

**DENALI NATIONAL PARK AND PRESERVE**

**CENTRAL ALASKA NETWORK**

**Vegetation Monitoring Program**

**Summary Trip Report: Divide Mountain Mini-grid**

**18 June – 22 June, 2009**



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## **PURPOSE:**

The purpose of this trip was to establish and measure 25 permanent vegetation monitoring plots in the Divide Mountain mini-grid according to the Central Alaska Network (CAKN) vegetation monitoring protocols (see Roland *et al.* 2005). We sampled the complete mini-grid with the exception of six points which landed in a wildlife exclosure area where access was prohibited. Ultimately, these plots were installed and sampled the following year, 2010.

## **PERSONNEL:**

### Green Team:

Carl Roland – crew leader, navigation, vascular plant composition/collection, photos

Peter Nelson – navigation, non-vascular plant composition/collection, soils

Carmen Backes – photos, sapling measurements, transects

Jamie Martin – vascular plant composition/collection, plot/quadrat variable estimates, transects

### Red Team:

Sarah Stehn – crew leader, non-vascular plant composition/collection, soils

Janet Prevey – vascular plant composition/collection, plot/quadrat variable estimates, transects

Duke Brady – navigation, photos, transects, sapling measurements

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

The Divide Mountain mini-grid is located along the Park Road just south of the Toklat River Bridge. Thus, the most sensible way to access the mini-grid is to drive from headquarters. During our trip, we pitched our tents in the Toklat maintenance yard, which is past the visitors' center and seasonal housing area. This was a practical choice: although camping around construction equipment was not very glamorous, employees in the house for transient workers generously shared their bathrooms, kitchen and couches with us during our stay. In this way, we had a dry spot to store food and equipment, fresh water, and a nice place for pressing plant collections at the end of the day. Reserving transient employee housing may be an option in the future; this year it had already been reserved for the full summer by maintenance employees.

## **HIKING:**

Each day, we drove our vehicle to a good access point on the Park Road before hiking to our plots. This was especially useful in the northwest corner of the grid. To reach points on the eastern half of the mini-grid, we did some reconnaissance and determined the best option was to park in a turnout near the eastern end of the Toklat River Bridge, and wade across the river, heading south from this point. At the time of our sampling, this stretch of the river was highly braided, and had channels of fordable depth, whereas the river running south to north through the grid was more channelized, with deep, swift water which several crew members did not feel comfortable crossing (Map 1).

Apart from the river crossings, most of the hiking in the Divide Mountain mini-grid was rather easy and involved walking along open gravel bars with patchy vegetation. Notable exceptions to

this were the eastern row of plots which involved climbing a brushy hillside above the river valley, and point 25, located on a steep scree slope above treeline.

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

We were fortunate with the weather when sampling the Divide Mountain mini-grid. Generally the weather was cool and mild. It did rain on us on several occasions, but never for very long. We had windy conditions as well, notably the evening of June 21 when a tent that was not staked down blew over. Most nights were cold, with frost. The puddles around our camping area usually had a thin layer of ice in the morning that quickly melted. This cooler weather may have aided our crossing of the Toklat, which was noticeably higher later in the day.

### **SAFETY CONSIDERATIONS:**

Wildlife is always a safety consideration when working in the park. Future samplers of the Divide Mountain mini-grid should expect to encounter wildlife while working. On June 20, shortly after crossing the Toklat and before the two groups had parted to go their separate ways, a sow grizzly with a cub was spotted nearby, and the group moved to get out of her way. Other signs of bears were in the area, such as scat and fresh digging sites where bears were especially interested in *Hedysarum alpinum* (Photo 1).

