

AGH Kobuk River Small Mammal I+M 2014!

Crew: Andrew G. Hope (AGH)

Kenn^P Enriquez (KRE) } on the river.

Schuyler Liphardt (SL)

Alfredo Soto (AS)

Melanie Flamme - NPS biologist-principle contact

Tara Whitesell - NPS ARCN Logistics

Julia

Anna

Sarah Swanson

Jim Lawlor - NPS supervisory biologist ARCN.

} NPS bio-techs.

17 July 2014 - I flew from Kansas City → Seattle → Fairbanks arriving at ~21:30 and got a room at the Super 8 on Airport Way for ~\$125. Not a great hotel but good enough... I was on site a couple days before the crew in order to buy supplies and prepare gear. I had dropped off most of the field supplies in mid-May at the NPS building before moving south to Manhattan, KS for my new job at K-State, from the USGS in Anchorage (Alaska Science Center). This trip was originally proposed for the Noatak River Corridor to sample along the boreal-tundra ecotone but the NPS asked if I would sample further south along the Kobuk River instead due to plans for an Ambler Road development from Bettles, ~~to~~ through the boot of Gates of the Arctic NP and on to Ambler where there is a large mineral bed slated for mining; the so-called "Roads to Resources". Our

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Samples from this trip will provide baseline pre-development data for this project. Also, there have been previous sampling efforts at 4 of our proposed sites in 2000-2003 by Joe Cook's crews, so this will act also as time series for previous collections. In addition to the standard small mammal sampling we will be collecting fur-on-skin samples for contaminants sampling, photographic series along the river corridor, some bird observational data, water samples for environmental DNA work, and extra blood samples on Nobuto strips for the USGS ASC to test for blood pathogens (Caroline Van Blemert). A good opportunity to lock this transect in as a long-term sampling route and to form collaborations with inter-agency folk. Alfredo Soto is here from the USFWS Arctic NWR office in Fairbanks (supervisor is Dave Payer) in order to train someone from that office in the methods for small mammal sampling so that in subsequent years, surveys can take place across northern AK. - on a long-term repeatable basis...

18 July 2014 - ~~Wake~~ wake at 08:00 and got a taxi to the NPS building on Geest Rd. by 09:00 to meet with Melanie Flamme. She has a number of interns and techs on staff that have been very helpful with preparations for this trip and providing gear and logistic support. Julia did most of the gear work but helped by both Sarah and Anna. We are using one 16 ft extra-wide SOAR inflatable canoe with

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our saddles and loads for each tube which I will use and carry the most weight, and two inflatable Gardner canoes for the other people and gear. There will be 4 of us on the river for the first 4 sites and 3 weeks and then Alfredo flies out at Kobuk village with our samples to date, and a resupply flies in with more food and a fresh NZ shipper tank. NPS also supplied 2 extra GPS units, a sat phone and spot for daily check-ins, single burner stove, camp chairs, boat gear and repair kits, bear sprays, etc. etc. The logistics were facilitated by both Melanie and Tara Whitesell,

So, I went over some details of things to do with Melanie and then went to speak with Jim Lawlor who is also keen to have this work done, partly also because small mammals are a vital sign for the Park Service. He unlocked ~~to~~ our shotgun for the trip which was issued by USGS in May. Then they lent me a new Chevy quad-cab Silverado to run my errands. I needed to first go and visit with Dave Payer and Alfredo at USFWS to discuss the plans and then I checked on the NZ tank shippers at Air Liquid on Van Horn Rd. Anna had dropped them off on Monday to be charged (they did three fills on them) and they were ready so I returned to NPS to pick up Anna and Melanie and we drove to pick up the tanks (Melanie had ~ \$5k to help pay for this trip so she paid the shipper at a cost of \$1,000!!). Afterwards, Anna and I went to do all the grocery shopping for our trip. We bought what I hoped was enough for 6 weeks ... Anna was very

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organized and helped to get this done smoothly. We had to do the shopping early (ie. before crew showed up) because I had just become a volunteer status at USGS since my job ended on the 11th July (long story) so I couldn't use my gov. credit card to pay. I managed to find a USGS post-doc who works at UAF (Dan Rizzuto) to meet us and pay for everything with his card. He was very nice to help out and happy to do so. This also meant though that we couldn't buy anything else afterwards because he wasn't around... All in all it cost ~\$1100 for all the food. Then I returned to NPS and unloaded everything (the Fred Meyers on Airport and University boxed all our food up as they are used to packaging for bush shipments) and then called Wright Air to check on our flight tickets to Bettles. We were all booked but the flight was full because lots of people were returning home to bush towns following the Games-olympics that week-end, so they were worried that our extra gear wouldn't all make it and advised to drop off gear on Sat. + Sun. mornings... So, I stayed on from about 17:00 → 19:00 to sort and pack ~~30~~ 289 lbs worth of luggage (freight), mostly lab prepping gear and traps. Then went to camp at the Rosehip campground ~28 miles along Chena Hot Springs road (\$10/night).

19 July (Saturday) 2014 - woke at 06:00 and headed into Fairbanks to load up the freight and met Melaine at 08:00 and we drove over to Wright Air on the

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East Ramp of the Airport. I spoke with Susan Holly at freight who works there on week-ends and works at the NPS during the week so she was very helpful and understood our situation. It turned out that the NPS could pay for our freight but only \$250 or less at a time, so that came to 292 lbs or less and so our first shipment was just right... I then went back to NPS and left Melanie and returned to the campsite to pick up her building key I had forgotten that morning and then headed back into town to run some errands including buying a fishing rod and license (\$25 resident) and duct tape, padlock for gun case etc. etc. and then went to pick Kevin up at the airport at ~~14:30~~ 15:00. ~~He~~ He had flown up from Anchorage. We then went to sort out all the food supplies, taking off cardboard and packaging into 7 boxes (1 per site) and then transferring into bear barrels. We also had to set aside 3 weeks worth for the resupply. We heard that Schuyler's flight had been delayed until ~~10:22:40~~ 10:22:40 pm (from 21:30) so waited for him arriving and all headed back to the campground. Earlier in the afternoon we heard that our first freight shipment had arrived safely in Bettles where Cadence had picked it up for us and stored it at the NPS bunkhouse. So, we had gone at 15:00 to drop off another load consisting of the 3 boats and associated gear which weighed ~250 lbs plus another small package so ~265 lbs total. Susan paid for that load with her NPS govcc. We were hoping that it would go out on Wright Air on Sunday morning at 08:00...

20 July 2014 - We all woke at ~ 07:30 and headed into town to get coffee and then run errands. Went to REI to buy a solar charger and usb adaptor for my camera batteries (later at Fairbanks Foto) and then there and there for other misc. stuff. Then returned to NPS around lunch and continued to pack and weight luggage. Alfredo came to join us around 13:30 and we loaded up all the bear cans for food and NZ shipper to take another load to freight at Wright Air around 15:00. It turned out that our shipment from the previous day (boats etc) had not gone out yet and Susan advised us just to hold onto everything until we flew the next day so we picked up some beer and food and headed back to the campground. It was a partly cloudy evening but cool, probably only 50°F but we sat by the Chena River to watch the flow. Fairbanks has been extremely wet all summer with record-high rainfall in June and July. The Chena was flowing high and fast. We managed to start a small fire and then went to bed around 23:30.

