

Journal

Andrew G. Hope¹

CAN: Manitoba: Winnipeg (base); 14 July - 14 Aug 2019.

Crew: Andrew G. Hope (A)

Fraser Combe (2 wks.) (F) (post-doc)

Ben Wiens (new MS student) (B)

Litsa Wooten (K-state U.S.) (L)

Tommy Herrera (K-state U.S.) (T)

Robert Wrigley (curator emeritus U. of Manitoba)

Purpose: This field work constitutes prelim. data collection for long term sampling across the Great Plains/Eastern (Deciduous) forest ecotone from north to south across N. Am. Hopefully will gain additional funding to sample multiple month-long transects including ND/SB, NE/IA, KS/MO, OK/AR, etc. The main purpose is to collect samples of small mammals and parasites to investigate community interactions (from an evolutionary ecology perspective) across the ecotone, including hybridization dynamics, parasite spread, biodiversity, disease ecology, all under the perspective of global change. My conceptual framework is that the Great Plains are a biological filter for forest biodiversity in eastern and western ~~the~~ N. Am. As anthropogenic disturbance ag., development, etc. fragment native prairies, the filter becomes more permeable to woodland species and the overlap/interactions between communities increases in intensity. (Very brief outline...)

Preamble: T+L did most of the gear prep work with me before the trip. Getting tubes labeled, organizing supplies etc. Did a great job. We met on Saturday 13 July at 9am to pack the truck. Packed all field gear with room to spare for personal stuff. Took 1 hr. I drove home and worked on my gear and other loose ends.

Sunday 14 July 2019 - Woke @ 07:00 and after coffee headed into town. Met Fraser and Ben at K-State campus, packed their personal gear and went to pick up T+L then headed ~~to~~ north. Was ~700 miles to north of ND. ~~Fraser~~ Fraser drove his SUV w/ Ben as passenger. We made good time overall. Arrived at Icelandic State Park to camp for evening @ 20:30 (located just west of Cavalier, ND.) Kind of expensive to camp and only 1 vehicle per site and could not choose sites... Cost ~\$60 for all of us.. But, it was comfortable. Had some dinner and went to sleep.

Monday 15 July 2019 - Woke @ 07:30. Packed up and headed to the border crossing, arriving at customs @ 09:30. Customs officer gave us a hard time about having a few beers with us and going to do science... Also looked like he was having a ~~comiptron~~ ^{comiptron} at mention of my two firearms (10 ga. + .410 shotguns) so we pulled over and went into customs office. Mostly empty but they made us wait 45 mins. then called us up. Did background checks, made phone calls, copied all our documents etc., interrogated us.. I had permits for everything and contacts so they eventually issued us all 30 day visas and we were through. (\$25 For firearms declaration). Much more hassle than I have ever experienced before. Drove 1 hr. north to Winnipeg and arrived at Bob Wogleys house at ~13:00. (took 2.5 hrs to clear customs!) Bob Wogley and Arlene Dahl welcomed us in and provided us a very comfortable home for the evening. Bob and I drove to meet Bill Watkins at Manitoba Sustainable Development (previously wildlife conservation) to talk about permits and sites and specimens etc. Bill was very friendly and helpful, just wanted

Andrew G. Hope

me to stay clear of fur bearers since Duck Mtn. Prov. Park had a bunch of trapper lines set out. We then returned to Bob's house, picked up others and went to buy food supplies. Went to Costco, then SuperSave, and we got most of our stuff. Then back to Bob's house (505 Borcham Blvd., Winnipeg). He had ordered us pizza and so we all ate w/ beers. He also invited Dr. Terry to join us, who is an expert (retired) parasitologist, specializing in ticks and now lice. We had great conversation about methods, biodiversity and stories of field work. My crew then went to pack all the food supplies (see my notes for Arctic NWR Inuitik/Chandalar trip July 2017 for detailed food/supplies lists that we followed again for this trip) while I sat w/ Terry and Bob and discussed details of our prospective field sites and contacts for this trip. We finished up by ~ 21:00 and then went to bed by ~ 23:00.

Tuesday 16 July 2019 - Woke at 07:00. Bob made us a pot of porridge w/ berries and grains for breakfast. He called Tim Guelph for details of the Nature Conservancy of Canada Ft. Ellice property and how to get there, where to stay etc. I called Tim later that day to go over details myself. We then packed everything up and left. Bob stayed but will join us later in our field efforts. We stopped at Walmart for some final stuff, at a beer place for refreshments, then hit the road. Headed west on Hwy 1. until the Yellowhead Hwy 16 @ Portage la Prairie. Then NW ~~to~~ and through Riding Mt. Nat. Park (didn't need to pay to drive through) then W to Grandview then north on 366 through Duck Mtn. Prov. Forest to D.M.P. Park. (Saw a young black bear in DMPP off of 366. We left Winnipeg)

Journal

4.

Andrew G. Hope

@ 11:00 and arrived @ Blue Lakes campground @ 17:00 after searching around for a free camp in the Prov. Forest. Didn't find anything good so decided to use the campground. Pretty busy and pretty expensive (\$20/night) but ok. Problem was that we arrived late so could not lock down a site so the ones we chose turned out to be booked so we had to move the next day. Lesson: reserve a camp space or arrive earlier than 4 pm!

★ Site #1A: CAN: Manitoba; Duck Mtn. Provincial Park;
Blue Lakes Campground; 51.60729°N, -100.91779°W, 689m
16-20 July 2019.

We unpacked at our campsite (#23/24) and set up camp. A nice place near East Blue Lake. Lake water was surprisingly warm! Good evening weather warm (70's °F) and dry. We then each set 30 traps around camp. Lots of red squirrels so we set some rat traps too. Camp was settled in a young mature spruce forest with good undercover of willow, some birch, lots of hazel and other shrubs. I arranged camp and cooked dinner of mac n cheese with onion and pepper with a can of tuna. We ate and then went to bed @ ~23:00.

Wed. 17 July 2019 - woke @ 07:00. Rained overnight and our prep tent had windows open so lots of water but no gear wet. Lots of kitchen stuff wet. Great start! Rain on and off through the day. Caught only 6 animals out of ~150 traps so I was a bit worried about numbers but Tommy got a red squirrel in a rat trap and T+L's line caught a *Zapus* in high grass down near the lake on forest edge. Others were red-backed voles. My trap line was down on

Journal

5.

Andrew G. Hope

waters edge in dead aspen and gravel. Fraser and Ben
set up in spruce woods. T+L set up in woods, and
forest edge near both lake and campground.

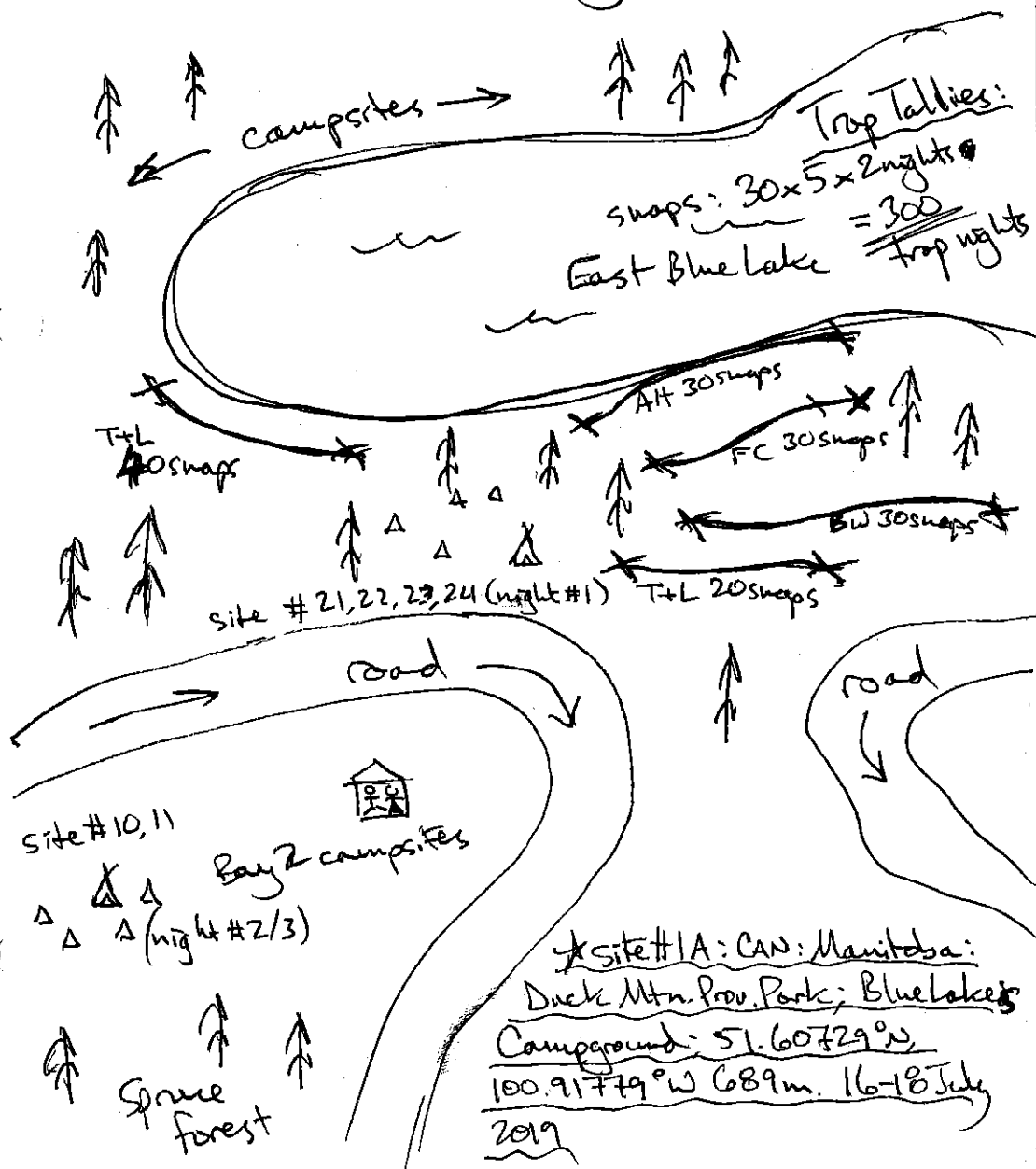
Trapping Results: Site # 1A: 17 July 2019; Blue Lake C.G.

