

DENALI NATIONAL PARK AND PRESERVE

CENTRAL ALASKA NETWORK

Vegetation monitoring Program

Summary Trip Report: East Sushana

14 July to 21 July, 2008



Lead Author: Kate Prengaman
Contributors: James Walton and Brian Dykstra
Photos by B. Dykstra

August, 2008

PURPOSE:

The purpose of this trip was to install permanent plot monuments and collect data for the CAKN Long Term Ecological Monitoring Program. Between July 14th and July 21st, 2008, we spent 6 full days collecting field data, while the first and last days were spent on transportation and data collection.

PERSONNEL:

James Walton -- Crew leader, species composition data (non-vascular plants), soil data, transect cover, tree and sapling measurements.

Brian Dykstra -- Plot photos, quadrat variable estimates, species composition data (vascular plants), transect cover.

Kate Prengaman -- Grid point data, metaplot data, transect cover, tree and sapling measurements, trip/weather report records.

ACCESS TO MINIGRID AND CAMPING POSSIBILITIES:

We reached the East Sushana Minigrid by direct helicopter flight from the park HQ airstrip. It took two flights to deliver all gear and three team members to a small ridge at the center of the grid.

We established camp on a small ridge just north of the line between plots 12 and 13 where open areas and hard-pack ground made for comfortable tent setup. We were happy to have a good, clear view of the grid around us for hike-planning and wildlife-watching.

Choosing to establish camp on a ridge, we didn't have running water right next to camp. We flew in with several 5 gallon jugs of water so that we had a partial supply of cooking and drinking water in camp. We pumped and filtered water from several different locations around the grid. The two main creeks that run N-S across the grid both had clear, flowing water (We were excited to drink water that did not taste like moss this grid!!) We crossed a creek, or passed close to one, almost every day, so it was easy and convenient to stop and fill water bottles to supplement our flown-in supply.

HIKING:

Much of the Minigrid was on gentle slopes, major vegetation types ranged from dense dwarf birch scrub to more open areas intermixed with head-high willows and alder in some wetter places. We were able to move pretty quickly through the low scrub on the western flats. Hiking was slow through the dense shrubbery, but we were able to borrow some animal trails in the south and east of the grid along the heavily vegetated creek corridor. Climbing up and down some of the steep, shrubby slopes along the eastern creek corridor was slow and slippery. Hiking along the ridgelines to the higher plots was easy and pleasant, except for plot 4 which was located in an active rock-slide area on a steep scree and talus slope. After very slow and careful hiking in the dangerous terrain toward the plot, we realized that it was not safe to sample.



Photo 1. Looking east toward our camp on the small front ridge from across the flat valley of the central/western part of the grid.

The East Sushana Minigrad is shaped by two creeks. To the east, a forested creek bed runs between ridges. To the west, another creek runs through a broad, flattish valley. Tall ridges frame the southern edge of the grid, while the flat valley extends northward. The vegetation ranges from open mixed low shrubs and sedges in the flat areas to denser, taller shrubs in the wetter areas and on the slopes. *Betula nana* and *Betula occidentalis* were some of the most common dominants across the grid. The eastern creek corridor is a *Populus balsamifera* forest and *Populus tremuloides* dominates some of the slopes. On the ridgelines there are rocky, alpine areas with dwarf shrubs and a high diversity of forbs and non-vascular plants. It seems to be a popular area for wildlife, given the animals and trails that we observed.

WEATHER AND ENVIRONMENTAL CONDITIONS:

The weather was primarily cool and windy with mostly rainy days. The cool weather kept the mosquitoes at bay.

SAFETY CONSIDERATIONS:

We saw both grizzly and black bears during this sampling trip. As always, technicians should be very alert in this mini-grid, make lots of noise, and have bear spray readily available.

GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:

Table 1. Collection series for the East Sushana mini-grid.

Collector	Identifier	Series
Dykstra	Vascular plants	BD70-BD103
Dykstra	Digital Photos	
Walton	Nonvascular collections	JKW series

Table 2. Wildlife observations.