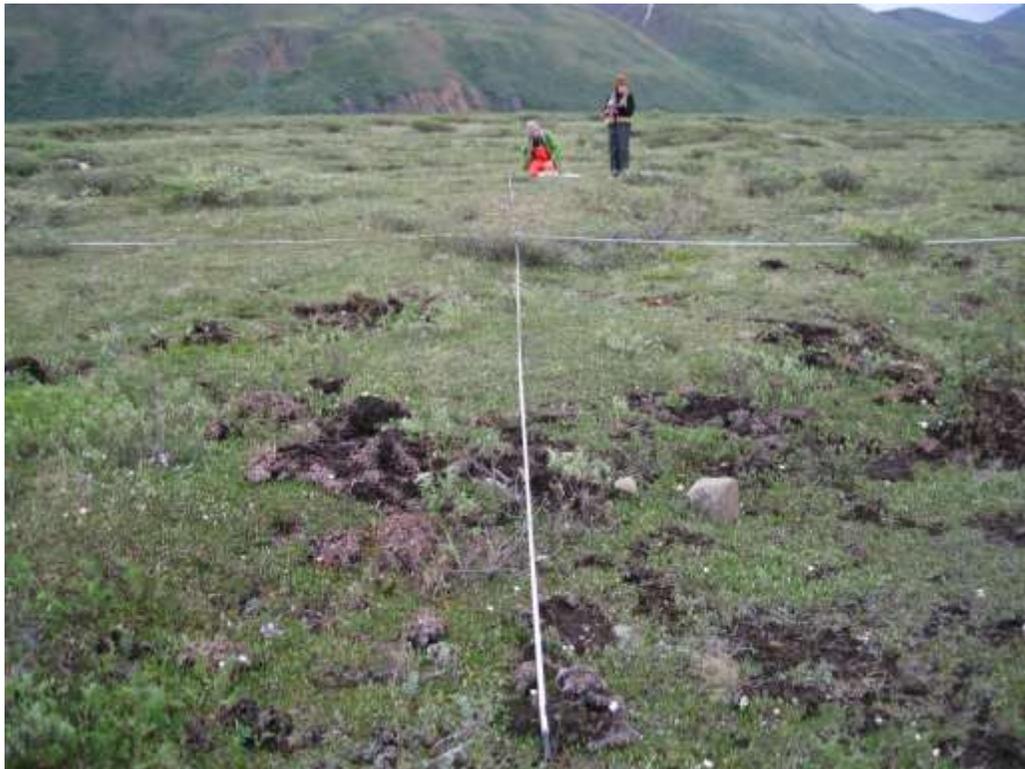


Photo 1. Fresh grizzly bear digging in plot 3.

Of special concern to safety is a wolf den located in the mini-grid. When we were there, six of our plots were located within the boundary of a wildlife enclosure designed to keep people away from the den, where a litter of new pups was being raised. One crew member had an encounter with a wolf in the camping area. The crew member woke in the night to use the restroom and a wolf happened to be crossing just behind the tent. After a few seconds of staring in disbelief at a distance of three meters, both parties moved on their way. We assumed we were erring on the side of caution by obeying the boundary and not sampling within the enclosure. What we did not know was that the den was located in thick brush just a stone's throw away from the Park Road quite close to plot 19, which was not in the enclosure. Imagine the surprise of the green team sampling plot 19, located in thick willows on the shoulder of the Park Road, to look up and see a wolf with them *in the plot*. The wolf did not behave aggressively; it was equally startled, and outnumbered. After a prolonged moment of hard staring, it changed course and quickly disappeared in the thick brush. These encounters should stand as a reminder that wolves are very active in the area, and not expecting botanists to be sitting in the brush they have been moving through for years in relative solitude. Furthermore, the dust and commotion of traffic along the road and the proximity of buildings and equipment does not diminish the chance of meeting wild animals up close. Before sampling the Divide Mountain mini-grid, future crews should check the status of this wolf pack, be aware of possible wildlife enclosures, and be willing to adjust their sampling if necessary to give these creatures a wide berth.

#### **PHENOLOGY OBSERVATIONS:**

Our visit to the Divide Mountain mini-grid was early in the season, when many of the vascular plants were in full flower. This includes sedges like *Carex scirpoidea*, *Carex bigelowii*, and *Carex membranacea*, shrubs like *Salix richardsonii*, *Salix reticulata*, and *Vaccinium uliginosum*, and forbs like *Papaver macounii*, *Silene acaulis*, *Pyrola grandiflora*, *Crepis nana*, *Mertensia paniculata*, *Epilobium latifolium*, *Oxytropis borealis*, and *Stellaria longipes*. A few individuals could already be found in fruit, such as *Arctostaphylos rubra* and *Dryas alaskensis*.

Many plots were located on gravel bars with scant vegetation. In those that were vegetated, shrubs tended to be the dominant species. Plots in the Divide Mountain mini-grid averaged about 8 vascular plant species per gravel bar plot and 37 species in areas with greater vascular plant cover.