1. *Zapus hudsonius*

3. *Myodes gapperi*

1. *Tamiasciurus hudsonicus*

-TOTAL = 5 captures, Diversity = 3 species



We set up the prep tent and processed the few specimens. Then I went down to the front office at 11:00 and discovered we needed to move camp so we ate some lunch and then packed up and moved all our stuff and reset camp at sites #10/11. It was raining on and off so our stuff was damp but we had a break in rain to move at least.

Once we were situated we headed out to some sites scouted day before south on 366 which were open wetland areas dominated by beaver dam pools and natural ponds.

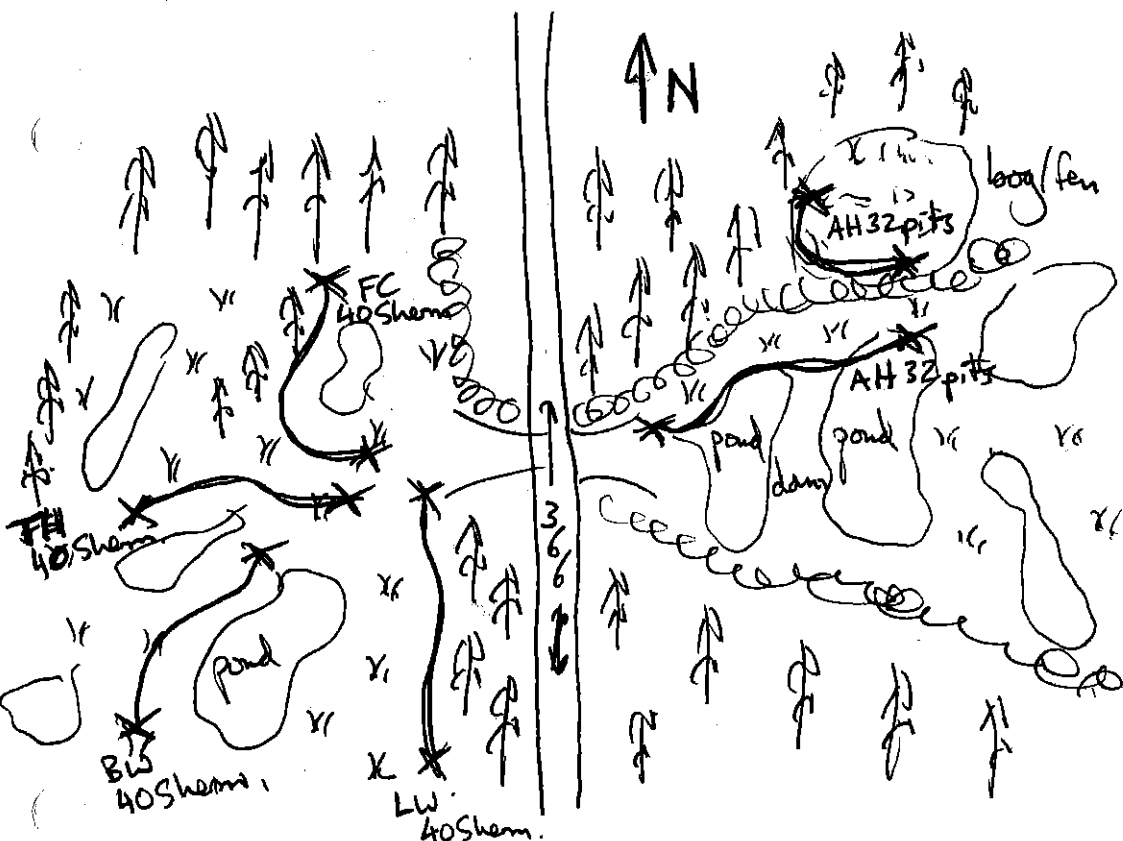
* Site 1B: CAN: Manitoba: Duck Mtn. Prov. Park; 2 mi. S.
Singush Jct. on 366; 51.56324°N, 100.84172°W, 676m.
17-20 July 2019.

This was a good looking site with big beaver dam ponds on both sides of the road (west and east). The west side was highly developed as a wet meadow system with good forest edge and bog/fen. T, L, F, B all set 40 snaps in this area. On the east side of road was a more post-flooded drained beaver system with muddy high grass meadow and a dry bank of wild rose and Portbs. To the north was a patch of very diverse spruce forest with good age structure and great undergrowth. Beyond that was a wet fen of thick moss, reeds, old downed rotten trees, very diverse plant community. Excellent shrew habitat! I set 32 pits in open beaver system and 32 pits in closed bog/fen. We set from 15:00-17:00 in between rain showers. Then headed north on 366 1.6 mi. to another open meadow on east side of road. Found a 2-track leading to a high dry "alpine" type meadow with willow thickets, next to a huge old filled in lake with tussock grasses.

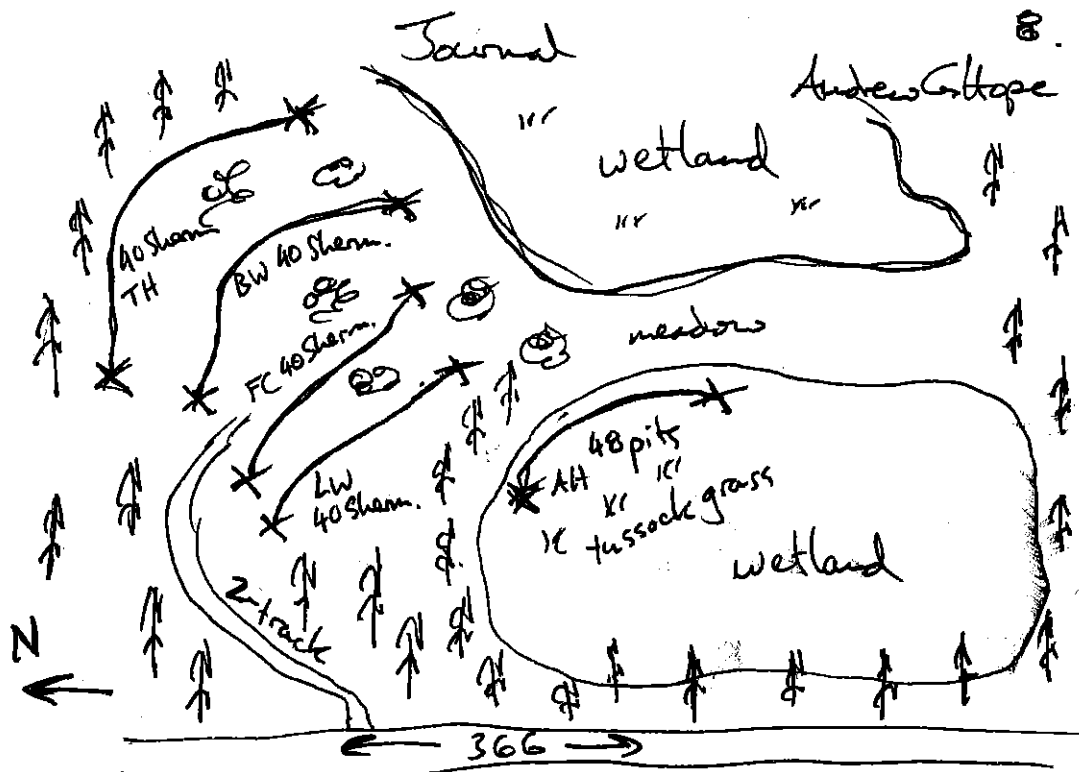
Andrew G. Hope

* Site 1C: CAN: Manitoba; Duck Mtn. Prov. Park; 0.4 mi. S
Singush Jct. on 366; 51.58308°N, 100.85122°W, 679m.
17-20 July 2019.

This was a great looking site because it resembled more a high prairie and wetlands and I hoped for some prairie spp. I set up 48 pits in the tussock grass of the filled wet lake and others each set 40 Shermans in the short grass meadow that had a good amount of rodent sign (past winter moss digging). Finished setting by ~18:30 then back to camp. Checked and reset our camp lines. Had dinner of pasta packets w/ pepper and onion and bed by 22:00!



* Site #1B: CAN: Manitoba: Duck Mtn. Prov. Park; 2 mi. S,
Singush Jct. on 366; 51.56324°N, 100.84172°W, 676m
17-20 July 2019.



* Site 1C: CAN: Manitoba;
 Duck Mtn Prov. Park; 0.4 mi. S.
 Singush Jct. on 366; 51°58'30" N, 100°05'12" W 679m
 17-20 July 2019

18 July 2019 - Woke @ 07:00, coffee, then checked and pulled all traps at the campground. A couple squirrels, and red-backed voles. Then left to check other lines. Lots of success at site 1B! Lots of *Zapus*, a few shrews and a big lemming plus lots of meadow voles.

Trapping Results Site #1A: 18 July 2019; Blue Lake CA.

- 2. *Microtus pennsylvanicus*
- 5. *Myodes gapperi*
- 1. *Zapus hudsonius*
- 2. *Tamiasciurus hudsonicus*

TOTAL = 10 captures Diversity = 4 species

Very few captures at the open dry meadow but some shrews and voles on my pitfalls...

Trapping Results: Site 1B: 18 July 2019; 2 mi. S. Singush.