21 July 2014 - woke at ~ 07:00 and packed our tents and headed into town for coffee and to buy lunch food then to NPS to pack and weigh our final personal bags. When Melanie arrived we went over final details and then loaded the truck and headed over to Wright Air at ~ 11:30. I picked up Alfredo at 11:00... Turned out ~~with~~ we could take 40 lbs each on our ticket price and then we had ~ 750 lbs extra baggage. I called Anna Tiger at USGS to pay for Kennard Schuyler, Alfredo

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paid his ticket with a gov. cc. and I paid for my ticket and extra bags with my gov. cc. (later cost ~\$750 total). No problem though, thankfully... We loaded into a Cessna Grand Caravan at ~13:00 and flew to Bettles. Altitude was ~8000 ft and 240 knots. Calm skies but cloudy and drizzle. Flight took 1 hour 20 mins. We arrived in Bettles in light rain and fairly low clouds and unloaded all our gear. I went to talk with Jay and Judy Jespersen at Brooks Range Aviation, and they said they would try to get us straight out to Walker Lake. So I found Cadence and she had all our gear. The boats had arrived that morning. Then I took the BFA truck to the hanger and loaded all our gear then drove over to the NPS bunkhouse and loaded the rest. Jay said he'd have an Otter ready to fly in 45 mins. Kind of strange that they just gave me their truck to drive around but everyone was busy since the National Guard was there dropping off a person from a rescue operation who had lost his boat on the Kobuk River! The guy seemed ok though... Anyway, we then drove out to the float pond and loaded the Otter and took off to our destination. Took about 45 mins to fly at ~900 ft elevation, 120 mph, with low clouds and more drizzle rain. Very cool flight though. I was in the copilot seat so when we got to the lake we flew around the SW and SE shores and he pointed to a few good spots to drop us off. We were further south than the site from previous year but it looked ok so we touched down, unloaded, and he flew off for home, leaving us in light rain...

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Thankfully it was only drizzle so we found some spots to set our tents on low tundra growing on sandy gravel so clear of water and thick shrubs/moss. Then set up the prep tent. We arrived in Bettles at ~14:40 and left at ~15:30, for arriving at Walker Lake at ~16:30. It continued to drizzle all evening.

SE shore
★ Site #1: AK; Gates of the Arctic National Park // Walker Lake; 67.06641 N, 154.28406 W, 211 m. 21-25 July 2014.

We stored stuff under tarps and in the prep tent and then I did a briefing on trapping and the site and our plans, safety, and staying comfortable in adverse conditions. We were all a bit wet. Although we put on our rubber boots in Bettles, our waterproofs were packed, but it was only fine rain, it was the soaking vegetation that did the damage. I decided we should only set a few traps that evening so that we would have time the next day to set up lots and go through all the prepping process. I set 48 pits up the hill to south of camp in grassy mossy old burn habitat. Lots of dwarf birch and willow, some blueberry, thick moss pillows and extremely diverse mosses and lichens. A few new growth white spruce and black spruce and some scattered snags. The fire was very old. Schuyler set 20 snags along with Alfredo who also set 20 snags so he had company and guidance. Schuyler has a fair bit of experience doing all this but it's the first time for Alfredo. Kevin set a parallel line of 20 snags. All snags were set near shore but away from the cobble in burned and unburned spruce, heading

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east from camp. We finished setting at ~20:00 and then had some snacks for dinner and watched some large fish jumping. Semi-palmated sandpiper on the beach, 2 loons on the lake, ringed plover, glaucous gull, lots of swallows (bank?), common merganser. Another plane (Float Beaver - looked like the yellow one from BRA) landed on the SW shore to drop off a crew. Not sure what they are doing but they're a long way away... This lake is huge. Alfredo put his rod together but it needs a bit of work. We decided to call it a night at ~23:00 after pressing the spot and changed into warm dry clothes.

22 July 2014 - I woke at 06:00. Turns out my watch was set an hour ahead so I was up early but it was good to have time to sort out gear. Boiled water for coffee and then went to the prep tent. The previous night had stayed cool at ~45°F and rained all night, getting slightly harder... Rain has continued all day getting steadily harder. We are now trying hard to keep ourselves as dry as possible. Still have not unpacked everything. Boats are not blown up, all is waiting for a break in the rain... Thankfully it is not windy too. Bugs are around but not very bad. We checked traps once everyone was up and had coffee, around 09:00 and then met back at the prep tent to set up. We caught 5 shrews and 6 voles so a good number for the first unorganized day of prepping... The site is a fairly heterogeneous habitat of old burned white spruce with a lot of small standing and fallen dead pluses sparse

live spruce and a healthy regrowth of seedlings, but the habitat is mostly open shrub brush tundra. The site faces north on a hill slope of 0-20° slope with shelves up to a flat topped ridge. The slope habitat is drier low lichen tundra with tall dwarf birch but the shelf habitat is thick low shrubs and wet with well developed moss pillows and in some places abundant equisetum. On top of the ridge there are low lying depressions with moss and meadow patches surrounded by lichen tundra with small groves of ^{young} aspen. To the west and east of camp the hillside becomes more of a spruce forest. There is patchy willow in the wettest areas and down along the shoreline. The mosses and lichens are surprisingly diverse and various mushrooms are present. Blueberries get more abundant upslope and they are laden with not quite-ripe berries that are large!

On the first day After processing we all went out to set more traps (I sat for a while and wrote notes while Schuyler and Kevin had a nap. Alfredo set more traps [40 snags west of camp]). It has poured with rain all day and folks were laying low but Kevin woke and went to set 40 snags up the slope to the east of camp and Schuyler set ~~80~~⁴⁰ traps up the slope on lichen tundra habitat. I went out eventually when the rain subsided a bit to set 2 more lines of 48 traps, one parallel to my first line further upslope on a shelf with thick mesic shrub habitat and lots of equisetum. There was lots of structure here and I suspect they will

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be productive. → The other line I walked up to the flat ridgetop and set a line through ~~the~~ a low depression with mossy and mesic vegetation. Not so good looking... Each of my lines I took a photo at the start and end of the double flagging and all photos in between represent that line. My new camera has GPS capabilities so I was able to also georeference my lines with the photo evidence to accompany all the specimens caught on each line. Hopefully all this photo and locality data can be linked to the specimens in the online database.

After setting traps it was still raining, but not very cold, maybe 50°F and just a slight breeze. The bugs in the afternoon were particularly bad. Mosquitos and white sox flies everywhere. Kevin pumped his grabner boat up and him and Alfredo went out for a paddle across the lake to the east shore where there was a NPS ranger emergency cabin. Apparently well set up with log book, provisions, boats, run, axes, fishing rods etc etc. We were steered away from this location as it is meant to be for emergency use only. They were back in camp by ~21:00 and we stood around in drizzle until ~23:00 then bed. Traps were set between 16:00 and 19:00. A bit down-pulling to be wet and in waterproofs the whole time so far but people are doing well. One of our single burner stoves is leaking white gas so we moved onto our backup and cooked spanish rice packets with lots of powdered potatoes and butter and sauteed some carrots, onions and garlic to go with it.

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Trapping Results: Site 1: SE shore of Walker Lake:
22 July 2014. (by line)

1 AJS/SWL1: 2. Myodes rutilus1 KRE1: 3. Myodes rutilus1 AGH 1: 4. Sorex coronatus2. Sorex hoyi1. Myodes rutilus

TOTAL = 12 captures, DIVERSITY = 3 species.

23 July 2014: - woke at 07:00 and made coffee then went to check traps once everyone was up. At 09:00 we called Dehali Dispatch to check in. This is a twice daily ritual for us at 09:00 and 18:00 and we also press the spot each evening before bed to send an ok email to all our folks at home. We had a pretty good catch for the most part. Not much diversity but good numbers and good parasite materials for the shrews. We prepped from 09:00 → ~14:30 and then had lunch. I started by pulling tissues with Alfredo to teach him how, Schuyler on data and ectos and measurements and Kevin on parasites. I switched to parasites when possible.

The night was rainy throughout but not windy. Maybe down to ~40°F overnight and then ~50-55°F during the day. Short periods of no rain but overcast. After prepping and some sausage and cheese burritos for lunch we went to set out more traps (all except for ~30 pits). I set a line of 40 pits with Schuyler between my first and second lines. Not too much shrewy habitat around except on the slope shelves... Kevin and Alfredo

each set 45 more snags to the east and west of camp respectively. We missed our call-in to Denali D. at 16:00 and called at 17:30 after setting traps. They reported that they had tried to get in touch with our contacts (Melanie) because we were over an hour late and that our spot messages had not been working. So I changed the afternoon check-in to 18:00 and explained that the weather was really bad so maybe the spot hadn't worked. We were doing it right. I tried to call Melanie the next morning but no success...

