

DENALI NATIONAL PARK AND PRESERVE

CENTRAL ALASKA NETWORK

Vegetation Monitoring Program

Summary Trip Report: Middle Moose Creek

1 July – 8 July, 2008



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Photos by B. Dykstra

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PURPOSE:

The purpose of this work was to install permanent plot monuments and to collect data for the CAKN Long Term Ecological Monitoring Program. Between July 1st and July 8th, 2008, we spent 6 full days collecting field data, while the first and last day were spent half in transportation and half on data collection.



Photo 1. Looking NW at Mid Moose grid landscape from ridgeline top near plot #2, taken 2 July 2008.

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 MINI-GRID AND CAMPING POSSIBILITIES:

We flew all three crew members and gear to Kantishna on the morning of July 1 with both a fixed wing and a helicopter. From the Kantishna airstrip, we took two short helicopter flights to drop three crew members and gear at our camp location near the center of the Mini-grid.

We established camp about 200m northeast of plot 13, in a small clearing in the stunted spruce that was easy to access by helicopter. This central camp location allowed us to be within 1.5 km from each corner of the grid.

There was a small, shallow but flowing creek to the south of our campsite where we set up our cook tent and food storage area. We filtered water from this small creek, despite its mossy flavor, for the first 6 days. However, the mossy, murky water eventually overpowered our filtering capacity- two hand pumps and one gravity filter-bag clogged to the point of uselessness, and we had to resort to boiling water to drink. The boiled water was not pleasant- an experimental filtering of the boiled water through a coffee filter clogged the coffee filter before one water bottle was filled. Fortunately, we were able to capture a lot of fresh rainwater after an evening storm blew over our cook tent.



Photo 2. Looking WNW at cook tent and stream after rain on 8 July 2008 at Mid Moose mini-grid. This was our water source during the week.

Similar mossy creeks and standing swampy areas were found with good frequency throughout the grid- carrying a hand-pump with a working filter would have allowed us to take advantage of those areas. Clean flowing water can be found in Moose Creek, which we crossed to access plots 5, 10, and 15, but it was a long hike from our camp.

HIKING:

Most of the mini-grid was on stunted black spruce tundra that was uneven, moss and tussocky terrain. Wet areas, and therefore, wet feet, were a common occurrence. Hiking was slow, but steady. There were occasional wet patches of alder and willow that required bushwhacking. On the east side of the mini-grid, along the creek banks, the vegetation became denser and lots of bushwhacking was required to move from plot to plot.

WEATHER AND ENVIRONMENTAL CONDITIONS:

The weather was hot, sunny, and humid. We only had three rain showers and two of those were at night. The insects were intense.

SAFETY CONSIDERATIONS:

Clean water was a concern at this mini-grid. Future trips to this site should be prepared with more backup filters, a rain-barrel, and possibly a few 5-gallon jugs of clean, moss-free, drinking water.

GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:

Most of the grid was located in the broad, flat boreal basin above Moose Creek, in a stunted spruce ecosystem. Moss and *Eriophorum vaginatum* tussocks are the typical groundcover, although in some areas, *Carex bigelowii* is the dominant or codominant graminoid. Low shrubs *Betula nana*, *Ledum decumbens*, *Spirea stevensii*, and *Vaccinium uliginosum*, and dwarf shrubs *Vaccinium vitis-idaea*, *Empetrum nigrum*, and *Oxycoccus microcarpus* were all common. Tall shrubs like *Alnus viridus* and *Betula occidentalis* were occasionally locally abundant. We were excited to see lots of carnivorous plants- *Drosera rotundifolia* and *Pinguicula villosa*- taking advantage of the higher numbers of mosquitoes we encountered. Along the creek corridor are dense, forested regions with *Picea glauca*, *Betula papyrifera*, *Populus balsamifera*, and *Alnus viridus* thickets. Several interesting species were noted just beyond our plots; *Arctophila fulva*, *Moneses uniflora*, *Ranunculus gmelini*, and *Utricularia* sp. BD-08-57(not in a plot), also a carnivorous plant.

