-grid.

Date	Activity/Points Completed	Comments
Monday, July 31st	Transport to Bear Creek	8am-6pm
Tuesday, August 1st	Point 5	9am-12pm
	Point 10	1pm-4pm
	Point 15	4:30pm-7:30pm
Wednesday, August 2nd	Point 4	9am-12pm
	Point 3	1pm-4pm
	Point 2	4pm-7:15pm
Thursday, August 3rd	Point 20	8:40am-11:15am
	Point 25	11:40am-1:30pm
	Point 24	2:00pm-4:50pm
	Point 23	5:30pm-8pm
Friday, August 4th	Point 6	9am-12pm
	Point 1	1pm-3pm
	Point 7	3pm-6:20pm
Saturday, August 5th	Point 9	8:30am-11am
	Point 14	12pm-3:30pm
	Point 19	4pm-7:30pm
Sunday, August 6th	Point 8	9am-12pm
	Point 13	1pm-4pm
	Point 18	4pm-7:30pm
Monday, August 7th	Point 12	8:30am-11am
	Point 11	12pm-4pm
	Point 16	4pm-6:30pm
Tuesday, August 8th	Point 17	8am-10am
	Point 21	11am-1:30pm
	Point 22	2pm-5pm
Wednesday, August 9th	Transport to headquarters	10am-2pm

CONCLUSION AND FUTURE CONSIDERATIONS:

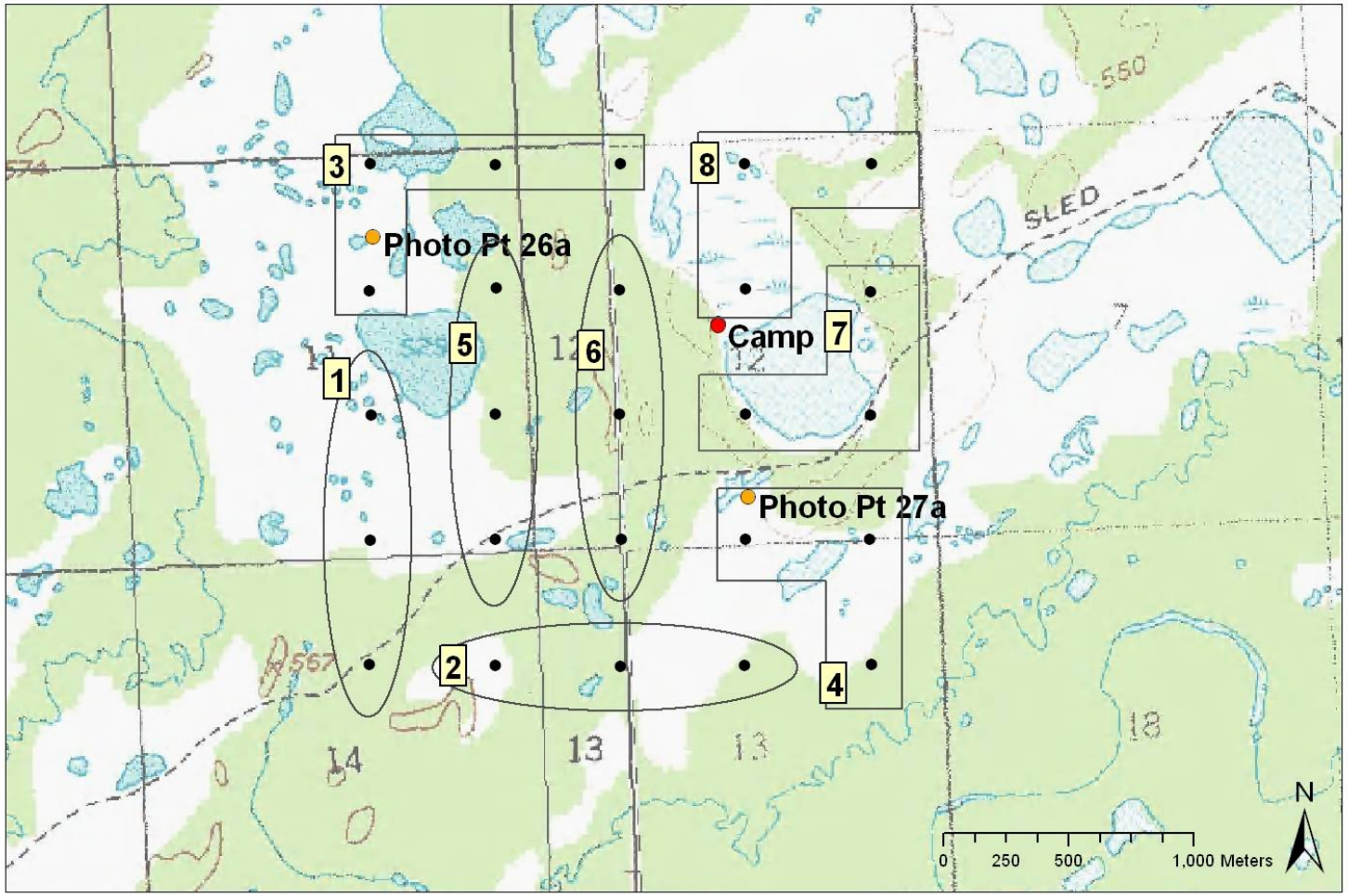
The Bear Creek mini-grid took 8 full days of sampling, 3 plots a day plus one day with 4 plots. Sedge and sphagnum diversity is high at some points. There are many saplings at some points, a few with >200. Other points have none. Diversity of cover type, burn stage, and wetness allow for a diversity of points but the flat ground and hard walking make the grid seem slightly timeless.