Date:	Point:	Wildlife:
7/14/2008	Camp	Several caribou were startled from near our camp area by the arriving helicopter.
7/15/2008	1	Saw several ducks and a beaver as we crossed the beaver dammed creek and ponds at the SE corner of the grid. In the plot, there was some obvious hare browse and leaf-miners in the aspen.
7/16/2008	25	Heavy disturbance from hare browse. Many shrubs were completely topped off.
7/16- 7/17	20, 21	Hare-browse observed.
7/17/2008	22	A well-used animal trail runs along the forest edge next to the creek terrace. James discovered an unusually large slug in the moss as we hiked toward plot 23.
7/18/2008	10	A large, solo grizzly bear passed below our plot. We watched from the ridge as he wandered around the flat area between plot 10 and our camp. As we returned toward camp we saw 6-8 caribou heading up the ridge across the creek.
7/19/2008	8, 7	A sow black bear and two cubs were hanging out on the ridge to the SW of our plots.
7/19/2008	2	The 3 black bears were approaching our plot area as we set up, but after seeing us, they changed directions and went up over the ridge. A moose ran by as we finished the plot, he was being chased by 4 grizzlies, a sow and 3 big cubs. They also saw us and went up over the ridge as well.
7/20/2008	16	Wolf scat and wolf tracks on the animal trail we followed up the ridge to the plot.
All week	many	Long-tailed jagers were protecting nests in the area, watching and warning us, as well as the bears.

ACTIVITIES:

Monday, July 14

We loaded up early at the office and headed down to the airstrip. We weighed gear and loaded up the helicopter. Shane flew two trips in cloudy, drizzly weather to deliver the crew

and gear to our campsite in the middle of the grid. After setting up camp, we convened in the cook-tent for a power lunch and strategizing. We set out for the afternoon to plots 14 and 15.

Plot 15: Located on the toe of a gentle, NW-facing slope of a low hill, plot 15 was dominated by *Betula nana*, the *Ericaceae* 3(*leddec*, *vaculi*, and *Vaccinium vitus-idaea*), and *Carex biglowii*, with some *equsyl* and *Betula occidentalis*. Pretty low diversity and no signs of disturbance or succession. A quick plot, with a quick, easy hike to #14.

Plot 14: On a gentle, NE-facing slope, the vegetation structure was similar to #15, but with higher diversity of forbs and some *salix*. *Vaculi* in fruit- yum! After these two plots we were feeling optimistic about our abilities to hike fast and sample quickly and accurately in this grid- so we head off home for dinner.

Weather: Cold, rainy morning when we arrived and set up camp. It cleared into a cool, breezy, cloudy afternoon.

Tuesday, July 15

Plot 1: Our quick-grid optimism was quickly deflated by a long, slow shrub-schwacking hike to plot 1, located in a dense thicket of *Populus tremuloides* saplings with *Betula occidentalis* beneath. On the middle of a south facing slope, plot 1 was slow to setup and sample. The trimble struggled in the dense saplings and visibility in the plot was less than 8m; we could not see one another across the transects. After almost 4 hours and 461 saplings, we emerged to hike towards plot 6.

Plot 6: Located on the toe of a small, SW-facing slope leading into a small drainage creek on a larger, NW-facing ridge. 80% of the plot was upland vegetation- dwarf birch and willows, while the creek bed (20%) was dominated by *Salix pulcra* and *Salix richardsonii* with dense *Calamagrostis canadensis*. No signs of disturbance besides what was probably some creek-related erosion. We pumped some water from the creek, but it was low and slow.

Plot 11: This is one of those plots that Veireck never visited. Located on a little knob in a flat area between the two steeper slopes down to the creek, the N-S tape runs from the top of the knob to the valley bottom. The valley is dominated by birch scrub, while the knob has been colonized by *Populus tremuloides* seedlings and saplings advancing down the hill. Open areas have a diverse collection of forbs, dwarf shrubs, and shrubs. Ongoing succession as a rock outcrop attempts to settle on a vegetation type. Worn out, we headed back down to cross the creek between us and our camp.