We noted very little wildlife during this trip, aside from vole activity in many of our black spruce woodland plots. James saw a woodfrog while hiking between plots 25 to 20, and he also found wolf tracks in the muddy bank where we crossed Moose creek just south of plot 5. We hiked briefly along animal trails that ran along the forest edge above the creek terrace. Do mosquitoes count as wildlife? We certainly saw a lot of them.

Table 1. Collection series for the Middle Moose mini-grid.

Collector	Identifier	Series
Dykstra	Vascular plants	BD45-BD69
Dykstra	Digital Photos	
Walton	Nonvascular collections	JKW series

ACTIVITIES:

Tuesday, July 1

We arrived at the office early to weigh and load gear and headed to the airstrip. We loaded the fixed wing and the helicopter and took off for Kantishna. We unloaded and waited for awhile in Kantishna because the helicopter took the green team out first. We all arrived at our campsite in the early afternoon, and set up. After all of the logistical things had been taken care of, we only had time for one plot- so we loaded up and set off for nearby plot 12.



Photo 3. Typical stunted spruce scene in the Middle Moose mini-grid.

Plot 12: The plot is on the gentle, southwest-facing slope above the broad, flat terrace. Vegetation is an open black spruce woodland with quite a few saplings and tall shrubs like *betocc* and *Alnus viridus*. Understory is *Ledum decumbens*, *Betula nana*, *Spirea stevensii*, and *Vaccinium vitis-idaea* all on moss.

Weather: Warm and sunny, the warmest weather we've felt all summer, actually. It is also seriously buggy.

Wednesday, July 2

Plot 1: We started off the day hiking to the far south-east plot. The point is located in a small drainage gully in the middle of a broad, flat saddle. There is standing water near the center of the plot, drier moss/sedge tussocks on the higher ground. Vegetation is a low-shrub/sedge mix with a few stunted and half-dead *Picea mariana* stems. Kate set the first single hand mosquito kill (from here on known as SHMK record) at 22 bugs.

Plot 2: Mid-slope point, on an even, gentle slope facing west above the terrace. Vegetation is mostly a mixed low-shrub/sedge in about 80% of the plot, but the southern 20% of the plot is dominated by a patch of tall shrubs- *Alnus viridus* and *betocc*. Hiking here Brian set the new SHMK at 30.

Plot 3: On the broad flat terrace, next to a small intermittent stream, with a small drainage occupying about 10% of the plot. The remaining 90% upland is stunted *Picea mariana* woodland with lots of seedlings and some saplings. We hiked away from the southern edge of the grid back toward our camp, with time to complete plot 8 on the way.



Photos 4 and 5. *Pinguicula villosa* flowers (left) and basal leaves (right), a small carnivorous plant that takes advantage of the plentiful mosquitoes in the area.

Plot 8: Also on the broad, flat terrace, with stunted *Picea mariana* woodland vegetation. Understory was typical- *Betula nana*, *Ledum decumbens*, *Vaccinium vitus-idaea*, *Eriophorum vaginatum* tussocks and lots of moss. We had not intended to have time for this plot today, so we were not carrying the monument cap, but we established the plot and collected that data anyway. We left the center flagged so that we could relocate the plot center and place the monument cap on a future hike to neighboring plots.

Weather: Sunny and humid conditions. Hazy clouds rolling in. It's still seriously buggy, and we are thankful for the occasional light breeze.

Thursday, July 3

Plot 16: Inspired by yesterday's 4 plot day, we set off to the 4 plots in the NE corner of the grid. 16 was on a small, NE-flowing drainage gully on a broad saddle. The upland vegetation was pretty typical stunted *Picea mariana* woodland, while the stream gully was dominated by *salpyr*, *compal*, and *calcan*, along with water, moss, and mud. Obvious soil erosion occurring in the stream gully where our monument was placed.

Plot 21: Located on a broad, flat ridgetop plateau. Vegetation is not very diverse- we're starting to get a good sense of what to expect from the stunted spruce woodland. *Picea mariana* above *Betula nana*, *Ledum decumbens*, *Vaccinium vitus-idaea*, and *Carex bigelowii* all on moss. Brian has his usual 12 species and James has his 30.

Plot 22: On the gentle, west-facing slope above the terrace, just below the ridgeline. The *Picea mariana* are looking pretty rough here, growing with the usual suspects beneath. A few tall shrubs- *Alnus viridus*, *betocc*, and *salix* as well. Brian found a blooming *pinvil* as well.