25. *Microtus pennsylvanicus*

7. *Zapus hudsonius*

5. *Myodes gapperi*

1. *Sorex monticolus*

2. *Sorex cinereus*

2. *Blarina brevicauda*

1. *Synaptomys borealis*

1. *Tamias minimus*

TOTAL = 44 captures Diversity = 8 species

Trapping Results: Site 1C: 18 July 2019; 0.4 mi S. Singush

3. *Sorex hoyi*

2. *Sorex cinereus*

1. *Myodes gapperi*

TOTAL = 6 captures Diversity = 3 species

Headed back to process animals. Had some more breakfast then processing by ~10:00. Traged some specimens while into EEOH (~12) including some shrews and then processed until pretty late afternoon. Stopped for lunch. Weather was hot and sunny mixed with cool and thunderstorms all day. On and off... Tried to dry stuff out best we could. Finished processing by ~19:00 then dinner of pasta packets and then bed by 22:00. Rained hard again overnight. Lots of rain!! Cool temps, down to ~50°F.

19 July 2019 (Friday) - Woke @ 07:00. coffee, breakfast, then off to check traps. Cool morning and clear/sunny but very wet ground/grass. Very pleasant checking traps. Started dead calm but got windy during the day. Many traps set off by overnight rain. Fraser trap line was walked by a black bear with scats and all traps set off. My pits caught some, but

Andrew G. Hope

many pits also flooded. Returned to camp by 10:00 and processed shrews first. Lots of ~~helminths~~ helminths and good quality today! Dunked a few specimens in EtOH then processed the rest, finishing at ~14:30. Lots of rotten specimens unfortunately caught in sunny weather day before, so no good skin samples. We packed everything up pretty efficiently and left camp for a final night of camping south of the provincial park c.g. We dumped some of our stuff, then drove to the Baldy Mtn. (the highest point in Manitoba) to experience that. Climbed the lookout tower and then hiked the 3 km. loop down to beaver lake which was a fun little trek. Then headed back to camp and I cooked up a frito pie dinner (hormel chile w/ my home canned venison, black beans, fritos, cheese, and my fermented red chile paste, great stuff!!). After dinner I gave a demo. of gopher trapping since there were some mounds about and then we all set ~10 gopher traps in about camp. Then I sat to write notes. All else went to bed. Another day of on and off rain showers mixed w/ sun. Pretty good over all. Folks are handling the constant wet pretty well. Some sun helps a lot!

Trapping Results: Site 1B: 19 July 2019; 2 mi. S. Singush

1. *Sorex monticola*
3. *Sorex cinereus*
14. *Microtus pennsylvanicus*
2. *Myodes gapperi*
3. *Zapus hudsonius*

TOTAL = 23 captures Diversity = 5 species

We washed up after gopher trapping in an enormous wetland near (East of...) site 1C. Amazing place and a great place to experience and hang out.

Journal

11.

Andrew G. Hope

Trapping Results: Site 1C: 19 July 2019; 0.4 mi. S. Singush

1. *Sorex cinereus*
2. *Sorex arcticus*
2. *Myodes gapperi*
4. *Microtus pennsylvanicus*

TOTAL = 9 captures Diversity = 4 species

20 July 2019 - Woke @ 07:00, clear early but very heavy dew. Packed up our tents and packed into trucks all personal gear. Then coffee, a bite to eat, then went to check and pull all traps. Rain as we headed out and very wet collecting traps. But another big day.

Trapping Results: Site 1B: 20 July 2019; 2 mi. S. Singush

5. *Sorex cinereus*
6. *Sorex monticolus*
2. *Sorex hoyi*
11. *Zapus hudsonius*
22. *Microtus pennsylvanicus*
1. *Synaptomys borealis*
1. *Myodes gapperi*

TOTAL = 48 captures Diversity = 7 species

Trapping Results: Site 1C: 20 July 2019; 0.4 mi. S. Singush

1. *Microtus pennsylvanicus*
5. *Myodes gapperi*
2. *Thomomys talpoides*
1. *Tamias minimus*
3. *Zapus hudsonius*

TOTAL = 12 captures Diversity = 5 species

Rain continued on and off all morning and afternoon. But warm @ 60°F and some sun while processing. Processed until ~ 16:00, packed everything up and then drove out for site #2...

Trapping Tallies: Site # 1A: Blue Lake Campground
16-18 July 2019

Snaps: $(25 \times 2) \times 2, (30 \times 3) \times 2 = \underline{280}$ trap nights.

Site # 1B: 2 mi. S. Singush Jct.; 17-20 July 2019.

Snaps: $(40 \times 4) \times 3$; pits: $(64 \times 3) = 480 + 192 = \underline{672}$

Site # 1C: 0.4 mi. S. Singush Jct.; 17-20 July 2019

Shermans: $(40 \times 4) \times 3$; pits: (48×3) ; gopher (9×1)
 $= 480 + 144 + 9 = \underline{633}$

TOTAL = 1585 trap nights



Capture Tallies: Site # 1; Duck Mtn. Prov. Park.

26. *Zapus hudsonius*

24. *Myodes gapperi*

3. *Tamiasciurus hudsonicus*

68. *Microtus pennsylvanicus*

2. *Synaptomys borealis*

2. *Tamias minimus*

2. *Thomomys talpoides*

8. *Sorex monticola*

12. *Sorex cinereus*

2. *Blarina brevicauda*

5. *Sorex hoyi*

2. *Sorex arcticus*

TOTAL = 156 captures Diversity = 12 species.

We drove back to Blue Lake C.G. to fill all our water jugs then drove west on 367. Saw a small black bear just west of Blue Lakes. Lots of white-tailed deer in this area too. No mule deer seen. Headed down into Rodin to fill up with gas, then headed south to St. Lazare. ~ 2 hrs travel time. Partly cloudy and warm ~ 70°F. From St. Lazare follow road across Assiniboine River to west then turn southeast onto

Ft. Ellise Rd. (dirt road). Then drive south along river for a few miles and reached the ~~NCC~~ Native Conservancy of Canada (NCC) Ft. Ellise Property Fieldhouse on the right, after passing over a NCC signed cattle grid. Arrived @ 19:00. Nice place with a double garage, 4 bed rooms (w/out bedding/beds), 3 bathrooms & 2 showers, nice kitchen, stove, fridge etc. A really beautiful property of ~4,700 acres. Lots of different habitats from river valley and riparian side stream to upland plateaus (both cattle grazed and not) to oak woodland on plateaus and south facing slopes to Acer woodlands on north facing slopes, short-grass prairie on plateaus, tall grass prairie in valley, crops of canola and hay, a few spruce, lots of service berry and red currant in wet woodland, poison ivy in woodland and down by river, nettles, abundant understory, old oxbow wetlands, etc. etc. —

We camped Site #2: CAN: Manitoba; NCC Ft. Ellise Property; 50.40251°N, 101.27772°W, 396m
20-25 July 2019.

We unpacked the truck. Only one person here looking for butterflies who left the following morning. We moved in, essentially, keeping most of our stuff in the garage and set up the lab there too. Set up all the wet tents in the backyard to dry. Fraser and T+L stayed inside camped on the floor while Ben and I used our tents. Had a quick dinner of rice packets which Fraser made. I drove up onto the north, ungrazed plateau to scout it out and got cell phone service and called Hydra and Bob Wrigley to check in and report on our successes. Then down to wander around by the field station near a creek running ^{from} west up side valley.

Andrew G. Hope

We were all tired and headed to bed by 23:00. Night was mostly clear and cool, down to ~50°F.

21 July 2019. - Woke @ 07:00. Had pancakes for breakfast and then went to scout the property. Drove up to the south plateau. Cattle grazed in the prairie but rodent sign along fence lines. The forest on the north facing slope was very wet with seeps and moss and great understory in aspen and Acer woods. Set up Shermans along prairie fence lines and 3 lines of 25 snaps on verge habitat and through slope woods. I set 80 pitfalls with Ben helping through wet woods. Drove down and then up valley to west along creek to the end of the road at a fence line and set 3 lines of 25 snaps (creek edge, riparian/woods edge [oak woodland on S. facing slope]) and 40 Shermans in oak woods. I set only 24 pits along creek. Hard to find good ground to dig. Mostly river cobble. High grass, lots of willow, some overhang banks. Then back to camp @ ~17:00. Set ~10 gopher traps in hay field next to field house and rat traps in lawn around field house. Lots of Peromyscus tribecembrensis in lawn around field house. Also rabbits along the road. - Need to shoot some. - Gopher sign all over. Also saw mule deer and white-tailed deer does in this area. Mule deer along road, white-tailed on south plateau slope. Lots of coyotes yipping at night. Talked to Marcell (farmer next door) and he's very nice. Spoke of gophers along Canada fields. They were fine with us shooting things. Apparently lots of black bear around but not bothersome. Ben also set a line of 25 snaps along creek south of field house evening before. Caught a few voles this morning. Then we caught some

Andrea G. Hope

ground squirrels. So we prepped ~6 specimens in the garage lab and I made a couple skins and T+L made some gopher skins from the last site. Finished working at ~22:00. Fraser made mac'n' cheese for dinner then bed @ ~23:00. Night was cool @ ~45-50°F.

(Combining all trapping locations)

Trapping Results: Site # 2: Ft. Ellice Fieldhouse; 21 July 2019

1. *Peromyscus maniculatus*
7. *Microtus pennsylvanicus*
2. *Myodes gapperi*
2. *Ictidomys tridecemlineatus*
4. *Thomomys talpoides*

TOTAL = 16 captures Diversity = 5 species.

22 July 2019 - Woke @ 07:00. Coffee and breakfast and headed out at ~07:45 to check traps. Lots of captures. Got a water shrew from along the creek up at the ~~high site~~ upper creek site. Caught it under an overhang cut bank in a pitfall but ~5m from the creek. Some cinereus shrews and voles from near the creek. Red-backed voles, chipmunks and 1 13-lined ground squirrel from the oak woods and *Peromyscus*. Then headed up to the south plateau and lots of shrews including another water shrew in the Acer/aspens woodland along a running seep. Surprising! Also hoyi, cinereus, Blarina, and possibly a monticola, need to check ID. Also voles and *Peromyscus* up there. Back to fieldhouse and processed shrews first then everything else. A long processing day. Then I prepped skins on water shrews and some other good specimens. We finished @ 19:00. A partly cloudy but mostly sunny warm day with little breeze. Good for drying carcasses. T+L cooked up baked potatoes and beans.