Weather: Cool morning quickly turned into a warm, sunny day



Photos 2 and 3. A number of our quadrats looked like this: dense low *Betula nana* and *Betula occidentalis*.

Wednesday, July 16

Plot 24: We set out to the opposite corner from the day before, looking for flatter, tree-free plots. The almost flat valley contained the open mixed shrub-sedge vegetation that was easiest to hike and sample. The vegetation included *Betula nana*, *Alnus viridus*, *Salix pulcra*, *Salix glauca*, the *Ericaceae* 3, and lots of *Carex biglowii*, with some *Calamagrostis canadensis* and *Arctogrostis latifolia* as well. No signs of disturbance or succession.

Plot 25 and 20: Located on the upper portion of a SW-facing slope, plot 25 is full of dense, chest-high shrubs in a mosaic of *Betula nana*, *Betula occidentalis*, and *Alnus viridus*. Along the W and NW edges of the plot, an army of seedling *Populus tremuloides* is invading. Major hare browse has clipped many of the shrubs. Plot 20, also on the upper part of a SW slope, has a similar mosaic of taller shrub vegetation, with *Populus tremuloides* attacking from both sides. Succession in action! Low diversity in both plots.

Plot 19: Back in the valley, on the toe of a slight NE slope, the vegetation was very similar to plot 24. Mixed shrub-sedge, no tall shrubs or invading saplings here. It was a quick plot, and we could see our camp up on the bluff. We stopped to pump some water as we crossed the creek on our way home.

Weather: Pleasant, cloudy, breezy (bug-free!) morning turned into a warm and sunny afternoon. Windy in the valley for late plot #19

Thursday, July 17

Plot 21: Corner #3! Located on the NW-facing slope above the east creek, the vegetation here is dominated by dense mixed shrubs- hardly any forbs. No invading saplings or signs of succession, but there was noticeable hare browse in the area.

Plot 22: It began to rain as we reached the creek terrace. The plot contains an ecotone between the creekside *Populus balsamifera* forest and the dense birch-willow scrub coming down the slope with higher vascular plant diversity here. A well-worn animal trail runs

through the plot along the tree-line. The *Populus balsamifera* saplings and seedlings along the edge of the forest seem to be moving into the scrub.

Plot 23: James discovered a large slug hiking here. The plot is on the upper part of a small SW-facing slope into the valley. Vegetation is dominated by *Betula nana* with patches of *Betula occidentalis* and *Alnus viridus*, and under siege by the succession-minded *Populus tremuloides*. Many of the *Populus tremuloides* were just under breast high, but plenty were just over as well- we recorded lots of 0.2cm saplings.

Plot 18: On the toe of a gentle, W-facing slope in the valley, the vegetation here is similar to other valley plots- a dense mixed low shrub and sedge area on moss. No invading trees, no disturbance. It was getting pretty cold and wet, so we were glad to finish quickly and head towards our cook-tent.

Weather: Cold and windy in the morning. Rain began in the early afternoon and got heavier throughout the rest of the day

Friday, July 18

Plot 4: After hiking up to the ridgeline from the east, we descended down the slippery, rock scree, west-facing slope toward plot 4. As we approached the point, we took off our packs and watched a small rockslide (not caused by any of our disturbance, just gravity) take place approximately at the center of plot 4. Although most of the slope was somewhat stable rock scree, this area was obviously experiencing active rock slide conditions. The few plants growing on the upper slope of the plot area were just below the breakline for the rock slide- and clearly doomed to be wasted away in the near future. After crawling out to the plot center to take the GPS data and survey the situation, we determined that it was too hazardous for us to attempt to sample. We did not place a monument because it would have been futile; it would have just ended up 100m below in the rubble.