Anyway, we blew up the other two boats. I found that the SOAR cars were not set up right so we worked on that for a while until they were better then we paddled around a bit to get used to everything and tried to catch a fish. Not much success... as yet... We cooked a dinner of stroganoff pasta and chicken (canned) and carrots and onions and stood around a fire which we managed to get going for a while as rain started and stopped. Little patches of blue sky every so often.

Trapping Results: Site 1: SE shore Walker Lake: 23 July 2014

- 1 AKN 3: 1. Sorex hoyi
 1 AGH 2: 3. Sorex hoyi, 1. Myodes rutilus
 4. Sorex cinereus
 1 AGH 1: 3. Sorex cinereus, 1. Sorex tundrensis
 4. Myodes rutilus
 1 SWL 2: 2. Myodes rutilus
 1 AJS/SWL 1: 1. Myodes rutilus
 1 KRE 1: 5. Myodes rutilus
 1 AJS 2: 11. Myodes rutilus

TOTAL = 36 captures
 DIVERSITY = 4 species.

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14.

No signs of red squirrels, or hares, and surprisingly low diversity. A little bit of moderately recent bear scat along shoreline to the east and west of camp but no sightings. We were in bed by 23:00.

24 July 2014 - Woke at 07:00 to no rain! but overcast though brighter with maybe a chance of it clearing. The bugs are not so bad this morning either. Very bad yesterday evening. Went to check traps around 08:00 and checked in at 09:00 with Demali. Then processed a larger catch today ~~from~~ after breakfast of oatmeal and granola. Stopped for a brief burrito lunch at ~ 13:30 then continued our until 18:00, called Dispatch again and then cleaned up and had a break.

Trapping Results: Site #1: SE Shore Walker-Lake; 24 July 2014

1 AGH ^{1 SWL} 1: 1. Sorex cinereus
 1 AGH 2: 4. Sorex cinereus, 1. Sorex tundrensis
 1 AGH 1: 5. Sorex cinereus, 3. Myodes rutilus
 1 AJS 1: 9. Myodes rutilus
 1 AJS 2: 4. Myodes rutilus
 1 KRE 1: 3. Myodes rutilus, 1. Microtus oeconomus
 1 KRE 2: 3. Myodes rutilus
 1 KRE 3: 1. Myodes rutilus
 1 KRE 4: 4. Myodes rutilus
 1 KRE 5: 5. Myodes rutilus
 1 AJS/SWL 1: 4. Myodes rutilus
 1 SWL 2: 3. Myodes rutilus

TOTAL = 51 captures, DIVERSITY = 4 species.

↑ N

Willow on shoreline

WALKER LAKE

boats & kitchen

KIS1 50 swags

AS2 40 swags



flat boggy
mossy

boggy



SLW/AS1 40 swags

KRE1 20 swags

SPRUC

KRE3 20 swags

Site # 1: USA: AK: Gates of the Arctic National Park

SE Shore Walker

67.06641 N

154.28406 W, 211 m. elev.

Scattered white spruce

AGH1 40 pits

AGH4 10 pits

SPRUC TUNDRA

SPRUC SHELF

birch

all birch white spruce boggy

KRE2 20 swags

KRE5 20 swags

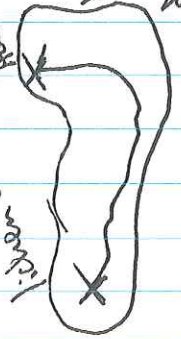
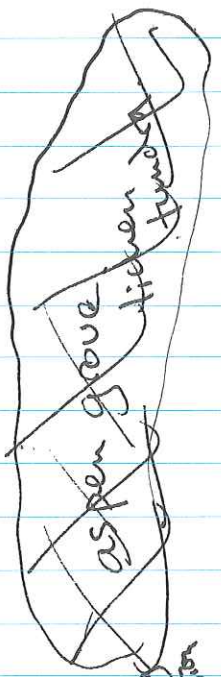
SLW2 40 swags

birch
lichen tundra

shrub
tundra

AGH3 40 pits

low mossy waterbed



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16.

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Alfredo and Schuyler cooked dinner of beans with chicken and rice packet for mexican burritos with a great chicken broth and tobasco sauce. The evening had some showers but was breaking up with some glimpses of sun during the day and now calm and sunny with clouds in the evening. Warm at ~55-60°F. Very buggy this evening though.

We had a small fire and burned the trash and talked logistics for our boat trip in the next afternoon. We plan to wake early and pack tents if dry out, then collect traps and get to processing, then pack everything and head towards the mouth of the ~~river~~ lake. Probably about a mile and a half distance before we hit running water. The wind is currently out of the west and this could make our rowing difficult though it has been mostly calm. The first two days had wind out of the east and north, so perhaps west wind means better weather? Our boats are a worry with lots of gear but we should manage. I made a water resistant mapex tube using gorilla tape, with a lid. Will check out the quads. -

25 July 2014 - Turned out the night stayed rain-free and clear sky, meaning cold... In fact, it frosted lightly in some areas. We woke to clear and sunny with a slight breeze. Good feeling! Up at 06:00 and checked and collected all traps. Didn't lose any, also good... so we prepped another reasonable clutch and finished by ~13:30. I called Melaine that morning and found out they had finally had a 'spot' alert, after I changed the batteries. I guess

it will still work through the proper motions but will not transmit under low battery power... I asked her for a spare cooker and white gas and bug dope in the resupply. She was worried we were ok., I guess. She said there were reports of lots of snow in the Brooks Range. We could finally see the most distant peaks were covered in snow but thankfully none around us. We were in very good moods at the good weather and prospect of heading down river. We had finished and packed everything to the shore by ~ 15:30. Packing the boats was not difficult and everything we have fit in easily. I took the bulk on the SAR and (though less than half) and split the rest among the two grabbers. Kevin was in his own, me too, and Alfredo and Schuyler both shared a boat, being the least experienced.

Thankfully the wind was low and out of the way east so paddling/rowing to the mouth of the lake was ^{an} easy 1.5 mi. I tried trolling for fish but no luck. We stopped before running water to take photos, set the GPS and do a little safety/procedure meeting on 'how to run a river'... Then we headed down. The outlet river is running much higher than usual but clear, at about 5.5-6 mph., pretty swift! I tried for some fish and caught two 10-12 inch grayling in 4 casts! Beautiful fish everywhere. Alfredo caught one and let it go. I kept mine for dinner. The big class 5 rapid was only $\frac{3}{4}$ mile down river so we didn't have much time to dally. Schuyler and Alfredo were not

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comfortable in the boat and it was apparent that the two grabbers were not in control, making me a bit nervous. Although there was plenty of time to pull out on the east side (river-left) before the rapid, it was intimidating and came up suddenly.

It was not apparent where the portage route was as we pulled out near a steep embankment. Old river notes I had suggested the trail was up on top but though there was an old trail up top, we found the best trail was along the river bank and partly submerged at where we were due to high flow. So, we floated down to a trail point on the bank and then pulled the boats up and tied off.

Walking the portage was $\sim 1/4$ mi., fairly easy but with fallen trees and lots of roots, so two-manning any of the gear was less easy. We arrived at the portage at $\sim 18:30$ and started to ^{carry} portage gear. There was a quaint little camp area on the down river end of the rapid up the bank a bit for tents.

The rapid was impressive and scary. Probably would be ok if you were a good kayaker or in a big raft. Big holes, big crunching waves and lots of huge rocks. I doubt any of our boats would have made it through upright...

We moved most of the gear in the next hour and a half then stopped for some food. After a dinner of carrots, onions, garlic, fish and cheesy mashed potatoes (powdered) which was excellent (though the two fish didn't go far amongst us), we went back upstream for the remainder including boats. The SOAR was

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very difficult even with 4 of us hauling it along the narrow trail, but the grabbers easier. All in all, moved ~1300 lbs of gear, finishing at ~22:00!