Bouncing
it
another 50m
by creek next
to field
house!

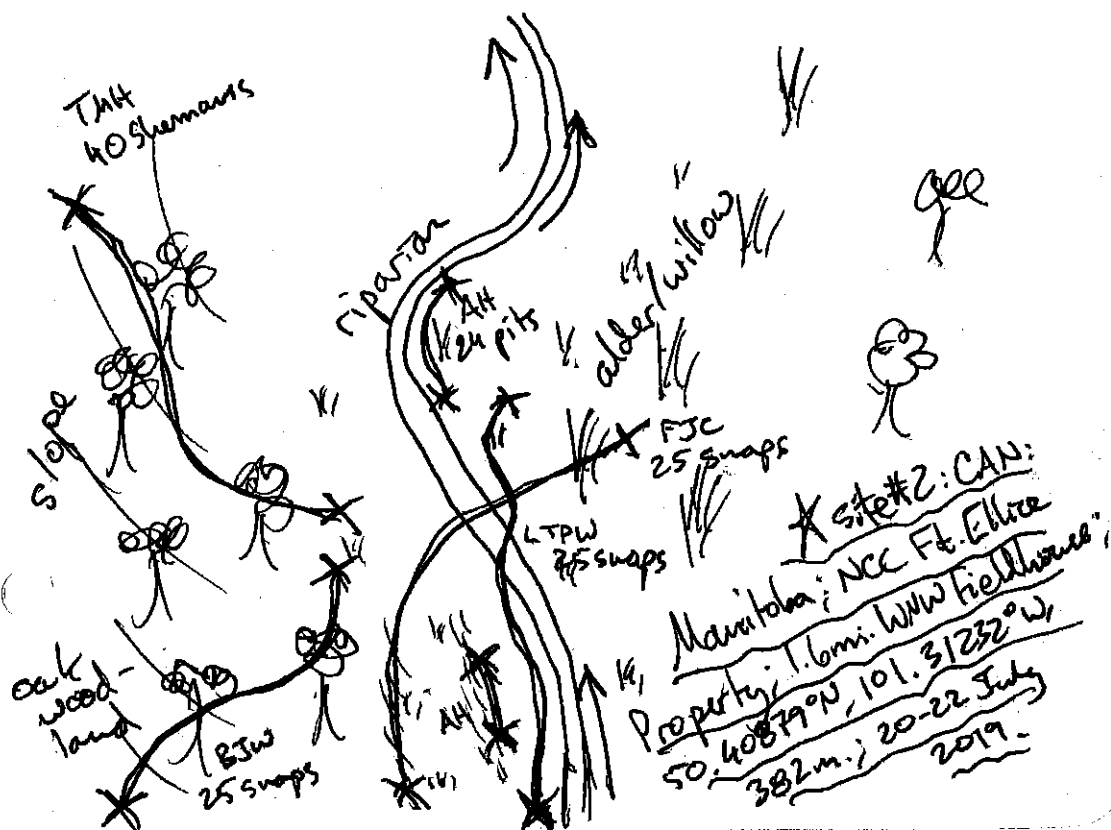
Andrew G. Hope

while I sat to write notes and we all caught up with entering data on sheets and barcoding tubes. Dinner at ~21:00. Bed shortly after. A great day.

Trapping Results: Site 2: NCC Ft. Elllice; 22 July 2019

3. *Sorex palustris*.
2. *Sorex hoyi*.
3. *Sorex cinereus*
1. *Sorex monticola* (maybe *cinereus*)
3. *Blarina brevicauda*
7. *Peromyscus maniculatus*
4. *Tamias minimus*
11. *Microtus pennsylvanicus*
3. *Zapus hudsonius*
6. *Myodes gapperi*
3. *Ichthyomys tridecemlineatus*

TOTAL = 46 captures Diversity = 11 species.



grazed prairie

Journal

plateau.

17.
Andrew G. Hope

FJC 40 Shamans

SE

W

LTPW
25 snags

AH/BJW
80 pits

Acer/aspens woodland

deep/creek

T44

25 snags

gravel road

to creek

★ Site #2: CAN: Manitoba;
NCC Ft. Ellice Property;
1.6 mi. W. Fieldhouse;
50.40151°N
101.30276°W, 454m
20-22 July 2019
(GSS)

Assiniboine River

canola

crops.

Gene/Marell
NCC

creek

hay field
(gophers)

BJW
25 snags.

(13-lined colony)

100
50
50
(volves)

NCC
Fieldhouse

fence line

oak woodland

high plateau

★ Site #2: CAN: Manitoba;
NCC Ft. Ellice Property;
Fieldhouse; 50.40255°N
101.27779°W, 394m.
20-25 July 2019

showshoe
hairs

Andrew G. Hope

23 July 2019. - Wake @ 07:00. I was up earlier and put coffee on and fried up leftover baked potatoes w/ onions and butter and topped w/ cheese for breakfast burritos. We all filled up then hit the road @ ~07:45 to check traps. Slightly foggy morning but no rain overnight and cool and calm morning. Sunny and warm ~80°F all day. We headed up creek to west and pulled all traps then up to south plateau and pulled snags and Shermans but left pits. I got another 3 water shrews, 2 by creek, 1 up in woods! A bunch of shrews and lots of other stuff. ~37 total. Headed back to fieldhouse to prep, starting @ 10:00.

Trapping Results: Site #2: Ft. Ellice Property: 23 July 2019

- 2. *Sorex hoyi*
- 3. *Sorex palustris*
- 1. *Sorex arcticus*
- 3. *Blarina brevicauda*
- 8. *Microtus pennsylvanicus*
- 9. *Peromyscus maniculatus*
- 3. *Zapus hudsonius*
- 5. *Tamias minimus*
- 2. *Myodes gapperi*
- 1. *Tamiasciurus hudsonicus*
- 2. *Ichthyophaga tridecemlineatus*

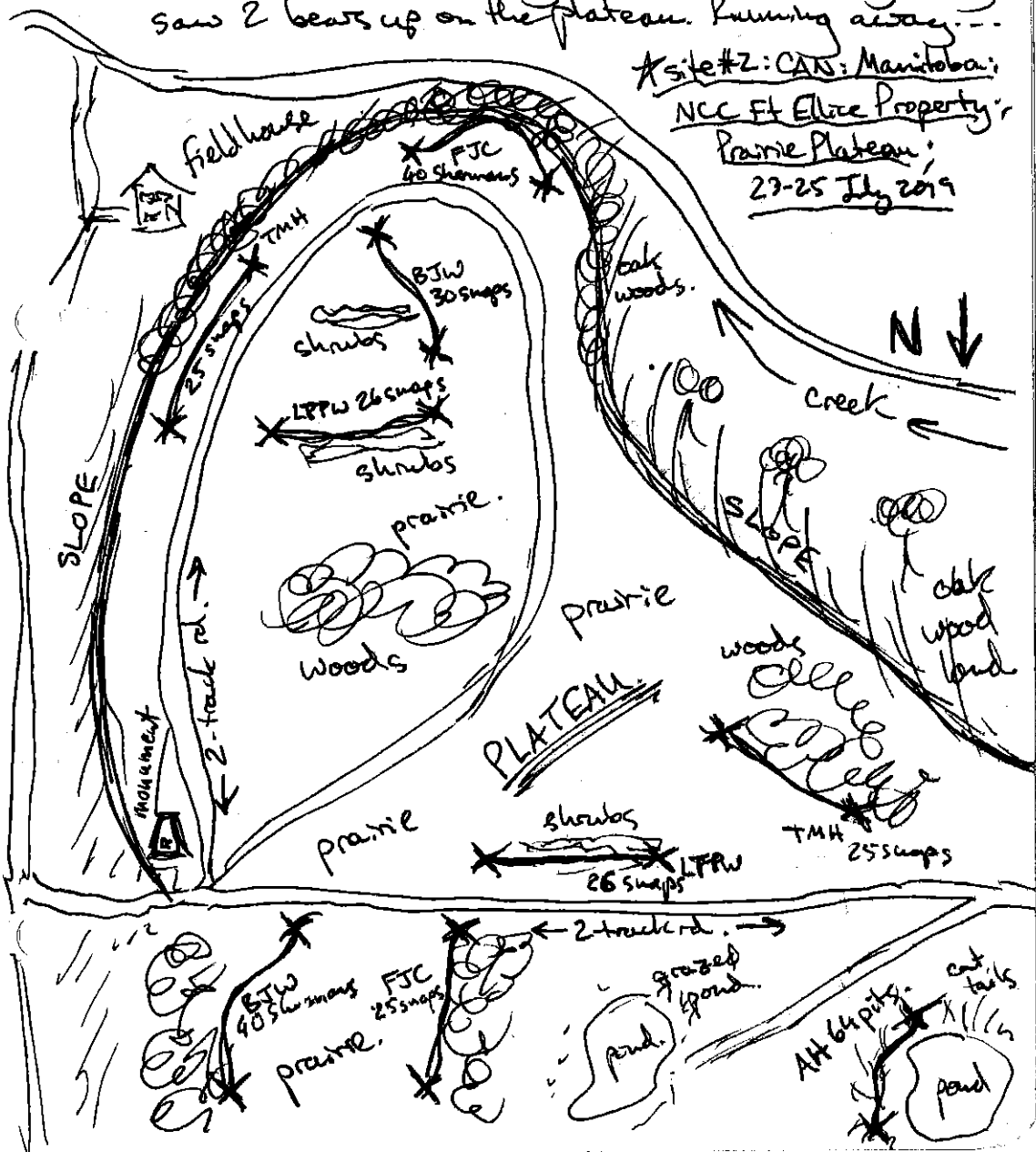
TOTAL = 39 captures, Diversity = 11 species

Took a long time to prep again today. Long days but we got some good full skins and lots of good parasites. Prepped till 2pm then some lunch then continued until ~18:00. Then headed out to set traps up on the north plateau. Drove out straight west from top of the drive up and then found a large grazed wetland w/ ponds. The crew left me w/ 64 pits and my auger and I set a pitfall line in

Andrew C. Moore

cattails and moss around the small pond while the other drove back to the open short-grass plateau mixed w/ woodland and shin-high willow and shrubs to set lines up on north and south ends. I finished and walked back a mile to the open grassland to wait for pickup. Called Lydia but reception was bad. Spoke briefly... Finished @ 20:00 then back to fieldhouse. Ben made rice and pasta packets for dinner then I sat to write notes. Bed by 23:00. Calm evening. They saw 2 bears up on the plateau. Running away...