Plot 5: Across the ravine on the opposite ridge, plot 5 is on a steep, SE-facing slope just below the ridgeline. The newly forested slope has many young *Populus tremuloides* saplings and a few *Picea glauca* making up the forest canopy. The open ground layer has some *Vaccinium vitis-idaea*, moss and lichen, and a lot of litter. No signs of disturbance, but more succession in action. It was a very cold and wet afternoon, and we were glad to have some shelter from the winds in the trees.



Photo 4. Plot 4 is the center of the “crater”-rock slide (camera facing approximately east). West end is east of the little willow, east end is above the tiny band of vegetation at 11 o’clock of the crater.

Plot 10: The rain slowed into a drizzle as we reached plot 10 on an easy ridgeline hike, but it stayed windy and cold. The plot was on a N-facing slope just below the ridgeline; a rocky, open alpine area dominated by dwarf shrubs and lichens. The plot exhibited high diversity, especially for non-vascular species. As we were finishing up, we watched a large, solo grizzly bear pass in front of us in the valley. We stayed at the plot, where we had a good vantage point, and watched as he wandered the valley and then began to head towards our camp. He climbed, slowly, within 100-200m of our cook tent before turning to run away quickly. He ran down and across the valley to the NW with impressive speed (we were wishing we could hike across the grid that fast). Once he was pretty far away we felt comfortable to hike back to camp.

Weather: Cold, windy, and rainy slowing to drizzle in late afternoon.

Saturday, July 19

Plot 8: We started out the morning seeing more bears. As we headed toward plot 7, we spotted a sow and two cubs on a nearby ridge. We decided to give them some space, and sampled plot 8 instead; located on the toe of a gentle, SW-facing slope into a small creek. The vegetation was the low diversity mixed shrub-sedge that we had been sampling across the valley. The sow black bear and her cubs moved to the ridge overlooking us to the south- but they did not seem interested in or concerned about us, so we continued on to plot 7.



Photo 5. Fresh bear scat full of *Arctostaphylos* berries we found on the trail as we hiked towards plot 2.

Plot 7: We kept an eye on the bears on the ridge as we sampled plot 7. On a gentle, east facing slope toward the creek valley, the plot is in a patch of dense, waist to chest-high *Betula nana* with *Alnus viridus* and *Betula occidentalis*, displaying low diversity. Open, low mixed shrub-sedge vegetation like plot 8 made up most of the area around us.

Plot 2: We took a recently used bear trail to hike to plot 2, finding some very fresh scat along the way. As we set up this plot, very close to where we had first seen the black bears, they came back along the ridge towards us. We made some noise and waved our arms around and she decided to take her family the other direction- she watched us carefully as they backed up and over the ridge. We sampled the plot, located on the toe of a west facing slope into a small creek terrace. The upslope vegetation was dense low *Betula nana* and the *Ericaceae* 3. Where the slope flattens out into the creek terrace- *Salix pulcra*, taller *Betula nana*, and *Calamagrostis canadensis* dominate. There were no signs of disturbance or succession, the ecotone seems pretty well established with the physical features. As we were packing up, James spotted a moose running past us. "I wonder why he's running so fast?" It turns out the speed was the result of being pursued by 4 grizzlies- a sow and 3 big cubs. When they spotted us, waving our arms, they stopped the hunt and stood up to get a good look at us. They also decided to change course and headed up over the same ridge to the SW that the black bears had taken. The moose escaped.

Plot 3: The hike to plot 3 was uneventful, which was lucky, since the plot was located on the ridge very close to where the black bears had been hanging out in the morning. This was a steep, gravelly, alpine plot on a NE-facing slope. *Dryoct*, low *Betula nana*, *salarc*, forbs, and lichens dominate, although there were lots of bare rocks as well.

Plot 9: We decided to push for 5 plots - since the bear at plot 10 prevented us from moving to 9 the previous night. The plot is at the toe of a SE-facing gravelly slope into a little creek between the two ridges. There were several vegetation types, somewhat patchy. *Betula occidentalis* dominated most of the plot, but there were lichen dominated gaps with a few dwarf shrubs like *Vaccinium vitus-idaea* and *arcalp*. The eastern edge of the plot meets an

open *Betula nana*, *Ericaceae* 3 and *Carex biglowii* zone in the flat areas before the creek. The *Betula occidentalis* seems to be expanding down the hillside.