Plot 17: Also on the gentle slope, looking west over the terrace. While there is a small clump of *Picea mariana* saplings, the overall vegetation is more scrub- dominated by *Betula nana*, *Spirea stevensii*, *Ledum decumbens*, and *Vaccinium vitus-idaea* with *Rubus chamaemorus*

and *equusyl*, all on moss. A few tall shrubs as well. The general surroundings are more typical *Picea mariana* woodland.

Weather: Another warm, humid, sunny, buggy morning. Denali looks great to the south against the clear skies.

Friday, July 4

Plot 24: We celebrated Independence day hiking to the NW corner of the grid. 24 is on the broad, flat terrace, partly in the upland *Picea mariana* woodland and partly in a pond depression. The shallow pond is mostly squishy, wet, organic mud, dominated by *erisch*, *chacal*, and lots of moss, with a lot of spruce seedlings.

Plot 25: We headed down a steep, forested, west-facing slope down to the creek terrace- where the plot is located on a small drainage gully on the flat stream terrace. We've switched vegetation types dramatically- it's a tall open forest of *Picea glauca* and *Betula papyrifera*, with lots of *Alnus viridus* and grasses underneath. The spruce trees are old- falling down and the cores we collected were pretty old and rotten.

Plot 20: Located on the flat terrace near Moose creek. The open forest is dominated by *Picea glauca* and *Populus balsamifera* with lots of alder underneath. Understory is *Vaccinium vitus-idaea* and *linbor* on moss, and it's nice to be walking on solid, even ground. Increased diversity and a pretty change from our typical *Picea mariana* woodlands- *Rosa acicularis*, *linbor*, and *pyrgra* are all in flower.

Plot 19: It was late, and we were tired, returning up to the flat, stunted spruce terrace. Vegetation was typical, low diversity *Picea mariana* woodland. We were happy to finish the plot easily and head back to camp.

Weather: Still beautiful weather- sunny and warm. The only clouds are clouds of mosquitoes.

Saturday, July 5

Plot 5: We set out to do the three plots across the creek. The hike out was our longest, bushwhacking and finding a safe place to cross Moose creek slowed our progress. We found a broad part of the creek a little bit south of plot 5 to cross and we were still pretty wet when we arrived at plot 5. The plot is located on the flat stream terrace, just NW of where another small creek joins Moose creek, so we had to cross that creek as well. The closed forest canopy was dominated by *Betula papyrifera* and *Picea glauca* with *Alnus viridus*, *Rosa acicularis*, and *Ribes triste*. Lots of debris from falling trees, but no signs of recent disturbance.



Photo 6. Crossing a side-creek to the west of Moose Creek with *Epilobium latifolium* blooming just south of the forested plot 5.

Plot 10: After a lot of bushwhacking, we arrived a 10, a dense patch of alder scrub on the flat creek terrace. A few emergent *Populus balsamifera* and *Picea glauca*, with *Ribes triste*, *calcan*, and *rubarc* beneath the *Alnus viridus*. It was slow going in this dense vegetation.

Plot 15: After another 500m of bushwhacking we arrived on a small, open, gravelly creek bed that made for fast walking. We were pleasantly surprised to find our plot center located right in the center of the creek bed, encompassing some of the vegetation on either bank. The creek was flowing due North, with the running water along the eastern half of the bed, and standing graminoids along the western. The eastern bank was dominated by *Salix alaxensis* and *Alnus viridus*, while the west bank was *Alnus viridus* and *Picea glauca*. A *Salix alaxensis* had fallen into the creekbed along our E-W transect line.

We did not want to leave the plot monument in the center of the creek, risking it to being lost and/or carried downstream, so we relocated the monument 6m due East of the center point onto the forested bank to survive until future sampling. Kate finally broke Brian's SHMK record with 33 on the wet cuff of her boots. This record held for the rest of the Mini-grid. We bushwhacked back to the creek and forded it again, and hiked wet back up to the stunted spruce and our camp.

Weather: Hot, humid and sunny. We spent the day in the dense, shaded forests by the creek where it was cooler, but more humid and buggy than the upland.