It was a surprisingly warm and sunny day so we were thoroughly beat by the finish. Sat at a small fire for a while as the late evening was cold after the sun went behind hills. Great scenery and glad to be past that hurdle... Bed by 01:00.

Trapping Results: Site #1: SE Shore Walker Lake; 25 July 2014

1AGH1: 1. Sorex tundrensis, 3. Myodes rutilus

1AGH2: 7. Sorex tundrensis, 6. Sorex cinereus

1AGH3: 1. Sorex hoyi

1AGH4: 1. Sorex hoyi

1KRE4: 1. Sorex cinereus, 2. Myodes rutilus

1KRE2: 2. Myodes rutilus

1KRE5: 6. Myodes rutilus

1AJS2: 2. Myodes rutilus

1AJS1: 2. Myodes rutilus

1SWL1: 4. Myodes rutilus

1SWL2: 1. Myodes rutilus

TOTAL = 33 captures DIVERSITY = 4 species

(+2. Savannah Sparrows archived)

Capture Totals: Site #1: SE Shore Walker Lake

91. Myodes rutilus 21-25 July 2014

27. Sorex cinereus

8. Sorex hoyi

4. Sorex tundrensis

1. Microtus oeconomus

Total = 131 captures

Diversity = 5 species

2014

20.

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Trapping Tallies: Site # 1: SE Shore Walker Lake.
21-25 July 2014

$$60 \text{ snaps} \times 4 \text{ nights} = 240$$

$$48 \text{ pits} \times 4 \text{ nights} = 194$$

$$170 \text{ snaps} \times 3 \text{ nights} = 510$$

$$96 \text{ pits} \times 3 \text{ nights} = 288$$

$$80 \text{ snaps} \times 2 \text{ nights} = 160$$

$$40 \text{ pits} \times 2 \text{ nights} = \underline{80}$$

$$\text{TOTAL} = \underline{\underline{1472}} \text{ trap nights.}$$

26 July 2014 - we had a bit of a sleep-in, waking at 0800 and making coffee, then packed tents and boats. We were launching into the riffle at the end of the rapid and though easy, we had inexperience, so I opted to carabiner the two grabbers together and float the three crew as a catraft. I showed them about using eddies for pulling out and how to control a boat in current. Then headed down river around 10:30. They watched and followed but an as-yet lack of coordinated effort put them on a gravel bar in the middle of the river. I tied up and waited with throw rope but they eventually pushed off and we headed down a $\frac{1}{2}$ mile section of easy riffle before it flattened and the two grabbers separated.

It was a sunny warm day, got to $\sim 70^\circ \text{F}$ with few clouds, so almost too much sun... I tried fishing again and caught a 12 inch and 2 20+ inch grayling. Amazing fish and so easy! Every other cast with a rainbow rooster-tail spinner.

Alfredo brought 1 ~14-15 inch rat too, all for dinner. I had programmed the GPS coordinates for the next site into my unit and it said ~6.5 miles by the crow, but it was ~14 river miles. Still, not too long. After a couple miles we joined the Kobuk River, it flowing in on river left but barely perceptible. Kobuk was also clear and roughly the same size. Our average speed was ~5 mph, sometimes 6+ mph if rowing. Very high water but mellow flow. I was taking river-right, and left photos at every mile for a time-series of photos down the river. My camera also recorded the GPS coordinates of all of these. Lots of good photos.

Incidental observations, - Saw a couple beaver lodges along the way. Also 2 peregrine falcons at GPS: 67.01760N, -154.36223W, 1 osprey at 66.99739N, -154.36378W, and another osprey on a nest at 66.95592N, -154.35849W on river-right at the top of a spruce. Plenty of moose poop and prints at portage camp. Also red squirrels there though we could not shoot one.

We stopped for lunch at ~14:30 on a small beach on river-right about 4 miles up-river of the upper Kobuk canyon. Then headed down. The upper canyon was meant to be fairly easy, maybe class 2 riffles and we all went through as separated boats. I led and pointed out obstacles. Very easy. One small bump of a grabber on a submerged rock, then

Floated on to camp, arriving at ~15:30. We stopped first ~~at~~ on river-right at a very small muddy beach that had lots of moose tracks and some huge wolf prints, size of a full adult hand. It looked too bushy here and no room to camp with the river so high so we crossed over and paddled back up river to a large sand-bar on river-left to camp.

★ Site #2: USA: AK: Gates of the Arctic NP; 4.7 mi. E
Outlet of Nutuvukti Lake; 66.95853 N, -154.43053 W,
177 m elev.; 26-30 July 2014

We are down in the flats of the upper Kobuk between the upper and lower canyons so the site is low-lying and generally wet. Plenty of room for camp and prepping space on the extended sand-bar though keeping sand out of everything will be tough. There is abundant low willow on the beach, which if you walk through, you flush out clouds of mosquitos... Bugs here are worse than at Walker Lake but manageable. We are on a west-to-south bend in the river. On the far side is a 30-40 ft cut bank with spruce forest (black and white) growing on the flats above. Behind camp is a strip zone of thick willow then a zone of thick alder separated by a narrow wet old channel with vole runways everywhere and very active. Through the alder you reach a zone of grassy meadow with sparse willow and black cottonwood all growing on sandy river floodplain. Behind that is a

small zone of black spruce where the ground is mossy and this forest also is mixed with cottonwood, willow, and alder, ranging from semi-mesic to boggy. Abundant black bear sign and moose tracks/scat. Bear scat piles, bedding-down areas, and upturned turf all over, but none very recent. Still we are being careful to make noise and stay close to others. Lots of red-backed vole signs and some larger runways that could be red-squirrels though no sign of middens...

We unpacked the boats and then wandered the site looking for good trapping lines. After setting up tents, we went to set out some traps from 18:00 to 19:00. Most snaps (40 each for three crew) were set behind camp through the different zones except for spruce forest, trying to hit the vole sign. I set up 80 pitfalls starting in the meadow/willow zone and moving so most were in the more structured spruce/alder forest with thicker mosses and downed rotting wood (looked more shrewy...)

After setting traps, ~~we~~ I was hot and nasty so jumped in the river to wash. First bath this trip. Cold water but bearable and the mosquitos didn't bother me once I had soap on... Felt great. After which we cooked our fish dinner. We had started a fire earlier to stand in the smoke, and to build up some coals for cooking. Cleaned the grayling and wrapped each in foil with chopped carrots, onions, garlic, and dill, salt + pepper then threw them on coals. Delicious fish! Schuyler already had one or two traps snap near camp and come back with a

2014

AGH

24.

beautiful specimen of Microtus xanthognathus (targa vole).
 So pleased to see one of these rarely caught voles.
 They are also semi-colonial meaning more around.

Everyone was tired so we sat for a while before
 bed at ~22:00. Sun was shining until after bedtime
 but it got cold over night and we woke to a light
 frost over everything, probably down to ~28-30°F.
 Clear and calm. Woke a few times to noises. Sounded
 like maybe something in the bushes and either really
 big fish jumping or beaver slapping in the river around
 02:30 am.

27 July 2014 - woke at 07:00 to a partly cloudy
 morning, though calm. Had coffee then checked traps,
 not as good a catch as I was hoping for. Had a
 breakfast of pancakes and then set up the lab and
 began to prep at ~10:00 (too late for my liking!). We
 switched people around so that Alfredo learned how
 to take data. Only one shrew but lots of parasites in
 it and in the red-backed voles. No parasites in the targa
 voles so far. -

Trapping Results: Site #2; E. of Nutnuvakti Lake; 27 July 2014

2AGH1: 1. Sorex coronatus, 1. Microtus oeconomus

2SWH1: 1. Microtus xanthognathus, 2. Myodes rutilus

2AJS1: 4. Myodes rutilus

2KRE1: 6. Myodes rutilus, 1. Microtus xanthognathus

TOTAL = 16 captures, DIVERSITY = 4 species

2014

AGH

25.