*site #2: CAN: Manitoba;
NCC Ft Ellice Property;
Prairie Plateau;
23-25 July 2019



Andrew G. Hope

24 July 2019 - Wake @ 07:00, coffee, breakfast, then headed out to check traps. Fraser drove the truck over to the cattail pond where I had pitfalls and dropped me off. Then he drove back to the other lines to check. I walked back after checking my line and met them at the monument to Ft. Ellise (an old fur trader hub ~~from~~ from the 1800's), only 2 km. quick walk. Got lots of stuff in the cattails. Mostly young coles but lots of sign and nice habitat. Bear sign all over too. After checking on the north plateau we returned to the fieldhouse. All the others started prepping with a few Sorex arcturus from my line and an old pregnant shrew ~~at~~ from the plateau prairie that "Lita" caught, looked maybe like a Sorex haydeni?? I drove up to my pitfall line on the wet slope of the south plateau. Met Marcell who was looking to move his cattle from S. to N. plateaus and he said he was happy to wait until we were out the following morning.

Trapping Results: Site 2: Ft Ellise Property: 24 July 2019

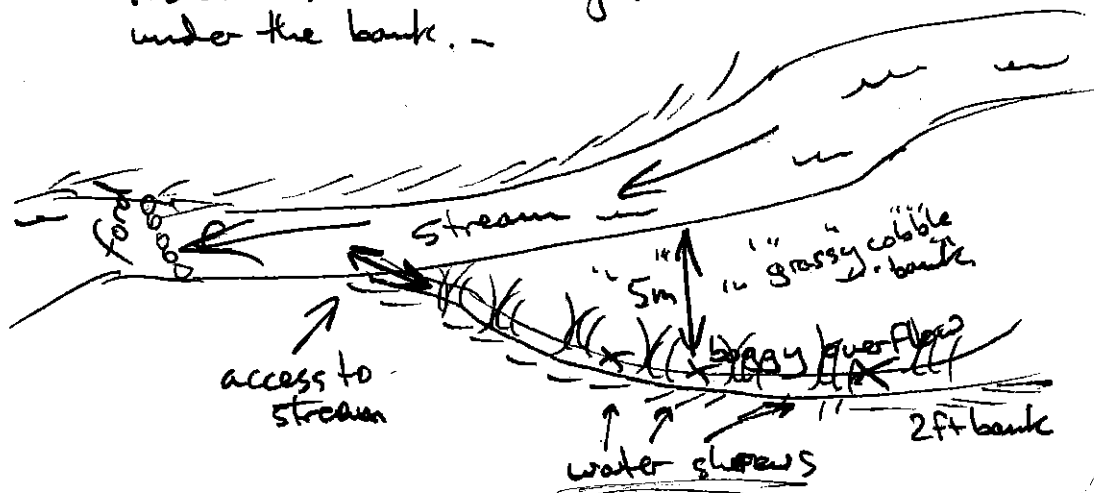
1. Sorex haydeni. (possibly)
4. Sorex arcturus
2. Sorex cinereus
2. Sorex palustris (again up in wet forest!!)
1. Sorex hoyi
2. Blarina brevicauda
17. Microtus pennsylvanicus
2. Myodes gapperi
6. Ictidomys tridecemlineatus
1. Peromyscus maniculatus
1. Tamias minimus.

TOTAL = 39 captures Diversity = 11 species

Spent most of the day prepping. Sunny and warm ~ 75°F. After, I spent the day evening catching up on data and skinning some full skins. The others went fishing on the

Assineboine River north of camp but no luck. I showered at the field station then went up to the plateau to make phone calls to Lydia, Bob Wingley and some email correspondences for work. Checked in on our details for export and import (CAN, US respectively) with Bob and Tom Dunning/ Joe Cook. Jon D. said he would help us with the import permits. Need to complete the CAN export permit then send it to MSB with port of entry and expected date of crossing. Jon will then fill out the 2-177 form (I think...) and submit it online to USFWS then send a copy to me for our crossing and notify the port of entry so they have a wildlife person available. So glad for the help! Things have changed since I last did this... I returned to fieldhouse and they were making tortilla pizza's for dinner. Excellent. Then bed @ 22:00.

25 July 2019 - Leaving day today. Wake @ 07:00 coffee, breakfast (eatmeal packets) then up to check and collect all traps. Same drill as day before. But lots more shrews at the cattail pond. I caught a *Sorex palustris* alive. Very strange to think of the broad aquatic ecology of these shrews here. Woodland seep, sphagnum bog pond, and big creek. The creek individuals were all caught at an over-flow channel under the bank. -



Anyway, another busy day with lots from my line and a good sample from others. Prepped. 10:00 through ~13:00. A couple ladies working for NCE stopped by in a truck, going out to do trail work, and I showed them our operations. They seemed interested and the lead wanted to keep in the loop. We then packed everything smoothly. Lisa organizing prep boxes. Then personal gear, then cleaned the fieldhouse and garage after loading the truck. Drove out by ~14:45.

Trapping Results: Site #2: Ft Ellice Property; 25 July 2019

1. *Sorex palustris*.
1. *Sorex arcturus*
5. *Sorex cinereus*
10. *Microtus pennsylvanicus*
4. *Ictidomys tridecemlineatus*
1. *Urocyon richardsoni*
1. *Sorex hoyi*
3. *Blarina brevicauda*
2. *Myodes gapperi*.
1. *Peromyscus maniculatus*.

TOTAL = 29 captures Diversity = 10 species.

We drove through St. Lazare, up the hill to East then turned south on 83 to Minota. Lydia's mom's family is from here so I stopped and took some pictures. Then headed south to Hwy 1, then west to Brandon. Stopped to fill gas, Get groceries, beer, tried to fill water jugs at gas stations and stores and no luck for a free fill, not like it used to be. But we have enough for one more site. Then drove S. on 10 down to Souris River Band WMA. Took a left (E) at the first road at the bend west on 10 then east for a couple miles then south on a dirt road to WMA.

Journal

23

Andrew G. Igoe.

Trapping Tallies: Site #2: Ft. Ellise Property - 20-25 July 2019

$$\text{Thomomys: } (40 \times 2) + (40 \times 2) + (40 \times 2) + (40 \times 2) \\ 80 + 80 + 80 + 80 = \underline{240}$$

$$\text{Snaps: } ((25 \times 3) \times 2) + ((25 \times 3) \times 2) + (25 \times 2) + (20 \times 2) + ((25 \times 3) \times 2) \\ + (30 \times 2) + ((26 \times 2) \times 2) \\ = 150 + 150 + 50 + 60 + 150 + 60 + 104 = \underline{724}$$

$$\text{Gophers: } = \underline{10}$$

$$\text{Rats: } = 12 \times 2 = \underline{24}$$

$$\text{Pits: } (24 \times 2) + (88 \times \frac{1}{2}) + (64 \times 2) = 48 + 320 + 128 = \underline{496}$$

$$\text{Havaherts: } 3 \times 1 = \underline{3}$$

$$\text{TOTAL} = \underline{1,497} \text{ trap nights.}$$

★ Capture Tallies: Site #2: Ft. Ellise Property; 20-25 July 2019

- 19. *Peromyscus maniculatus*
- 53. *Microtus pennsylvanicus*
- 14. *Myodes gapperi*
- 17. *Ictodromys tridecemlineatus*
- 4. *Thomomys talpoides*
- 9. *Sorex palustris*
- 6. *Sorex hoyi*
- 12. *Sorex cinereus*
- 1. *Sorex monticola* (possibly... prob. *S. cinereus*)
- 11. *Blarina brevicauda*
- 6. *Sorex arcticus*
- 1. *Sorex haydeni* (possibly... prob. *S. cinereus*)
- 10. *Tamias minimus*
- 6. *Zapus hudsonius*
- 1. *Tamiasciurus hudsonicus*

$$\text{TOTAL} = \underline{170} \text{ captures Diversity} = \underline{13} \text{ (possibly 15) species}$$