Weather: Cool, windy, and cloudy day with on again off again rain. At least it's too cold for mosquitoes!

Sunday, July 20

Plot 16: Sunday, Sunday, Sunday- we're in good spirits because if we succeed in our plans to sample 4 plots today, we would be finished and ready to fly out tomorrow. The plot is on a steep, SE-facing slope into a small creek, which is just a meter or two out of the plot. The slope breaks from steep to flatter mid-plot. The vegetation was a *Populus balsamifera* forest- larger trees and saplings creating a closed canopy. The forest floor contains dense *vibedu*, *rosaci*, *epiang*, and many other forbs. Several species were in flower and it was a very pretty area to be working in. There was an animal trail running through the plot along the creek. Along the ridge on our way out we noted wolf tracks and wolf scat.



Photo 6. *Cypripedium guttatum* was abundant in areas of the grid and was recorded in plot 16.

Plot 17: Located on a gentle, east facing slope from a small hill towards the main creek. The vegetation is simple- dense low *Betula nana* with some small patches of *Betula occidentalis* and *Alnus viridus* with some *ericaceae* and *Carex biglowii* below. This was a quick and easy plot- with small specks of sunshine peaking through the clouds.

Plot 12: On the middle of a north facing slope overlooking our camp, plot 12 has open mixed low shrub-sedge vegetation with moss and relatively high forb diversity. No sign of disturbance or succession or bears. So –it's on, past camp, to our last plot.

Plot 13: Ah- last but not least, lucky number 13! Located on the toe of a gentle, west-facing slope into the broad creek valley. The plot is in a patch of dense low *Betula occidentalis* and *Betula nana* with some *Carex biglowii*, *Ledum decumbens*, and *Vaccinium vitus-idaea* underneath, pretty low diversity. The surrounding area is more characteristic of the valley-mixed low shrubs and *Carex biglowii*. Another fast, bear-free plot finished, and we're happy to head back to camp just a few hundred shrubby meters up the hill.

Weather: Another cold, wet, cloudy, windy morning with on again off again rain. Late afternoon- occasional sunshine breaks in the clouds between rains to keep us optimistic.