Finished prepping at ~13:00, had some food. then I sat to write notes and others went for some reading or napping in tents. The morning turned sunny and warm to ~70°F. Now at 17:00 it is mostly overcast with a light breeze but bright and cooler ~60°F. We will go to set traps soon. Schuyler and I will head across the river and the other two extending their lines behind camp.

The bank across the river supports a much different habitat than anywhere near camp. A mixture of boreal and tundra vegetation grows on top of permafrost 6-12 inches below surface. Tussocks of grass in the draining regions and Ledum and blueberries grow with big moss pillows amid smaller tussocks, dwarf birch and some willow, with sparse small spruce trees. Very slushy habitat! In the center of the area is a small boggy pond mostly grown in with grasses. To the south end is an inlet stream, I think its the mouth of the outlet from Nutwukti Lake to the east. On higher ground is lichen tundra with larger spruce forest. Heard a red squirrel in there. Wolf prints on the slumped bank we tied up at straight across from camp and a beaver skull. Schuyler set up 62 snaps along the pond and then back within the spruce forest on the north end. I set 100 pitfalls along the west end where spruce was thickest. We set from 18:30-20:00 then back to camp. Before setting we paddled up to a big eddy on the river-right above camp and fished. I caught 4 nice sized grayling within about 20 mins. for dinner. So easy!

2014

AGH

26.

We prepared the fish as last time except scaled them first and wrapped with garlic and butter and onion over the fire. Excellent. Also used the last apple cut up in foil with butter, honey, peanut butter, also delicious, and extra onion ~~and~~ and garlic roasted with apple peel in foil. These guys no how to cook which is gratifying. Bed by ~23:00

28 July 2014 - Woke at 07:00 and checked traps after coffee. Looked like a couple animals somehow escaped or were predated by something... Got lots of shrews though, particularly across the river. Prepped from 10:00 → 16:30, stopping for a brief lunch.

Trapping Results: Site #2: E. of Nutuvakti Lake; 28 July 2014

ZAGH 1: 7. Sorex cinereus 1. Microtus oeconomus
1. Myodes rutilus 1. Microtus xanthognathus

ZAGH 2: 10. Sorex cinereus, 1. Sorex hoyi

(one of two of these cinereus looked a bit like S. agnatus but too big...)

ZSWL 2: 1. Sorex cinereus, 1. Myodes rutilus

ZSWL 1: 1. Myodes rutilus 2. Microtus xanthognathus

ZSWL 3: 1. Lemmus trimucronatus, 2 Myodes rutilus

ZAIS 1: 2. Myodes rutilus 2. Microtus xanthognathus

ZAIS 2: 1. Myodes rutilus

ZAIS 3: 2. Myodes rutilus

ZKRE 1: 10. Myodes rutilus

TOTAL: 46 captures (+2 birds) DIVERSITY = 6 species

Also Schuyler found a great caribou skull (antlers across river).

2014

AGH

27.

After prepping Kevin went up to the eddy across river and caught 4 more fish. I repaired a hole in the self bailer spout of one of the grabbers with a patch as it was letting water into the boat. Worked ok I think... It was another nice day, up to 70°F in the sun but much cooler if the clouds rolled over. Not windy at all, some breeze sometimes to keep the bugs at bay. These are the worst mosquitos I've seen outside of Siberia... Bearable, though we are running low on DEET. The morning broke with more frost so we could walk around unharrassed for a short period then.

Fix Filleted the fish this time after scaling and Schuyler fried them over the fire in our cast iron 10 inch skillet with butter and a meat rub I made at home from scratch herbs. Had the fish with mac + cheese packets doctored with dried milk, butter, more cheese and tobasco. Great stuff again. Had a couple sips of Hornitos and then sat by the fire before an early night at ~21:00.

29 July 2014 :- Second last morning at this camp. Woke again at 07:00 to frost but quickly warmed since the sun was up. Clear skies and mostly calm, temperatures soared today to ~80°F, hot! We checked traps and prepped after a quick breakfast from 09:00 - 14:30. Kevin came back with a completely skeletonized vole he found on Schuyler's line from the day before. He found it near a small/med. sized hole. Ledged to me to be the work of a small weasel, maybe *Mustela nivalis*. We will set a few traps with vole skin tonight to try and get it...

Trapping Results: Site #2: E. of Nutwulki Lake; 29 July 2014

- 2AGH 2: 2. Sorex hoyi, 4. Sorex coronatus
 2. Myodes rutilus
 2AGH 1: 1. Myodes rutilus, 1. Microtus oeconomus
 2SWL 1: 2. Myodes rutilus, 3. Microtus xanthognathus
 2SWL 2: 2. Myodes rutilus.
 2SWL 3: 3. Myodes rutilus.
 2KRE 1: 1. Myodes rutilus
 2KRE 2: 2. Myodes rutilus
 2KRE 3: 4. Myodes rutilus
 2AJS 1: 2. Myodes rutilus
 2AJS 2: 3. Myodes rutilus

TOTAL = 32 captures (+2 birds) DIVERSITY = 5 species.

Great to get a Lemming yesterday over next to the pond. No more today, fewer shrews too. Also nice to have a decent sample of taiga voles. They seem to be much more diurnal than the other species with most captures during daytime hours. They are also really wimpy. I caught an adult in a 7 inch deep pitfall with no water in it. Their guts rip very easily too. Interestingly, they have had absolutely no parasites that I could find, although all the Myodes and shrews are packed with parasites. Much more in the Myodes than I am used to seeing. Alfredo also caught a taiga vole by walking up and stepping on it... An interesting species... Schuyler saw a red-tailed hawk (most likely) and a bald eagle across river. This afternoon we will go across to try and get a red squirrel and I will set the remaining ~40 pits pitfalls.

After prepping we ate some lunch then I sat to write notes and Schuyler and Kevin each took about across to the eddy to try and get fish. They are having a tough time of it today.. Lots of bites but no takers. We had to rearrange camp a bit. Too hot to leave all the food barrels out in the sun.

They brought back 3 fish and then Alfredo tried his hand with my fishing rod off the bank near camp and landed a great looking Arctic char (we think). A huge fish, probably > 5 lbs, closer to 10 lbs?! Caught on a small rainbow rooster-tail spinner. While I went to set the final 40 pits across river, Schuyler prepared all the fish. He grilled the char ^{filleted} on a wire mesh splint from our first aid kit with salt, pepper, garlic powder, ^{over the fire} and made the graying into a fish curry in a pot. Really delicious! The char was orangy colored meat and very fleshy, like monkfish/steak.

All traps were out and we were happy with hot sunny weather. Bugs come in waves so we have some respite through the day. They hang out in the willow at waterline... Tomorrow is our moving day so thoughts on procedure for pulling traps, packing, river etiquette etc before bed at $\sim 22:30$.

30 July 2014 - Up at 06:30 and coffee then collecting all the traps. Had another good catch so processing took a while. We forewent ectos, skin samples, and blood and focused on tissues and endos. Finished up at $\sim 15:00$ and then to packing. The night was cool

but not frosted as cloud come in and stayed with us for most of the day. Good to not have too much sun on the water. Packing went smoothly. Routine is coming together. People have had some time to practice boating skills too, but as we were to find out, not enough...