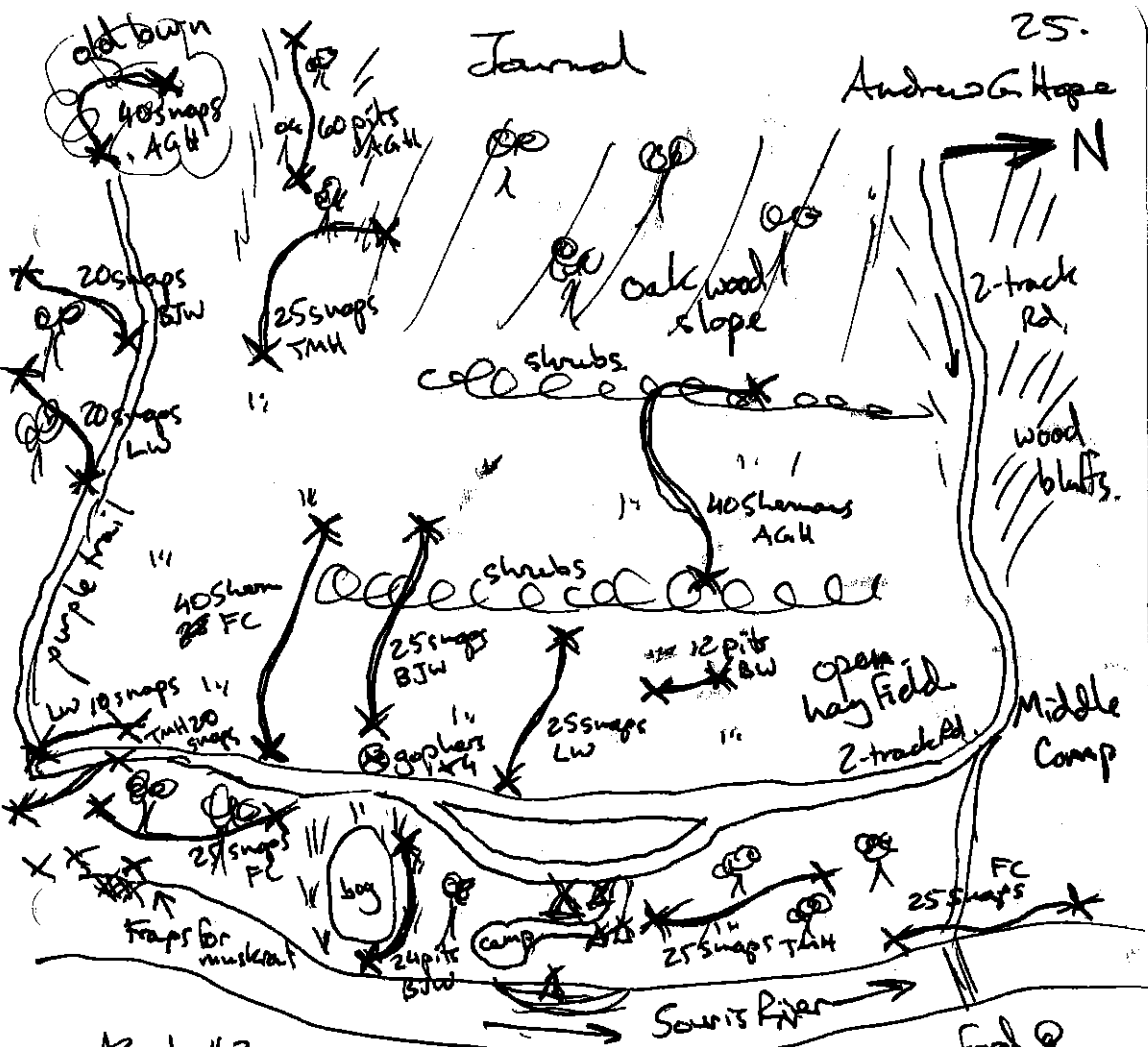
(Forgot to mention, lots of snowshoe hares along the road into Ft. Ellise in hazel aspen shrubs. Toomay set some cage traps and I walked with shotgun but no luck. Also caught a *Urocyon v. richardsoni* (I shot it) on the lawn in front of fieldhouse. More ~~saw~~ around.

Andrew G. Hooper

We drove in the road east into WMA ~ 2 mi. to "Middle Camp" which is a huge open hay field (Fallow brome/alfalfa) up against the Souris River. Drove mostly through bur oak wood land up to the open hay and then a strip of oak woods w/ green (?) ash along the river. There is a trail post at the end of the road w/ maps of the WMA and some trail descriptions. Looks like a possible river ford nearby. River flowing well though lazy and warm. Still not easy to walk across and mostly with a deep channel. Healthy looking river w/ lots of minnows. Big fish rising, abundant inverts. Not clear but not muddy. We drove along the river on a 2-track S. of the post and found a loop 2-track ~ 0.25 mi. S. of post towards river. A great site. Not large but good enough to fit us all and with a low beach front to the river and great kitchen spot. Also other good camp sites just south of ours though further from the river.

★ Site # 3: CAN: Manitoba: Souris River Band Wild-
 Life Management Area; 49.48241°N, 99.84249°W,
 385m; 25-29 July 2019.

We unpacked and set up camp. All set up personal tents while I cooked dinner of Thai noodles with our canned rabbit and onions/garlic/coconut milk. Great stuff. Ate then set up a short trap line each. Mostly out in the hay field trying to pick up prairie species. but Tommy set a line through brushy woody swail along the river to the north. looked good for lots of stuff, maybe ermine?? No one set tents on the small beach so I pitched down by the water. A really relaxing spot. Sign of beaver, muskrat, mink (crayfish poops) and deer. Bed by ~ 22:00.



★ site #3: CAN: Manitoba;

Souris River Bend Wildlife Mgmt. Area;

Middle Camp; 49.48241°N, 99.84249°W, 385m.

25-29 July 2019

26 July 2019 - Woke @ 07:00. Coffee then checked traps. Lots of meadow voles! A couple shrews on Tommings line in swail near camp. We prepped ~15 specimens then went to set more traps. I took 80 pits and headed up a steep hill to top of purple trail to an old burn thick with hazel and raspberry. Was looking for a spring said to be along the hill so went north off the side of a valley down to the grass and found the spring. A good seep with wet riparian veg among oak and ash woodland. I set 60 pits before running out of wet habitat. Ben set 12 pits out in the hayfield and another 24 around a boggy pond just south of camp. Others

Andrew G. Hope

set lines in oak woodland and verge habitat and some in grassland. A warm calm day. Partly cloudy ~80°F. A lazy afternoon. I decided to head back up the hill with 40 snags to set in an old burn up on the flat top along purple trail. Lots of chipmunks calling up there and different habitat so worth a try.

Trapping Results: Site #3: Sawtooth River Band (MMA) 26 July 2019

2. *Sorex cinereus*15. *Microtus pennsylvanicus*TOTAL = 17 captures Diversity = 2 species.

Lots of porcupine activity at this site so were doing our best to avoid it... Also lots of deer, a beaver lodge along river south of camp w/ both beaver and muskrat. Tommy spotted a woodchuck across the river. Bugs not too bad but around. Red squirrels in oak woods and gopher mounds around. Looked like maybe a mink was hanging out in the small bog south of camp. Small footprints at the exit to river. I set a small leghold but no luck. Fraser cooked washed potatoes and onions and Tommy caught a good size fish (maybe walleye??) so we ate it w/ potatoes. Good stuff. Bed by 21:00. Tired...

27 July 2019 - Up at 07:00. Coffee and oatmeal. Then out to check traps. We pulled our first lines from hay field. Lots more meadow voles. I also got a couple 13-lined and a couple shrews. Again not much diversity but decent numbers. I went up to the old burns. No chipmunks but lots of red-backed voles. Then headed down the valley from my top line to the spring. Got a bunch of *Sorex cinereus* and a *Zapus*. Picked up ~35 captures off my lines w/ ~35 more from other folks. Prepped from ~09:30 → 18:00. A long busy prep day.

Hot and sunny w/ no breeze all day - Sweltering in prep tent ~ 90°F. I made ~ 12 study skins as well. We all had baths in the river. I sat to write notes. Fraser cooked pesto pasta packets for dinner. Tried for more fish but no luck. Tommy set some cage traps @ beaver lodge for muskrat. Bed by 22:00.

Trapping Results: Site #3: Sornis River Bend WMA > 27 July 2019

- 17. *Sorex cinereus*
- 1. *Sorex hoyi*
- 27. *Microtus pennsylvanicus*
- 1. *Tamiasciurus hudsonicus*
- 2. *Peromyscus maniculatus*
- 1. *Zapus hudsonicus*
- 15. *Myodes gapperi*
- 2. *Ictidomys tridecemlineatus*

TOTAL = 66 captures Diversity = 8 species.

28 July 2019 - Others had set up short lines of 20 traps night before along river and in woods. We woke @ 07:00, coffee etc. Then to check traps. I pulled my traps line from old burn. Lots of ants up there. A few more red-backs but no chipmunks. Again lots of shrews (*S. cinereus*) in the spring seep area. Good numbers again but finished pepping by ~ 13:30. Lunch then I finished up some skins. Went up the hill to get email/text access to check in with things. Contacted Bob W. about meeting at Spruce Woods tomorrow. Contacted Darlene ~~La~~ Lamoreaux who is in charge of access to the Provincial Park just to check in. Spoke to Lydia briefly. Others either napped or caught up on data. Fraser walked to South Camp and back. I then wrote notes and caught up on my data. Cooler, partly cloudy and nice weather today. Windy in the afternoon. Still no muskrat...

Andrew C. Hope

Trapping Results: Site #3: Savvis River Bend WAB; 28 July 2019

- 17. *Sorex cinereus*
- 12. *Myodes gapperi*
- 4. *Peromyscus maniculatus*
- 1. *Zapus hudsonius*
- 4. *Microtus pennsylvanicus*

TOTAL = 38 captures Diversity = 5 species.

Ben set some gopher traps ~~on the small beach near~~ my tent, nearby camp ~~last~~ and caught one the following morning. Bed @ ~ 22:00.

29 July 2019 - Woke at 06:30. All up by 07:00. Coffee then off to pull all traps. Morning day. Got a good catch but processed quick. Then packed up camp and we were on the road by 13:00. The small leghold Tommy set by beaver/muskrat lodge was gone so ~~too~~ bad on that (but Tommy shot a sub-adult *Marmota monax* the previous evening while I was writing notes so we processed the specimen then I skinned it out and packed the skin in a bag till the next site).

Trapping Results: Site #3: Savvis River Bend; 29 July 2019

- 1. *Sorex harrisi* (maybe... caught in prairie)
- 1. *Sorex hoyi* (maybe)
- 2. *Sorex cinereus*
- 9. *Myodes gapperi*
- 4. *Zapus hudsonius* (need to check for *Z. princeps*)
- 7. *Microtus pennsylvanicus*
- 1. *Thomomys talpoides*
- 1. *Marmota monax*

TOTAL = 26 captures Diversity = 8 species.