There are two auxiliary photo points that should be revisited: BEAR_CK26a (longitude -151.021782, latitude 63.979944) and BEAR_CK27a (longitude -150.992085, latitude 63.970046). These are shown on the attached map. They document ponds that appear to be drying (see Figures 9 and 10).

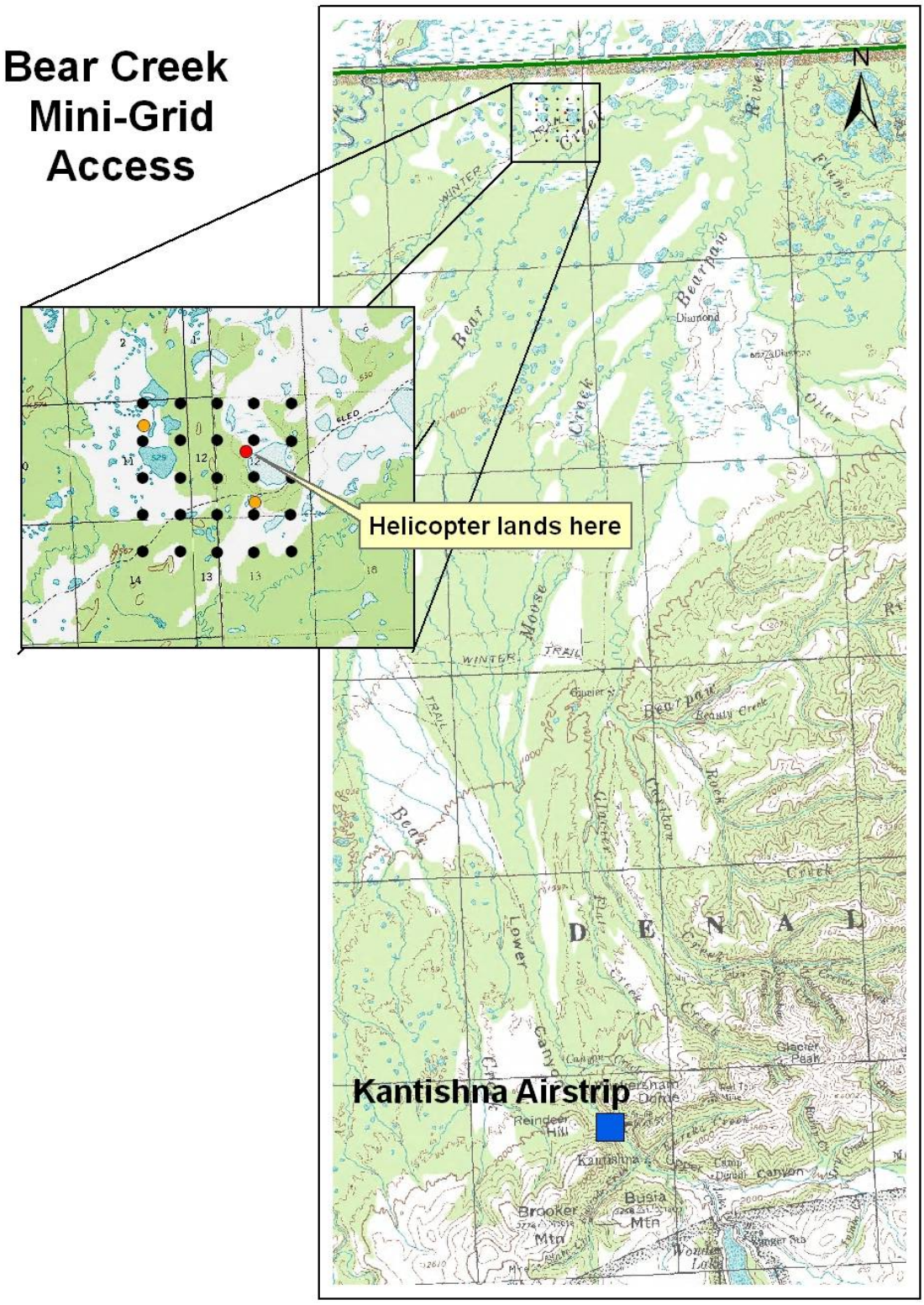
Figure 9. View from auxiliary photo point 26a looking south to southwest.

Figure 10. View from auxiliary photo point 27a looking west to east.

Bear Creek Mini-Grid



Points are grouped by sampling day number showing in which order we sampled them.


Bear Creek
Mini-Grid
Access
Helicopter lands here
Kantishna Airstrip
N
DENALI