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

Two teams worked on the Divide Mountain mini-grid instead of the standard one team approach to finish it in the short time frame available. Both crews were fresh at the start of the season and just learning to work together as a team, as well as developing proficiency at their individual tasks. In spite of this, it should come as no surprise that with two teams working on a mini-grid, it was completed ahead of schedule. Future teams should also consider that with the large number of barren gravel bar plots, low number of plots with trees, and possibility of plots made inaccessible due to a wildlife enclosure, they may finish ahead of schedule, as well. Contingency plans for an early departure should be in place in case the plot takes less time than the time allotted.

Table 1: Record of Collections:

Name	Team	Collection	Numbers
J. Prevey	Red	Vascular plants	JP-09-007 to JP-09-046
C. Roland	Green	Vascular plants	CR-09-001 to CR-09-003
J. Martin	Green	Vascular plants	JM-09-001 to JM-09-033
S. Stehn	Red	Non-vascular plants	SS-09-010 to SS-09-075
P. Nelson	Green	Non-vascular plants	PRN-09-001 to PRN-09-052
D. Brady	Red	Photographs	IMG_0097 to IMG_0249
C. Backes	Green	Photographs	100-0070 to 100-0205
D. Brady	Red	Tree Cores	3 cores
C. Backes	Green	Tree Cores	1 core
S. Stehn	Red	Soil	11 samples
P. Nelson	Green	Soil	9 samples

**ACTIVITES:**

Date	Activity/Points Completed	Team	Time Period	Comments
6/18/09	Transport personnel and gear to Toklat by government vehicle.	Both	8:00am-12:00pm	Set up camp in Toklat maintenance yard.
	Point 24	Red	1:30pm-5:30pm	Spruce forest with willow understory
	Point 25	Green	1:53pm-3:31pm	Scree slope above treeline, no non-vascular species present in quadrats
6/19/09	Point 8	Red	10:00am-1:15pm	80m from main channel, open willow scrub on slight terrace
	Point 18	Red	2:00pm-3:15pm	Gravel bar between stream channels
	Point 3	Green	9:53am-1:56pm	Dryas dwarf shrub tundra
	Point 23	Green	3:02pm-4:47pm	Gravel bar
6/20/09	Point 11	Red	9:30am-12:00pm	Subalpine willow scrub, some spruce
	Point 7	Red	2:00pm-3:00pm	Gravel bar near small flowing channel
	Point 13	Red	3:15pm-4:15pm	Gravel bar 20m from large channel
	Point 12	Red	4:30pm-5:30pm	Gravel bar 10m from small channel
	Point 6	Green	9:12am-11:51 am	Birch/ericaceous scrub near treeline
	Point 1	Green	1:08pm-4:10pm	Willow alder scrub/birch ericaceous scrub
	Point 2	Green	4:42pm-5:26pm	Gravel bar
6/21/09	Point 16	Red	9:00am-1:00pm	Willow scrub on NW facing slope
	Point 17	Red	1:30pm-2:30pm	Gravel bar with 2m wide flowing channel in plot
	Point 21	Green	8:40am-11:28am	Open low willow/herbaceous on old stream bed
	Point 22	Green	12:26pm-1:24pm	Gravel bar
6/22/09	Point 20	Red	8:45am-11:30pm	On E facing slope, off edge of stream bank in willows
	Point 19	Green	8:38am-12:28pm	Plot on park road/ditch; wolf in plot
	Transport personnel and gear back to Headquarters by government vehicle.	Both		

## CONCLUSION AND FUTURE CONSIDERATIONS

The Divide Mountain mini-grid offers the opportunity to observe vegetation in and around a large glacial river floodplain. There is a complete continuum ranging from barren gravel bar, to early successional river terrace, to a subalpine mosaic of spruce, willow, and tundra to barren, steep, scree, mountain slopes. Proximity to the Park Road makes for relatively easy access. The open landscape makes navigation uncomplicated.

Take home messages for future crews visiting the Divide Mountain mini-grid:

- Before you leave, enquire about the status of possible wildlife closures along the Toklat River, particularly for wolf dens.
- Consider camping near the Toklat Ranger Station; if you can reserve space in the transient employee house, all the better.
- Bring footwear and any other gear (trekking poles, etc) useful for crossing glacial rivers.
- Note the route we used for crossing the river (Map 1), but expect to spend a little time finding an optimal path for your visit. A good route is worth a little extra time to find; it will improve safety and can be used again and again over the course of sampling the mini-grid.
- Have a contingency plan in place for leaving the mini-grid early; it may not take a full 10 days to sample.
- Rather than being dropped off by vehicle, plan to keep a vehicle for daily use moving between the camping area and the mini-grid.