Trapping Tables: Site #3: Souris River Bend; 25-29 July 2019

Shermans: $((40 \times 2) \times 2) = 160$

Pits: $((60 \times 3) + (12 \times 3) + (24 \times 3)) = 180 + 36 + 72 = 288$

Snap: $((25 \times 2) \times 3) + (40 \times 2) + ((25 \times 2) \times 2) + (20 \times 2) + (25 \times 2)$
 $+ (20 \times 2) + (25 \times 2) + (20 \times 2) \times 2$

$= 150 + 80 + 100 + 40 + 50 + 40 + 50 + 80 = 590$

Gophers: 4

Havaharts: 4

Leghold: 2

TOTAL = 1048 trap nights.

★ Capture Tables: Site #3: Souris River Bend; 25-29 July 2019

38: *Sorex cinereus*

2. *Sorex hoyi* } check ID's ...

1. *Sorex haydeni* }

53. *Microtus pennsylvanicus*

1. *Tamiasciurus hudsonicus*

6. *Peromyscus maniculatus*

6. *Zapus hudsonius* } check ID's ...

36. ~~Myodes~~ *Myodes gapperi*

2. *Ictodromus tridecemlineatus*

1. *Thomomys talpoides*

1. *Marmota monax*

TOTAL: 147 captures, Diversity = 11 species.

We drove up the hill to 346 N and stopped while I made a phone call and we checked email. Bad news about AK university funding and possibly a loss of funding to the U of AK Museum of the North!! I wrote some emails to the Board of Regents the next day. We'll see what happens...

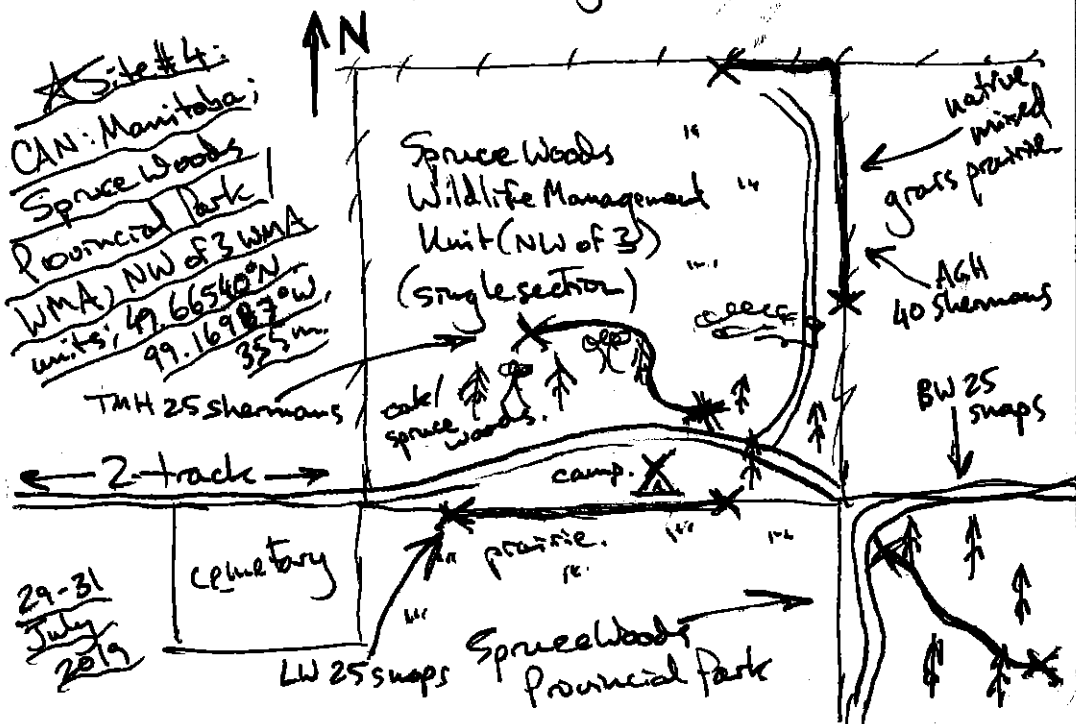
Anyway drove north to mark Hwy east then east to Culberson then north on Hwy 5 to Spruce Woods Provincial Park. Stopped @ Sand Dunes trailhead (Seton Bridge)

Andrew G. Hurre

at the Assiniboine River crossing to wait for Bob Dugley. At ~15:00 (approximate time) he arrived. We discussed our progress for a while then headed to the main camp-ground just south on the east side and I bought some vehicle permits for \$15/day each (CND). Then we drove north along Hwy 5 to a few spots Bob had sampled at previously, many years ago. Near the sand dunes, Parsons Hill, Marsh Lake, etc. The habitat here is surreal with spruce forest isolated among sand dunes and native mixed grass prairie. Almost savanna in some areas with semi-arid prairie, 2 spp. of ground juniper and small copses of spruce, burr oak, aspen, and shrubs. Lots of poisoning all over in verge ~~low~~ habitat. Blankets of these stuff!! Wonderful habitats though - Bob said spruce reach down through the sand for moisture, allowing them to persist. The prairie is also great. Lichens, big bluestem, bunchgrasses, sidecoats gramma, wild rose, etc. All in dune areas. Then in low spots, lots of exlows, small ponds/lakes and mesic grassland/cattails/phragmites. A very old and contrasting landscape. Once we had scouted, Bob headed home to Winnipeg. He had been collecting beetles too and was out with his sweep net and vile of Etoth. We then headed through the campsite and then straight east along a gravel road to a set of three sections/part sections of wildlife management area that bordered both private land and the provincial park. The road ended at a cemetery but carried on a 2-track along the south edge of the NW unit of the WMA. This unit sat diagonal to the prov. park. We found a great open meadow in the WMA ~2/3 mi. in and made camp. The 2-track carried on to prov. park

★ Site #4: CAN: Manitoba; Spruce Woods Provincial Park / WMA; 49.66553; 99.16988, 366 m.
29 July - 2 August 2019.

We unloaded and set up camp @ 18:30. Tents dispersed and pop tent in against some small aspen to provide minimal shade from sun. I cooked a friot pie dinner w/ venison and beans, chili etc.. Great stuff again. Then we went to set short + lines around camp. Fraser didn't bother as he was leaving the next morning. I carried on down the 2-track east then north opening into a broad prairie area and set 40 Shermans along fence line to corner of WMA section. Ben set 25 snags in conifer forest at corner of provincial park. T+L set 25 snags near camp in forest/prairie. Hung out for a while then bed @ ~ 21:30. Warm sunny day ~ 75°F. Night got very cool. Light frost on chairs in the morning some 35°F. Cold front came through... felt good to wrap up though.



Andrew G. Hope

30 July 2019. - Woke @ 06:45. Fraser was up earlier and drove off home. Never heard him leave but he reached the border by ~ 08:00 and got through with no issues. Made it home late and glad for it I'm sure. He kept us updated via phone. We all went to check our traps. I got both meadow voles and a single prairie vole on my line. Ben got a large rabbit on his forest line. A tough one to identify. Black short tail, short ears but lanky w/ little fur around neck. Black fringes on both front and back of ears. Pregnant ♀ covered in ticks of all stages. Looks like a small lepus but otherwise like a New England cottontail. Not snowshoe. Not Eastern cottontail. Hmmm. Made a wire skin on it. A few mice and voles too. Prepped ~15 animals till lunch.

Trapping Results: Site #4: Spruce Woods; 30 July 2019

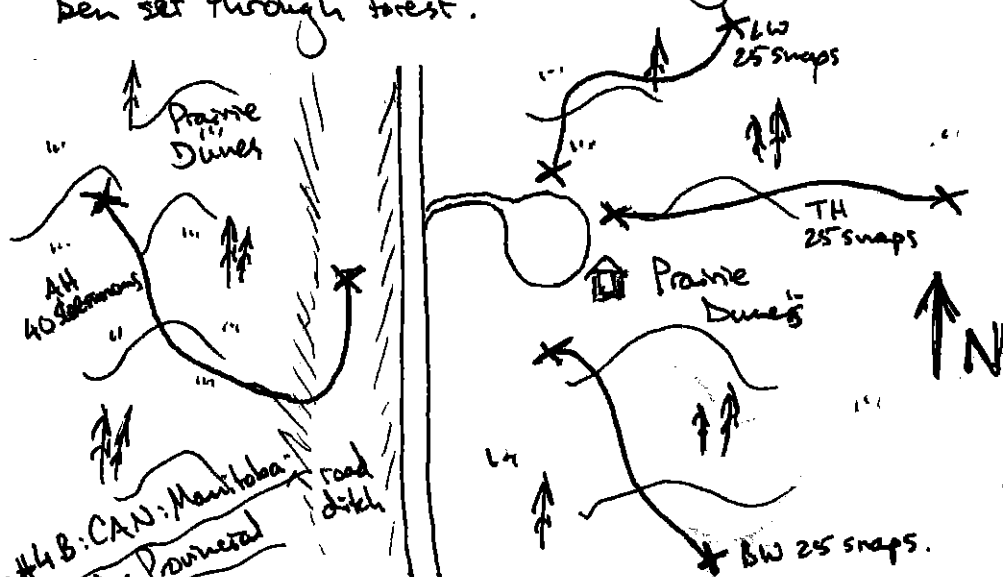
- 3. *Peromyscus maniculatus*
- 3. *Myodes gapperi*
- 1. *Tamiasciurus hudsonicus*
- 3. *Microtus pennsylvanicus*
- 1. *Microtus ochrogaster*
- 1. *Sylvilagus* spp.
- 1. *Echidomys tridecemlineatus*.

TOTAL = 13 captures Diversity = 7 species.

Spent the afternoon setting more trap lines at spots that Bob W. suggested. Drove up to Yellow Quill Tailhead. I set a line of Shermans along the road ditch then back into prairie dunes. Others set ~~sp~~ snaps in dunes of prairie and spruce around parking area. Then drove south to Parsons Hill and I set another box of Shermans back on prairie dunes. Others set snaps around parking area and Ben walked in to the hill area of prairie and set southwards. We then drove

Andrew G. Hope

South a short distance to a swail on the east side of the road just south of Marsh Lake parking area. The swail was dry but full of chest high weeds. ~~Surround~~ Surrounded by spruce/Tilia/aspen forest and then prairie savanna on high dunes behind to east. I set another box of Shermans up on the dunes, Tommy set a line of traps through the weedy swail (caught Arctic shrews here) and Litsa set a line along forest verge while Ben set through forest.