Photo 7. Location of BD-08-065 *Carex viridula*. Quadrant D of plot 11, Mid Moose Creek, July 6, 2008, facing NE.

Sunday, July 6

Plot 11: Located on the middle of a gentle, N-facing slope down towards a depression pond. The wetland edges almost reach the edge of quad D, and a small drainage extends into the plot. The vegetation is stunted *Picea mariana* with *Carex bigelowii* and the other usual suspects on a lot of moss. *Carex viridula* was located along the wetland edge- the first time it has been recorded in a CAKN plot.

Plot 6: Continuing south along the eastern edge of the grid, plot 6 is on the middle of a gentle, east-facing slope looking out over rolling hills. The vegetation is open low-shrub/sedge tundra- dominated by *Betula nana*, *Ledum decumbens*, and *Vaccinium vitis-idaea* with tussocks of *Eriophorum vaginatum* and lots of moss. Only a few small spruce seedlings present.

Plot 7: On the upper portion of a west-facing slope, plot 7 is typical *Picea mariana* woodland. Even with a high number of saplings to measure, we are getting these plots done pretty fast now. We then hiked from 7 to 8 to place the monument cap at the center of the plot we had sampled on 7/2/2008. From 8 we hiked on to plot 4 along the southern grid edge. Plot 4: Again on the broad, flat stream terrace- with slightly higher density of spruce; our record number of saplings. The open *Picea mariana* forest had all of the usual suspects underneath- another quick, low diversity plot.

Weather: Still feels like summer- a hot, humid, sunny morning. Late afternoon storm clouds rolled in and thundered at us, but it never really rained. We got a nice breeze though.

Monday, July 7

Plots 9 and 14: Two more stunted spruce woodland plots on the broad, flat terrace. The usual moss and *Eriophorum vaginatum* tussocks with *Ledum decumbens*, the *vac sp*, *Empetrum nigrum*, *Carex bigelowii*, *Rubus chamaemorus*, and some *Betula nana*. Lots of saplings, but

we finished these low diversity plots quickly. We hiked past camp up toward points 18 and 23.

Plots 18 and 23: Located 500m apart on the toe of the gentle, west-facing slope into the broad, flat valley, these similar, low diversity plots were pretty typical *Picea mariana* woodland. With only one plot left, we called in to see if we could reschedule our pickup for Tuesday instead of Wednesday.

Weather: It finally rained a little bit last night- but the remaining clouds have burnt off and so we have another warm sunny morning. A nice breeze. Afternoon storm clouds rumbled for awhile and eventually turned into a light rain, but it did not last for more than 45 min.