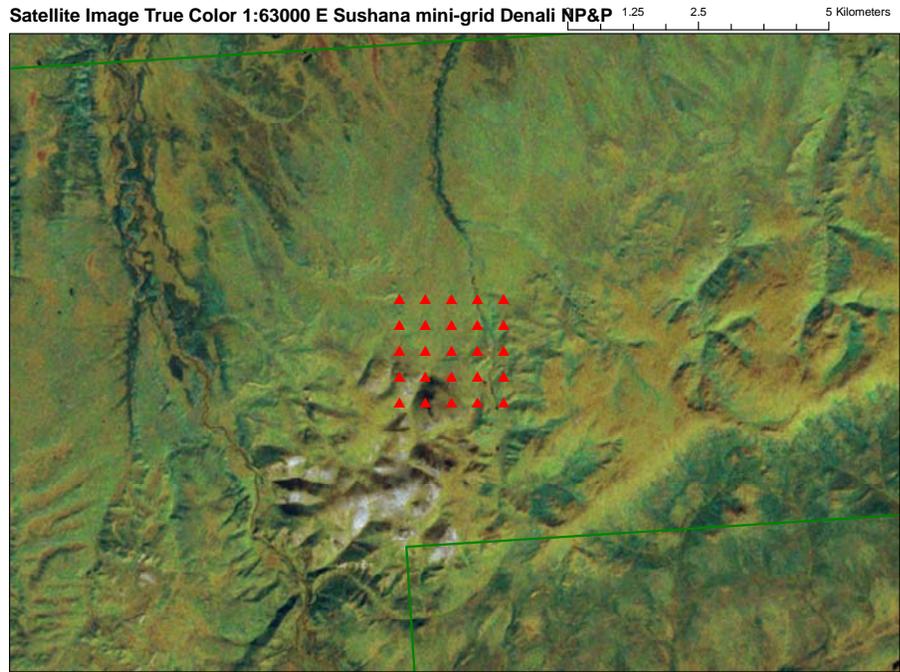
Monday, July 21

We had just woken up and James called in to check on what time we should expect an afternoon helicopter. Instead, they told us they were coming for us first thing that morning, so we got moving and packing up camp as quickly as possible. We had just finished packing, and sat down to a cup of tea, watching thick fog roll into the valley and expecting to wait a little while, when Shane arrived. He took Brian and most of the gear on the first trip back to HQ, and then came back for Kate and James, waiting in the rain that followed after the fog lifted. We spent the afternoon back in the office, unpacking, drying, recharging, and working on some data entry.

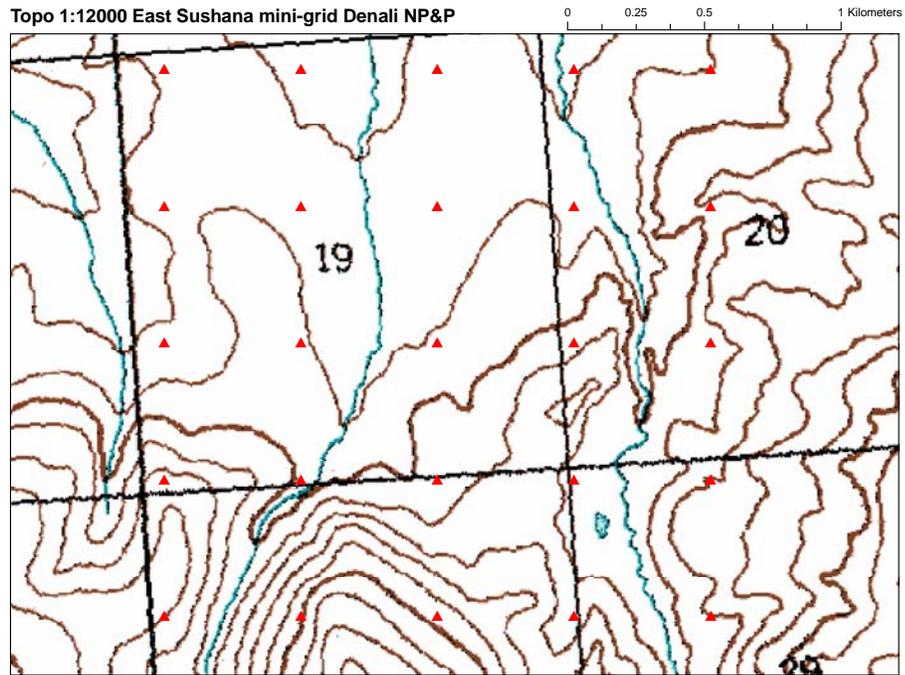
Weather: Cool morning with low clouds. A fog rolled in as we were packing up camp, but the helicopter was able to fly anyway. It rained while we waited for the second flight.

CONCLUSION AND FUTURE CONSIDERATIONS:

For us, this was a cold, wet grid. Crossing a lot of creeks meant that we spent most of the week hiking in knee-high waterproof boots- and we wore most of the layers and raingear we brought with us. We were thankful every night for our cook tent- having a place to get warmer and drier to eat was crucial to our sanity. It was cool to see so much wildlife, but it also forced us to be more careful. Future trips to East Sushana should definitely pack enough bear spray (that is not empty or expired) for each crew member, as well as backups for in camp. It was nice to have a few jugs of water in camp, since we were not close to a stream, so that we did not have to carry all of our water back and forth.