Trapping Results: Site #2: E. of Natuwukti Lake; 30 July 2014

- 2AGH1: 4. Sorex cinereus, 1. Myodes rutilus
 2AGH2: 1. Sorex monticolus, 6. Sorex cinereus
 2. Sorex hoyi, 5. Myodes rutilus
 2SWH2: 1. Sorex cinereus, 1. Lemmus trimucronatus
 6. Myodes rutilus
 2SWH1: 1. Microtus xanthognathus
 2KRE1: 1. Myodes rutilus
 2KRE2: 3. Myodes rutilus
 2KRE3: 5. Myodes rutilus
 2AJS3: 1. Myodes rutilus
 2AJS2: 1. Myodes rutilus
 2AJS1: 2. Myodes rutilus

TOTAL = 41 captures DIVERSITY = 6 species

Capture Totals: Site #2: E of Natuwukti Lake 26-30 July 2014

44. Sorex cinereus
 3. Microtus oeconomus TOTAL = 145
 11. Microtus xanthognathus captures
 79. Myodes rutilus DIVERSITY = 7 species
 5. Sorex hoyi
 2. Lemmus trimucronatus
 1. Sorex monticolus

Trapping Talies; Site #2: E. of Nutwukti Lake; 26-30 July 2014

$$68 \text{ pits} \times 4 \text{ nights} = 272$$

$$100 \text{ pits} \times 3 \text{ nights} = 300$$

$$40 \text{ pits} \times 1 \text{ night} = 40$$

$$120 \text{ snaps} \times 4 \text{ nights} = 480$$

$$142 \text{ snaps} \times 3 \text{ nights} = 426$$

$$\text{TOTAL} = \underline{\underline{1518}} \text{ trap nights.}$$

We pushed off the beach heading down river at ~16:30. Had ~23 miles to the next site and everyone was keen to just make the whole distance so we could spend the next day settling in and setting traps. The float was fair for the first 15 miles or so. 3 or 4 miles out of camp was a first set of very small rapids, barely more than a riffle with some rocks to avoid. Everyone managed it well and on we went. Wind at times hampering our momentum but we maintained 4-6 mph despite the breeze. The river is lower than Walker Lake dates but still running swiftly, higher than usual. Apparently 14 miles between the upper and lower rapids of the Lower Canyon.

Incidental Observations :- Another osprey on a nest on river left at 66.94357N, 154.42500W, 183m. Spotted a bald eagle at 66.93983N, 154.44543W, 183m, and two red-tailed hawks alarmed at us on river left (presumably a breeding pair) at 66.84042N, 154.63826W, 166m. Saw a large grizzly/brown bear swim across river to river-right ahead of us at 66.85038N, 154.64847W, 169m and what we thought was a black bear up river from that.

There were also a number of beaver as we travelled. Schuyler and I watched one in the river near our last camp and they have been ~~not~~ stopping the water each night, and as we passed them this day, particularly abundant below the lower rapids.

Big rapids - lower Kibuk Canyon: - I had read about these rapids from a 1974 NPS trip log and been told a bit about them from others but none of us were prepared for what lay ahead. The high water made for a big ride and tough to eddy out. The rapid began as a stout riffle, bigger than the first one of the day as we were coming into a big S-curve on the river, to the right initially. It looked easy and everyone was confident so we went for it. Not much time to think about it once you begin but a big cobble beach on the right, had we opted to pull off and scout. I really don't think that the main rapid to come was scoutable from this point but perhaps. Once we navigated the first riffle, we swept around a left bend to be faced (unknowingly till now) with the real rapid. Large, and definitely required a scout. Unfortunately the eddies on the right were very small, too tight for the two grabbers to reach with their skill level and just no time, plus Alfredo and Schuyler ~~both~~ had water in their boat making maneuvering much more difficult. Everything happened very quickly but as I remember it, you had to enter on top right, then cut over to left to hit the chute near the left wall. We did not manage.

Apparently there is also a ~~timber~~ boat-lining route on river-right but with a very tight walk-slot and I never saw it. Looked as if it might not even be possible to line without being in the river ^{at this water level}. Regardless, I asked if everyone was OK to go on, got the thumbs up, but I was nervous, ... plus I caught some slack water on top center, left of the main channel but Alfredo and Schuyler stayed in current so swept ahead and hit the first wave-train at a side angle right-to-left, first big wave pushed them high-side and over, flipping to the up-river side, right in front of me. Both had a hold of their canoe but, being at the top of the rapid still, I told them to grab my boat so I could steer them through. They held onto my left side. I took a bit of water here and no way to cut to the left chute. Instead we headed down the right side over some very large boulders and narrow chutes. Two more drops... No way to pull over. I got the two swimmers to the back of the boat so I could use the oars. Knocked Alfredo with oar a couple times. Told them to keep legs up and hold on!! at each major drop. Took the first one straight on, so far so good except for legs hitting rocks. The bottom drop was a large boulder on right followed by a huge one on left with water spilling over. I only just managed to turn the boat straight over right rock or Alfredo would have been worse off, as it was he got pressed against. Then we poured over the left one OK but again dragging bodies...

2014

AGH

35.

Thankfully everybody made it without serious injury, and I managed to keep the boat straight and upright. A tough run and a big rapid! After the last drop I looked back again (I'd been watching Kevin behind in glimpses. He was fine to the last boulder. He followed me over it too far to left and hung up on top for ~~25 mins.~~ ~~trying~~ a couple minutes, lining up for the plunge; came off, hit the hole and flipped too! I told the other two to relax, and that Kevin was in too, then tried to assess what to do. I saw a boat floating away below and lots of gear floating by. I was heavy with water, decided to try and get floaters to shore. Locked upstream to see that Kevin had crawled out onto a big rock shelf in the middle of the rapid. I got near shore on river right until Alfredo and Schuyler could swim to shore and then went to retrieve Kevin's boat and two paddles and a bear canister. Then pulled over. Schuyler took Kevin's boat and the two of them righted it and bailed his and my boats as good as possible. I took the sat phone and spot, checked to make sure they were ok (checked for cuts/bruises/clear mind) then walked back up river to look for Kevin. He was being mobbed by seagulls on the rock... I signaled to swim to river right. Luckily he was below the main rapid so only some rattle to deal with. Once he was in and all were accounted for I made a call to Denali dispatch to report our condition. It was probably ~ 22:00. but still plenty of light.

I told them we were short a boat and gear but all well and asked what the procedure was for this. They said to regroup and they would call Melanie. I told them we would load what we had and get to a better bank on river - left then call back and call Melanie once we had a rough inventory of missing items. Dispatch did not seem too concerned and I was calm enough, at least outwardly -- so we followed through to the other side.

Kevin's clothes were mostly dry. We spotted one of my black bags I lent to him on the bank so retrieved his clothes. The others had lost their stuff with the boat. I gave them ~~my~~ clothes from my bag to change into and get warm and dry. I reported to dispatch our location and disposition, then called Melanie. She was fine and suggested we find a place to camp and regroup and let the adrenalin wear off. Then see what needs done the next day. Luckily we still had most of the kitchen and only had ~~missing~~ bear barrels of food plus the other boat, a kayak paddle, all the pitfalls and prep tent, Alfredo's backpack of toiletries etc., and some other small misc. gear.

Considering we were only a couple miles from our next camp, we decided to head down and sitate and look for lost gear on the way. We headed down with Schuyler in my boat on bowtowers scanning the banks and eddys. He spotted the bag with pitfalls and prep tent to my great delight. I had all the rest of the science equipment on my boat so now we

had everything to continue with the work! I was not hopeful for recovering the pits as they were in a cloth bag and with only a little air between stacked cups. Had they stayed in the main flow they would have sunk, and our major shrew catching equipment gone... A huge relief... Also near them in the same eddy was the staples bear can so now all of the kitchen equipment. We split up the two boats at all the river braids to canvas the whole river and eventually found the lost boat washed up on a bank in a minor braid on river-right. The biggest relief of all!

Clothes bags were still strapped on but all was wet (I taught them to always thread straps through all bags, but didn't show them to check they knew how to properly close dry bags --). Now only hoping for dry weather to dry everything out though it was overcast and threatening rain...

We continued down-river to camp on river-left but there was no good place to stage a camp and the site was an old burn area with masses of tumbled trees. Would have been a hellish site to run so we stopped on an island gravel bar downstream for the night and regrouped, setting stuff out to dry. Everyone had enough clothes and a tent to suffer through one night! I called dispatch and sent a 'spot' alert then we went to bed at ~ 01:30, exhausted.

31 July 2014 - Woke at ~ 08:00. Everyone seemed OK if not still tired and a bit depressed at our prospects...

2014.

AGH

38.