Photo 8. Typical stunted spruce scene of Mid Moose

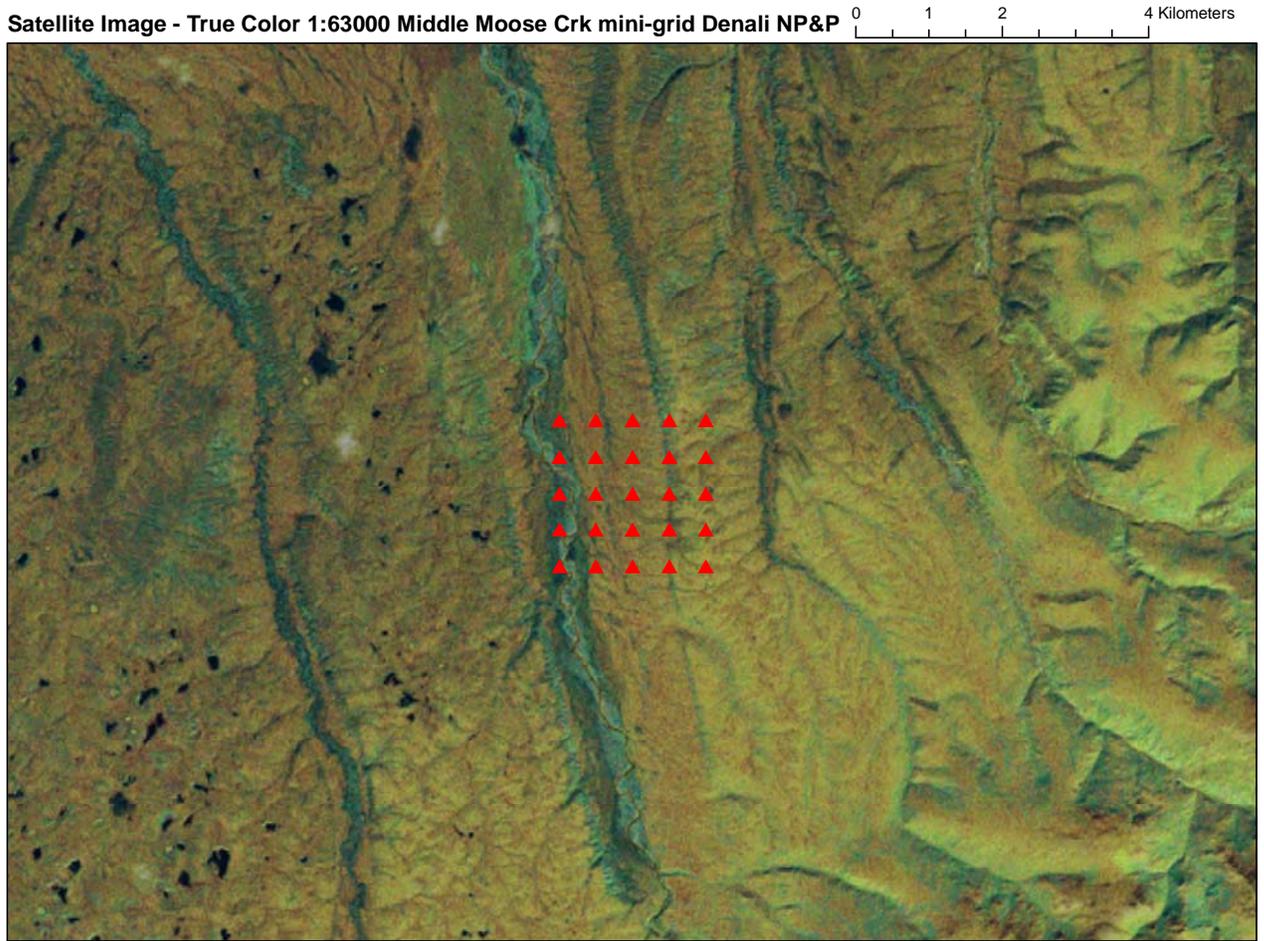
Tuesday, July 8

Plot 13: Expecting our helicopter pick-up around mid-day, we set out to our last and final plot, lucky number 13. We saved the closest plot for last, so it was a quick, 200m hike from camp. At the toe of the west-facing slope into the valley, the plot was another open *Picea mariana* woodland, although with fewer saplings than some of our recent plots. We finished smoothly, and headed back to camp to pack up and wait for the helicopter to pick us up. We spent Tuesday afternoon in transport. The low cloud cover delayed the helicopter slightly, but we made it out with all of our gear to Kantishna. Jenn Johnson, a Wonder Lake ranger, picked us up and drove us to Toklat, where we reloaded into a truck that the paleontology crew had driven out earlier that day. We drove ourselves the rest of the way back to headquarters.