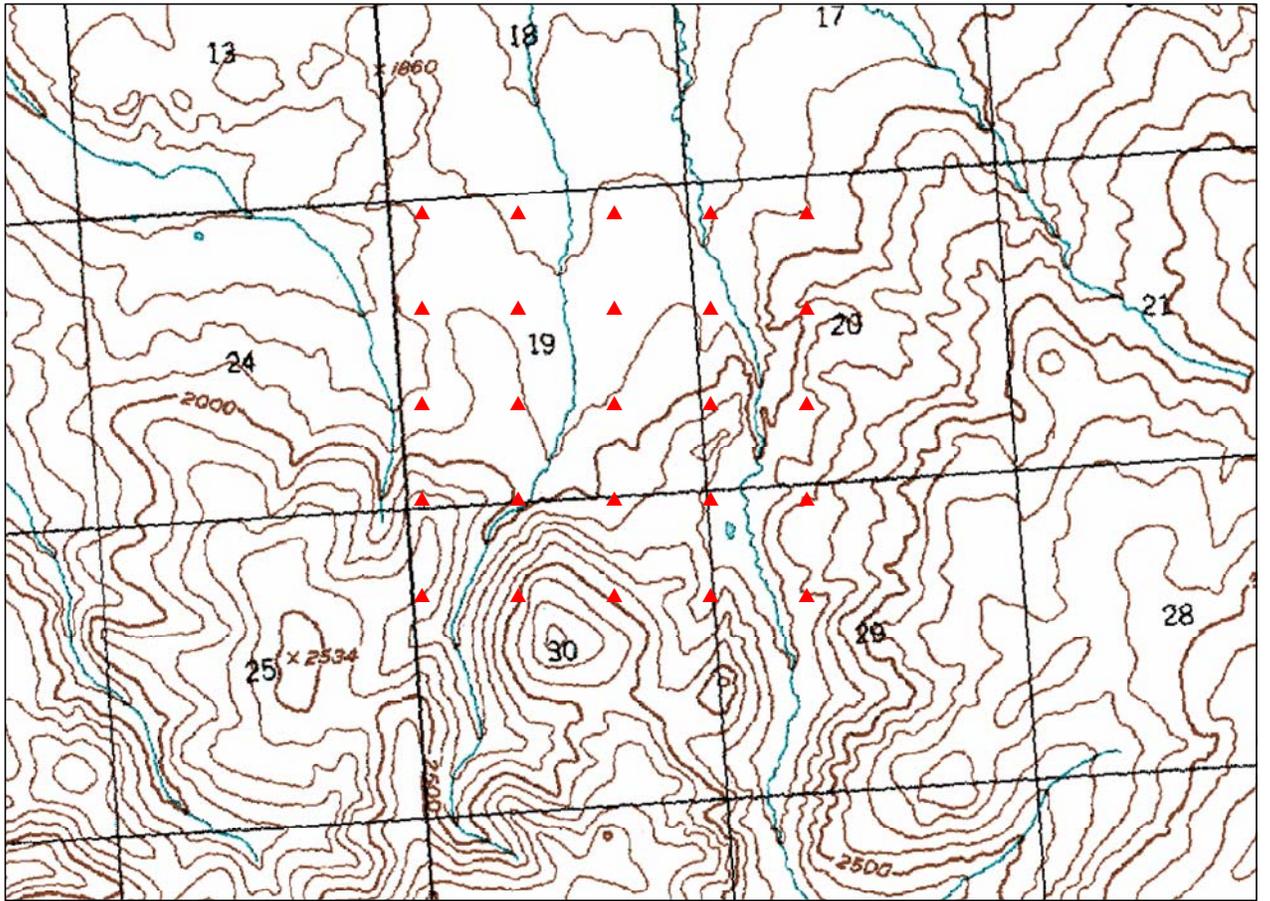
Map 1. Satellite image True Color 1: 63000.