Photo 2. Looking south from the center of Point 11 gives a good overview of the mini-grid from the eastern side. The mini-grid stretches across the river bar and up the other side of the valley.



Photo 3. Looking southeast from the perimeter of Point 13 gives a good view of the central portion of the mini-grid, a large alluvial floodplain.

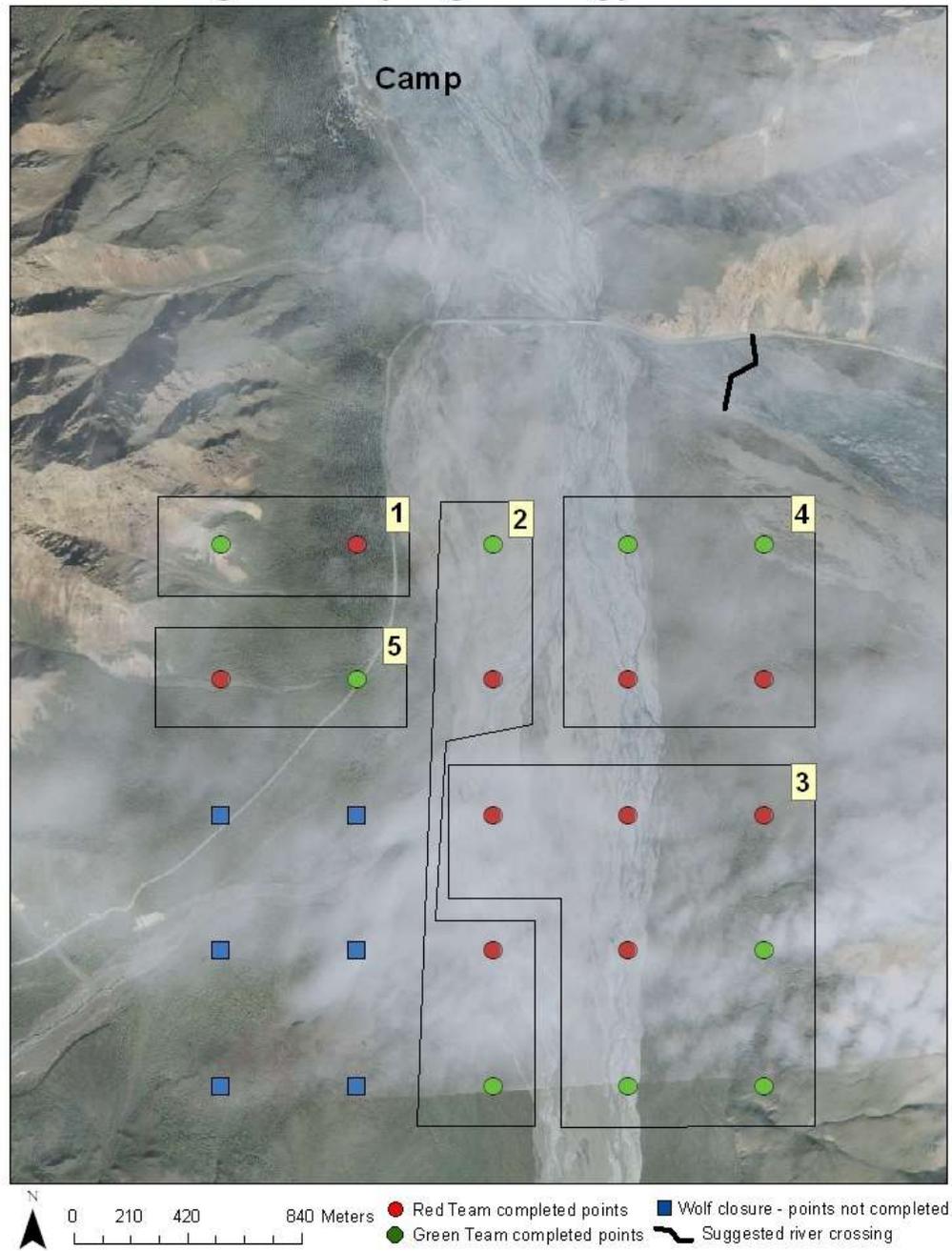


Photo 4. Looking southwest from Point 24 shows the open spruce characteristic of the northwest portion of the mini-grid.