We headed down river looking for the first good gravel or sand-bar to set up camp and run our site. Not many options. The night before was cool, maybe down to $\sim 40^{\circ}\text{F}$ and overcast but not rainy. Same weather most of the day with rain showers over hills to the north. Not encouraging. I did not manage my bank photos each mile through this stretch although have managed a good series up to our rapid adventure. About ~~80~~ 45 miles down river from the portage below Walker Lake we pulled in to a large gravel bar on river-left and set up camp, arriving at $\sim 13:00$.

★ Site # 3: USA: AK: Gates of the Arctic NP.; 0.5 mi. W. confluence of Reed River on Kobuk River; 66.81572N, 154.97713 W, 130m. 31 July - 4 August 2014.

I called Melanie to let her know our condition and dispatch to report our location. We unpacked our personal gear and the kitchen stuff and got tents up just as light rain started. Then had some food. Luckily the rain quit so everyone set out their wet gear ~~on~~ to dry. All then went to tents to take a nap. I stayed up instead to put the camp together. Set up water filter, collected wood for fire organized stuff went fishing (caught 5 nice grayling though not as easy fishing here) and then went to scout the site. No bear sign but wolf tracks next to camp in mud. The gravel bar is separated from the main river bank by a shallow narrow moat of water. The bank consists of a thick zone (maybe 50m deep) of cottonwood and

alder and willow. Difficult to push through but nice-looking habitat. This was followed inward by another ditch then a zone of mossy spruce forest with dwarf birch, Ledum, and other tundra type plants. Further inward and the spruce gave way to a large pond of grasses and willow. So three major habitat types to set traps in. Vole runways here and there though not as abundant as the previous site. Red squirrels chirping in the spruce.

I returned to camp and cleaned the fish and chopped some carrots, garlic to sautee in olive oil. Once a fire was burned down to coals and veggies were on the skillet Schuyler was up and I called for the others to come and eat, around 18:30.

Everyone was better after a rest. I decided that we would not set traps this evening. Alfredo was still a bit out of sorts and had a bunch of wet gear. It was still cloudy and buggy and all were still a bit shell-shocked. Turns out that Schuyler had a bad knock on the hip he didn't even remember getting. - Anyway we had a good hot dinner and I basically said we'd take it easy tonight, sleep well and hit the trapping hard tomorrow after a sleep-in. Made our check-ins and headed to bed at ~21:30.

1 August 2014 - I was up at ~08:30 and made some coffee. We were short on coffee. Lost 2 lbs in the ~~be~~ missing bear cans, plus most of the tea. Still enough for some caffeine, till the resupply. Everyone was further improved and though the morning was dreary,

it felt like low cloud and fog. I predicted it would burn off by 11:00. Turned out 13:00 was the ticket after which sun and breeze (perfect combo for drying everything) for the rest of the day. At ~10:30 we filled our bags with traps and all headed out together so I could show the different zones. Very wet and buggy but by now we're all used to dealing with it so no problem. Alfredo set a line of 90 traps in the cottonwood riparian near the river, Schuyler set a line through the spruce and along the grassy pond (50 traps) and a further line of 30 snaps along the verge of cottonwood and spruce zones heading west. Kevin set a similar set of two lines further east (90 snaps total), and I set two lines of pit falls. The first was 112 pits along the verge of the cottonwood and spruce zones and the second was 96 pits along the verge of the spruce and willow pond zones. A good canvassing of the site in general. Looked productive. I was slow on my pits. Finished the first line around 12:30 and then took a break dead tired, then set the second line from 15:30 till almost 18:00. Felt good to get almost all the traps on the ground and get everybody back into the groove. The good afternoon weather picked everyone up and after assessing all our gear, found that if things remained fair (weather-wise) we'd be fine till the mid-point. Alfredo was worst off without saline for contact lenses, toothbrush, toiletries in general... He's upbeat though and I helped out where I could. He went fishing but struck out. Kevin came back with

2014

AGH.

41.

2 big gaying from the same spot I was fishing the previous day. Schuyler went out with the 12ga. and shot a red squirrel while I was out setting my second line. He had it processed with tissues, blood ~~as~~, skin and skull for vouchers and the body prepared for dinner. He cooked the squirrel in a skillet with meat rub (my home recipe of mixed spices), a bullion cube and garlic + oil and then gravied it for a while over the fire before adding the two fish which I filleted and joined it with a couple rice packets for dinner. Not much ~~meat~~ on the squirrel but we all savored the red meat! All went to bed at ~ 22:00 feeling better all round.

2 August 2014 - Woke at 07:00 to the same dense still fog, so chances were good it would clear again. Good to have the cool morning to keep all specimens fresh. Turns out the wet overcast weather produced a ~~big~~ plethora of shrews. Over 20% success on pitfall traps! Highest I've had in a long while. A lot of these ~~the~~ shrews were quite tri-colored in their pelage, but big. Not big enough for S. tundrensis and relatively longer tails, but quite different than the majority of clear S. cinereus. Looked very like S. ugnunak, but too big. Will be interesting to do some molecular work on these guys... Also caught a couple wood frogs (Rana sylvatica) and Kevin collected 5 too. I kept 5 smallest specimens for freeze-tolerance research and (mEtoH) and let the larger ones go. Equally surprisingly low numbers of

AGH

voles, all Myodes rutilus, and but our catch still equated to a long day of prepping. We had set up all the prep-stations the evening before so after a bite to eat, we started.

Trapping Results: Site # 3: W. Reed River, 2 August 2014

- SWL: 1. Tamiasciurus hudsonicus
 3AGH2: 15. Sorex cinereus, 4. Sorex ugyunak
 1. Sorex hoyi
 3AGH1: 15. Sorex cinereus, 5. Sorex ugyunak
 2. Sorex hoyi
 3SWL1: 2. Sorex cinereus, 7. Myodes rutilus
 3SWL2: 5. Myodes rutilus
 3KREZ: 1. Sorex cinereus, 3. Myodes rutilus
 3KRE1: 3. Myodes rutilus
 3AJS2: 2. Myodes rutilus
 3AJS1: 2. Myodes rutilus.

TOTAL = 68 captures (+ 1 bird [pipit]) DIVERSITY = 5 species
 (+ 5 Rana sylvestris)

Prepped from ~ 09:30 → 17:00. Afterwards I sat to write notes for a while. Alfredo went out to fish and caught a single big grayling. I shared it with him for dinner but everyone had a very late lunch so we kinda did our own thing. Everyone checked their snap traps in the evening, being such a hot day so as to prep any animals before they rotted. Just one shrew although we heard traps going off. Lots of birds around including gray jays. Sat up till ~ 22:00 then bed. A beautiful evening!

AGH

3 August 2014: - Woke at 07:00 to a clear sunny morning so had some coffee and got to work. Much less today. Wonder if the lack of a foggy morning made a difference... Prepped from 09:30 → 13:00. Hot today ~80°F, slight breeze from the east but just sweaty... Finished up and after lunch I went for a swim and a much needed bath. Washed all my dirty clothes. Others also washed clothes and we hung out for the first time in shorts and sandals! Very few bugs and those around are no bother. River was cold but refreshing.

After our cleanse, I sat to write notes up to date and the other three sorted our remaining food. I think we'll have plenty, particularly if we keep fishing. Alfredo caught another fish and Schuyler cooked up a Thai noodle peanut coconut milk dinner with canned chicken and fried fish on the side at 18:30. I'm now finishing notes before bed.

Trapping Results: Site # 3: W. of Reed River; 3 August 2014

3AGH2: 6. Sorex cinereus, 1. Sorex hoyi.

3AGH1: 6. Sorex cinereus

SWL: 1. Tamiasciurus hudsonicus

3SWL1: 1. Sorex cinereus, 1. Lemmus trimucronatus
5. Myodes rutilus

3SWL2: 2. Myodes rutilus

3AJS2: 1. Myodes rutilus

3KRE1: 2. Myodes rutilus

TOTAL: 26 captures, DIVERSITY = 5 species

2014

AGH

45.

4 August 2014 - Woke at 07:00. Partly cloudy but looked like a good day to come. I was glad for cloud to keep the animals cool. We collected all our traps and then processed after some breakfast. A pretty good catch for the last day.