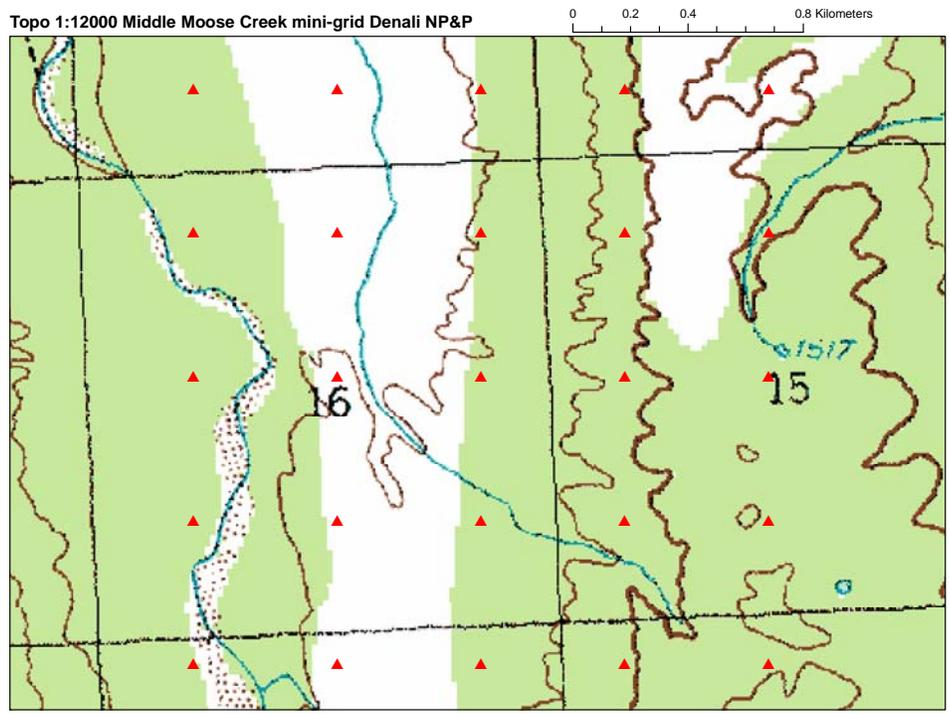
Weather: We got a real rainstorm last night and early this morning, but now it's just damp, cloudy, windy, and cool.

CONCLUSION AND FUTURE CONSIDERATIONS:

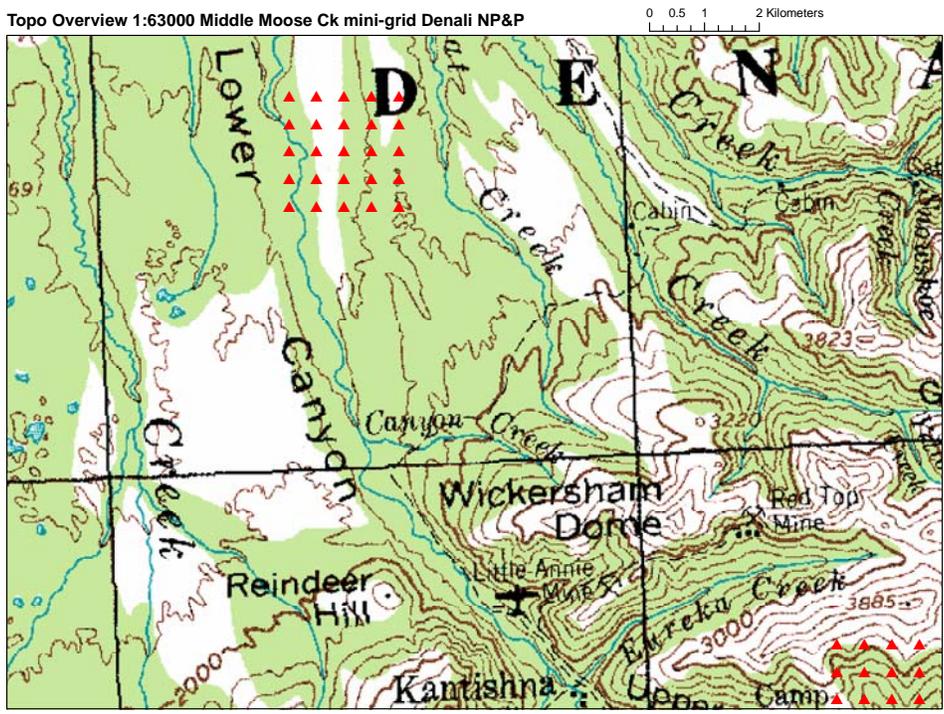
We strongly recommend that any future sampling trips to the Middle Moose mini-grid bring several jugs of drinking water with them, as well as several extra water filters, as ours quickly clogged and became non-functioning in the mossy water. Mosquito protection is a necessity here. We were fortunate to have warm, sunny weather for the three plots, 5, 10, and 15, for which we had to cross Moose Creek, because we were quite wet after the creek crossing. It would have been very unpleasant to be soaking wet, almost to my waist, on a cold day.



Map 1. Satellite image True Color 1:63000 of Middle Moose Creek mini-grid.



Map 2. Topo map 1:12000 of Middle Moose Creek mini-grid.



Map 3. Topo map 1:63000 of Middle Moose Creek mini-grid.