Map 2. Topo map 1:12000 of East Shushana mini-grid

Topo 1:24000 East Sushana mini-grid Denali NP&P

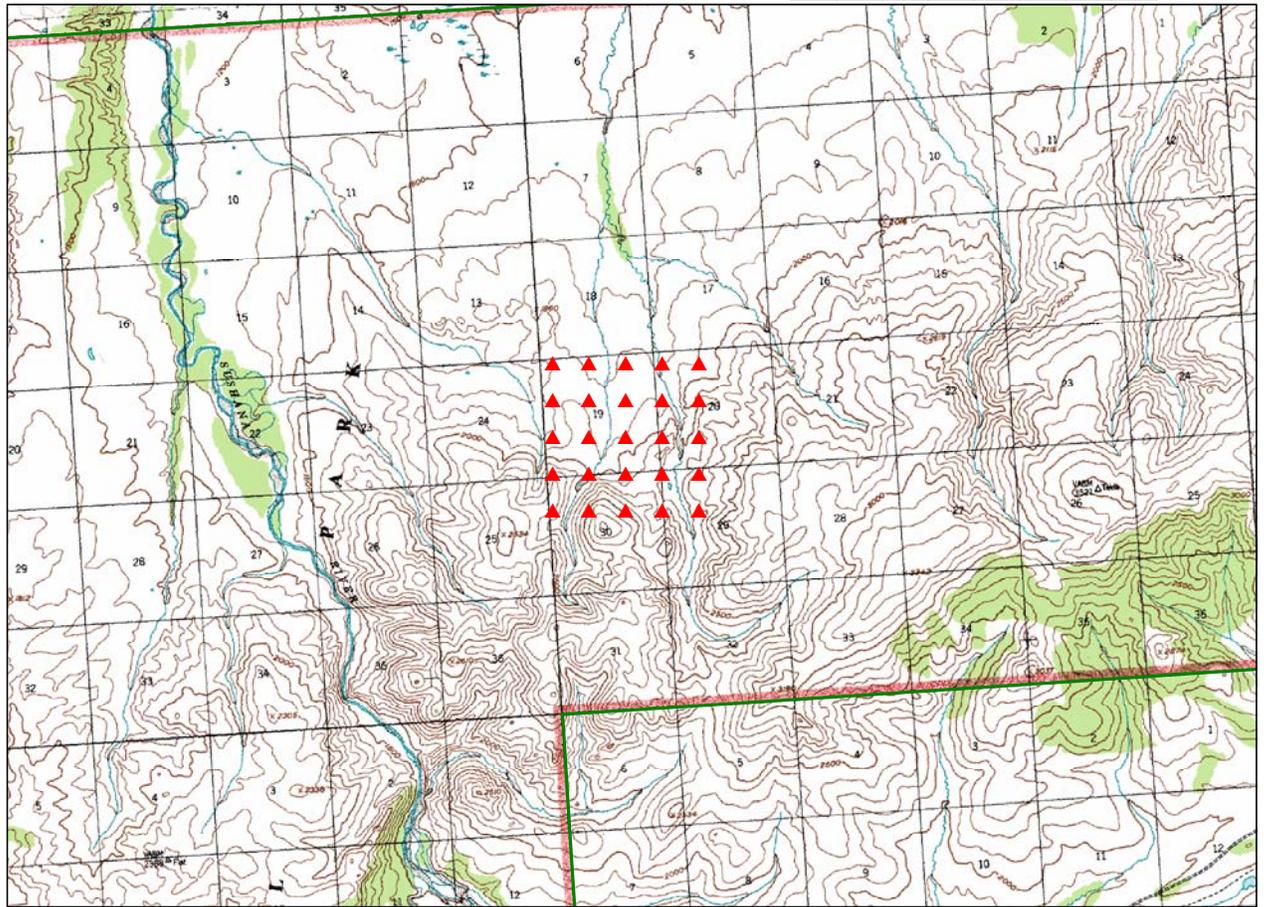
0 0.5 1 2 Kilometers



Map 3. Topo map 1:24000.

Topo 1:63000 East Sushana mini-grid Denali NP&P

0 1.25 2.5 5 Kilometers



Map 4. Topo map 1:63000 of East Sushana mini-grid.