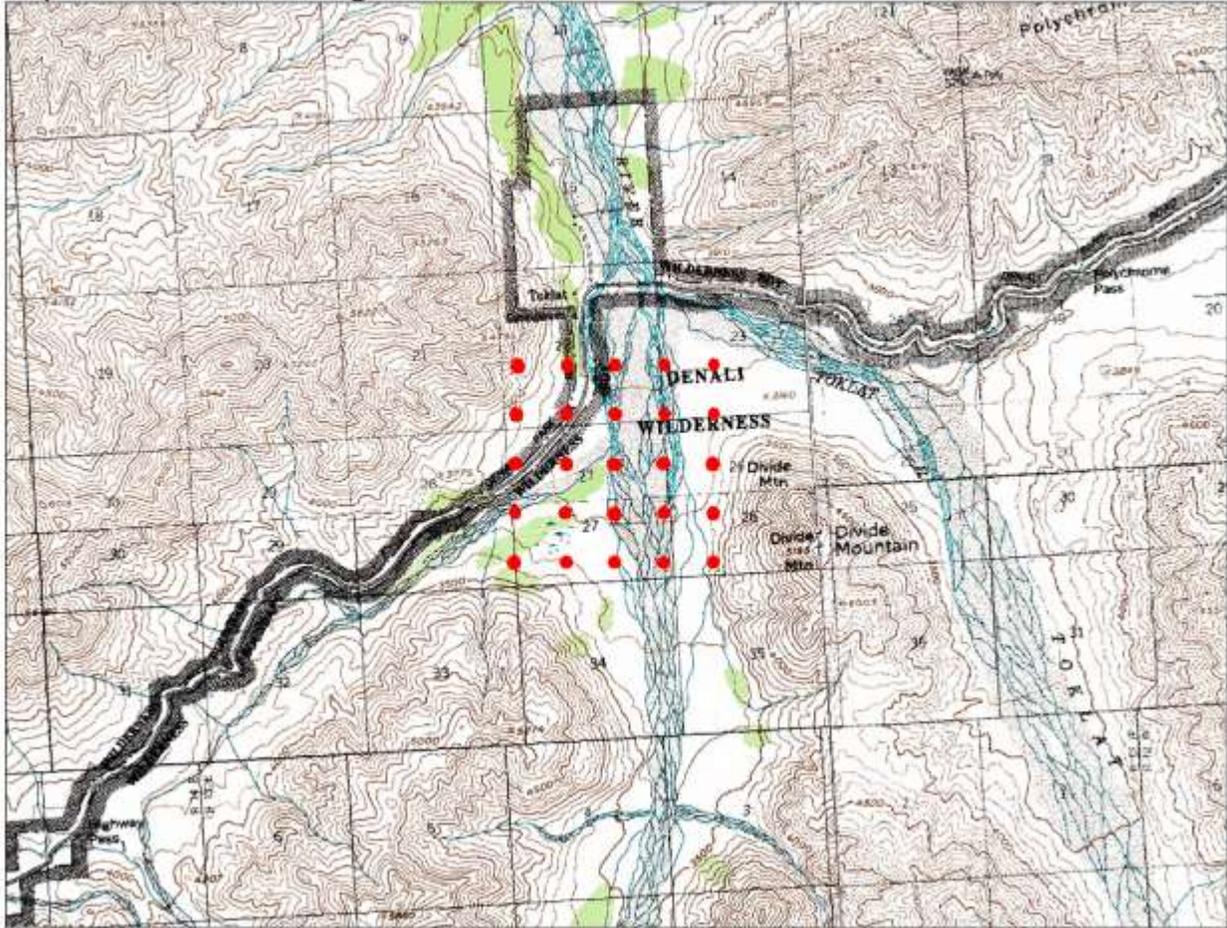
Photo 5. How many botanists does it take to classify a gravel bar?

# Divide Minigrid Sampling Strategy



Map 1. Arrangement and sampling order of grid points. The number in the upper right corner of each block refers to the grid day.

**Topo: Divide Mountain mini-grid Denali NP&P**



Map 2. Topographical map showing the location of the Divide Mountain mini-grid on the landscape.

**REFERENCES CITED**

Roland, C.A., Oakley, K., Debevec, E. & Loomis, P. (2005) Monitoring vegetation structure and composition at multiple spatial scales in the Central Alaska Network. National Park Service, Central Alaska Network, Final Monitoring Protocol.