Trapping Results: Site #3: W. of Reed River; 4 August 2014

3AGH 1: 2. "Sorex uggianale", 4. Sorex cinereus

3AGH 2: 2. Sorex cinereus. 2. Myodes rutilus

3SWL 2: 1. Sorex cinereus, ~~1. Lemmus trimucronatus~~

3SWL 1: 4. Myodes rutilus

3SWL (SG): 2. Tamiasciurus hudsonicus

3KRE 1: 1. Myodes rutilus

3AJS 1: 4. Myodes rutilus

TOTAL = 22 captures, DIVERSITY = 4 species.

Capture Tallies: Site #3: W. of Reed River; 31 July - 4 Aug. 2014

4. Tamiasciurus hudsonicus

53. Sorex cinereus

11. "Sorex uggianale"

4. Sorex hoyi

43. Myodes rutilus

1. Lemmus trimucronatus

TOTAL = 116 captures, DIVERSITY = 6 species

We finished prepping and then packed up camp. Pretty swift work. Done processing at ~13:00 and out of camp on the water by 14:20. We aimed to get down river at least 25 miles that day so rowed on. Made good time for the first 15 miles. Bright and sunny.

Capt. Trapping Tallies: Site #3: W. of Reed River, 31 Jul - 4 Aug 2014

AGH	208 pits x 3	=	624
AJS	90 snaps x 3	=	270
KRE	90 snaps x 3	=	270
SWL	80 snaps x 3	=	240
Shotgun (SWL) *		=	4

TOTAL = 1408 trap nights

Lots of small braids on this section of river. Good practise choosing the best route for later, but I have a good GPS unit with topos so I could follow our route. Also have all the quad maps in case. ~ River was easy riding. A few rocks to avoid. Flowing pretty fast, sometimes 5mph without rowing. Varied from 3-7 mph. After we travelled 25 miles we looked around for a good camp spot for the night. Found a gravel bar with few willow and some sandy spots for tents after about 1.5 extra miles on river-right. Called dispatch to report our co-ordinates. (66.75877°N, 155.58417W, 96m). Had an easy meal of pasta packets before bed. Arrived around 20:30 and bed by 22:30. Lots of sun so tired..

5 Aug. 2014 - Woke at 07:30, had some tea then packed up and headed down river by 09:00 after our call-in. Turned out we had another 16 mi. left to our next site. Longer than I anticipated but still easy enough. I thought there might be a small side channel on river-left that would take us into the Pah River above the mouth but it looked to be mostly slack water

2014

AGH.

47.

and not worth risking getting stuck.. So we headed down to the mouth and paddled upstream to the first gravel bar on the right (river-left of the Pah). Tough paddling so we lined the boats for some of it. Not bad though. The Pah is coppery red colored but clear. Lots of algae on the banks and in the water too. Ok tasting but a bit tougher to filter.

Anyway, arrived at ~12:30 and set about unpacking and making camp.

* Site #4: USA: AK: Mouth of Pah River; 66.76727°N
156.05196°W, 88 m. 5-9 August 2014.

The day was clear, hot and sunny, up to 80+°F. Not much wind. Not a great spot for tents but we leveled some spots and it's fine. Cobble mostly. I decided to wait till early evening to set traps so that any captures were not sitting in hot sun. So we spent time collecting wood (Schuyler and I took a canoe up to the next beach across river and filled it with drift wood), fishing (Kevin caught a grayling near camp on the Pah and fished a big back-eddy behind camp where he found pike, collected 2 small ones), and scouting the habitat. Schuyler and I walked back behind camp (to the west). The cobble bar at camp backs against a cut-bank topped by good tussock tundra habitat growing on permafrost with only sparse spruce. Lots of blueberry, ledum, mossy pillows, shrub birch. Looked good for shrews. Behind this further west is a small pond depression with reddy

grasses. Generally wet though with high enough areas for pitfalls. To the southwest is a larger pond surrounded by aquatic grasses with bog cotton and then a thick band of tall-grass habitat planted by willow. This transitions back into tundra with very thick and high dwarf birch and berry bushes. Tough walking. Lots of grass clippings in runways among the tall-grass. Rodents here for sure. Found a bird pellet at camp with lots of *Myodes* and shrew jawbones in it. Kept that as a voucher.

Incidental observations between sites #3 + #4.

Lots of osprey along the river corridor. First was at 66.79080 N, 155.13187 W with another just down river carrying nesting material (sticks) at 66.79060 N, 155.13821 W. Then another just down river at 66.78378 N, 155.14125 W. All on the wing. Saw another flying at 66.75753 N, 155.51649 W. Kevin saw a large wolf on the bank of river right at 66.77194 N, 155.67563 W. Then we saw another osprey flying across river with a fish at 66.76924 N, 155.70644 W. Four miles further downriver we saw a flying osprey, peregrine and bald eagle, all at 66.77380 N, 155.84691 W. Another mile down on river-left we saw a well established osprey nest with a bird on top at 66.77548 N, 155.87805 W. Another bald eagle at 66.77667 N, 155.91766 W. While we were collecting wood on the beach of the Park river-right across from camp, Schuyler spotted multiple river otter tracks and a latrine station with lots of scat. Recent.

Mosquitos not too bad here. I think we're all much more used to them now. But white-sox and midges here too which are a pain. We spent some time swimming. Felt good to be in shorts and sandals w/out shirts!!

At ~18:00 we called dispatch, then went to set traps. I put a line of 80 pitfalls weaving through the tussock tundra shrub tundra just west of camp. Each of the others set snaps radiating outward through spruce and tundra. 90 for each for Alfredo and Kevin. Schuyler set out 50 towards the larger pond and aimed to set his other 30 around it but spotted some brown bear scat there and headed back, which was wise. He set his other 30 nearer camp the next day. Turns out there is brown bear and moose sign all round the lake and elsewhere though we have still ~~seen no sign~~ not seen them.

Had dinner of fish chunks in pasta packets, thickened with some instant potatoes. Good stuff. Went to bed still ~~stuffed~~ hot at 22:00.

6 August 2014 - Up at 07:00 and out to check traps. Woke to a clear and sunny morning which would quickly warm up again, so we got to processing asap. Not a huge catch. All either red-backed voles or cinereus shrews. Finished up by ~13:30 then lunch. Afterwards Schuyler went to set his remaining traps along the bank south of camp in tundra/spruce and then went to meet Kevin up at a small shack he had spotted yesterday on a small hill looking south from camp. Turned out to be a small and weathered structure. in bad

AGIT

repair. As best I could guess from their description, it is a fish smoking/drying hut, but I never went. Instead I set another line of 96 pitfalls, mostly as an extension of my first line, heading south. I left 2 sleeves of 16 pitfalls for Alfredo to set later that evening, as he was interested to have a try. He helped me with a few the previous evening. He went out after dinner (~~~20:30~~) to (~19:30-21:00) to set. Took a long time, but I stayed up until he was back, and he wasn't far off. I set mine up from ~15:30-17:45.

Trapping Results: Site #4: Pah River; 6 August 2014

4AGIT: 7. Sorex cinereus, 2. Myodes rutilus

4SWL1: 1. Sorex cinereus, 4. Myodes rutilus

4AIS1: 9. Myodes rutilus ~~11. Myodes~~

4KRE1: 11. Myodes rutilus

TOTAL = 29 captures, DIVERSITY = 2 species

Schuyler got a grayling south of camp along the bank where the water is deeper and not too fast. Kevin caught a medium sized pike in the back-eddy. He's trying for a big one that won't swallow the hook... But plenty to accompany our dinner of rice packets and blackened fish fillets with meat rub. We're pretty low on food since we lost a ~~some~~ bunch at the rapids. Should have plenty but all the comfort stuff is gone. (granola, coffee, whiskey, gorp, snacks, breakfast stuff, etc.) We'll be fine for a few more days though... I wrote a few notes in the evening but it was hot (80's) (maybe even 90's) and we were all exhausted. Bed at 21:30.