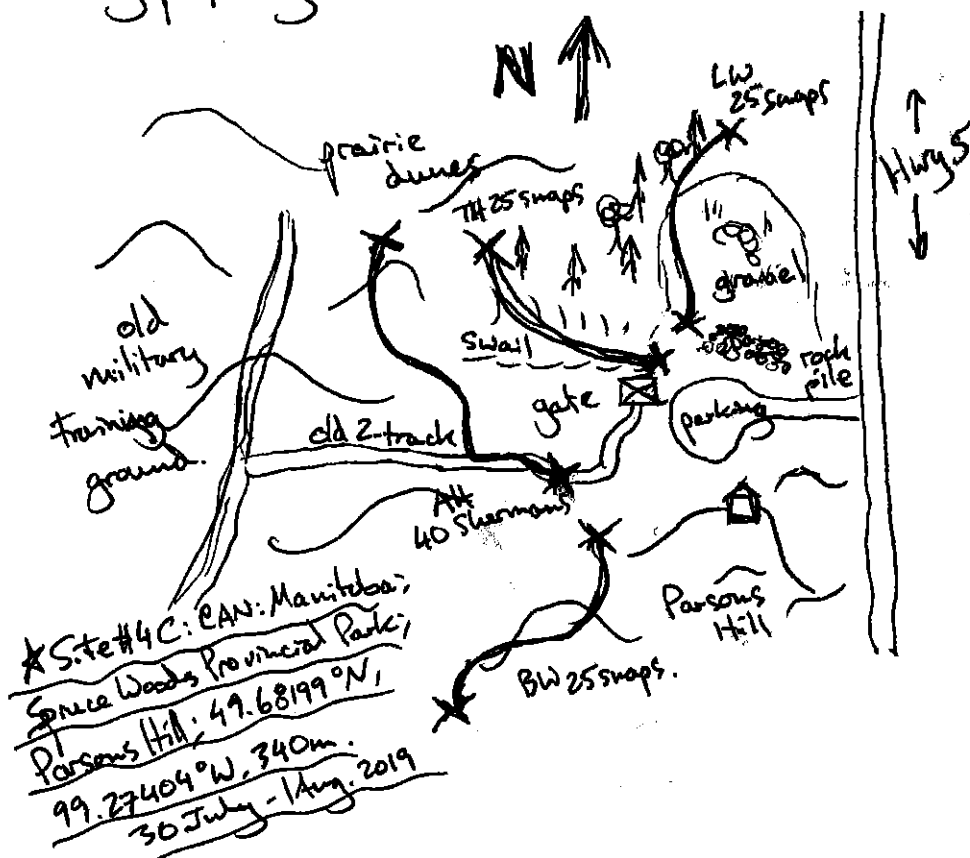
* Site #4 B: CAN: Manitoba
Spruce Woods Provincial
Park
49.70840°N, 99.26740°W, 349m.
30 July - 1 August 2019

After setting traps we went for a swim in the Assiniboine Ri. as it was a hot day ~ 85°F and we were all tired and dirty. The river was low but semi-clear and cooler than ambient. Then back to camp. I tried to catch up on notes a bit while others cooked pasta packets for dinner. Bed by 22:30.

31 July 2019 - Woke at 06:30 and we all checked and pulled traps from WMA lines. I got several 13-lined and others a few mice and voles. Tommy also caught a northern flying squirrel in a Sherman within oak-

Andrew G. Hope

spruce forest just north of our camp! A very nice ♂ specimen. I made a good skin of it too. We drove out to check our other lines. Lots of animals and another very busy prep day.



Trapping Results: Site #4: Spruce Woods; 31 July 2019

- ~~20~~ 2. *Sorex araneus*
 3. *Sorex arcticus*
 1. *Zapus princeps*
 2. *Microtus pennsylvanicus*
 10. *Myodes gapperi*
 39. *Peromyscus maniculatus*
 1. *Microtus ochrogaster*
 10. *Ictodromys tridecemlineatus*
 1. *Glaucomys sabrinus*
 1. *Tamias minimus*.

TOTAL = 70 captures, DIVERSITY = 10 species

Andrew G. Hape

*Site #45: CAN:
 Manitoba: Spruce Woods
 Provincial Park, Marsh Lake;
 49.66556°N, 99.27010°W
 336m; 30 July - 1 Aug. 2019.



Prepped specimens until ~18:00 then packed truck w/ bath supplies and headed down to river for another soak. A really hot day in the pre-text. Not much shelter and no breeze till evening. ~90°F. Some storm clouds built in the evening and good lightening show but no rain. At dusk we drove around for an hour or so with headlamps looking for pocket mice but saw no sign so headed back to camp @ 22:00 and then bed.

1 August 2019 - Woke at 06:30, coffee, breakfast then drove to check traps. Another busy day. I let go some live juvenile Peromyscus but still had to process 53 specimens. We pulled all our traps from all sites. Lots of Zapus princeps (we think) today too. Prepped fairly quickly cutting some corners with lots of juveniles. Finished by 16:00. Drove to ^{river} lake again for a soak. Another hot sunny day ~90°F. Then back to camp. I cooked mac n cheese w/ sautéed veggies while Litza caught up on data and others set rat

Andrew G. Hope

traps on trees around camp to try for another Glaucomys and also cage traps for a carnivore. Thumbed by ~21:00. (Also Ben set a couple gopher traps).

Tapping Results: Site #4: Spruce Woods; 1 August 2019

3. Sorex arcticus

1. Sorex cinereus

13. Myodes gapperi

7. Eapus princeps

22. Peromyscus maniculatus

1. Microtus ochrogaster

3. Microtus pennsylvanicus

1. Tamias minimus

2. Ictidomys tridecemlineatus

TOTAL = 53 captures, DIVERSITY = 9 species.

2 August 2019 - Woke @ 07:00. Coffee while others collected the local traps. No captures to process today so we spent time boxing and labeling tubes for the next 250 NK pages. Worked on this till ~10:30 then cleaned and packed up camp, loaded the truck and headed out. Stopped by the "Pine Fort" food stall and shop at the campground entrance for some poutine and milkshake for lunch then drove east on Hwy 2 to Winnipeg. Got a few more groceries, a coffee for me driving and more beer then drove south on Hwy 59 and then east on Hwy 52 to Steinbach, a big mennonite town. Stopped by the Manitoba Conservation office to get a copy of an export permit but no conservation officers were around so I talked with Glen (a forestry guy) some and he gave me some names and numbers for both Steinbach and Falcon City offices. Nice guy. Then we drove north to on Hwy 12 then east on CAN 1 ~50 mins to East Brantree exit, ~25 km west of Falcon City. Eliza and Paul Barkman

Andrew G. Hope

and their 4 young kids are the hosts of the A Rocha Christian Conservation property where we stayed for 4 nights as our site #5. Scott Gerbrandt is the property manager. Although Scott is on holiday I had discussed this site with him previously and emphasized my non-advocacy stance on christian science but he was keen to have us work at this new site (previously owned by Walter Lowel who is now 94 and lives nearby) so we came here to sample within the boreal zone.

★ Site #5: Can: Manitoba; East Braintree; A Rocha Property; 49.62565°N, 95.60973°W, 318m;
2-6 August 2019. (address is 81025 Buggy River Rd.)

I had contacted Elisa about meeting to get into the lodge but she couldn't get over till 7pm. so we arrived at ~17:15 and scouted the property. The lodge is huge and newly built (sleeps ~18 people w/ stocked kitchen and furniture). It is located just north of the Buggy River which is deep and ~10m. wide, flowing sluggishly through the property to the west. The forest here is true mixed conifer with lots of spruce, pine, larch, and fir. Juniper is understory and lots of ground shrubs, cinquefoil, blueberries, mosses, lichens, hazel. Also some paper birch and aspen. Low lying wet areas and dryer areas, and bare rock (pink granite of the Canadian Shield). Some open grassy lawns and fallow hay fields and paths mowed to north and west leading to two small cabins, rustically stocked w/ stoves etc. Not huge but a nice site. We met the host family at 7pm and they showed us details of the lodge then they left home ~20mins. west of here. Were basically on our own for the 4 days we're here. We settled in, unpacked and then set up some short traplines by ~21:00.

Andrew G. Hope

Then showered and had dinner. I wanted to sleep in my tent on the back lawn so I set it up. Really thick mosquitos here at dusk, more than most places in Alaska! Reminded me of Siberia... Went to bed @ 22:00 and heard a big bear cracking branches near my tent and moving closer. I talked and shouted some and it went away then came back a couple times so I moved my tent into the garage and slept inside. Oh well... Cold inside with A.C. but I'll manage.

3 August 2019 - I woke at 07:00. I let others sleep till 08:00. I packed my tent up and then set up the garage for processing lab. We all checked traps but only 3 captures (2 shrews out of my pits) so processed those and continued to work on labels and tubes and data prep for the rest of the morning. Lunch then I set to write notes. Ben went out to a small bog pond north of the granite mounds to set snakepits. T+L took lines of snaps out south of the river.

Trapping Results: Site #5: East Brantree; 3 August 2019

- 1. *Sorex hoyi*
- 1. *Sorex caereus*
- 1. *Zapus hudsonius*

TOTAL = 3 captures DIVERSITY = 3 species.

Trapping Tallies: Site #4: Spruce Woods; 29 Jul-2 Aug 2019

Shermans: $(40 \times 2) + (25 \times 2) + ((40 \times 2) \times 3) = 370$

Snap: $((25 \times 2) \times 2) + ((25 \times 2) \times 9) + 15 = 100 + 450 + 15 = 565$

Cage traps = 4

Gophers = 2

TOTAL = 941 trap nights.

Andrew G. Hogue

★ Capture Tallies, Site #4, Spruce Woods; 29 Jul - 2 Aug 2019

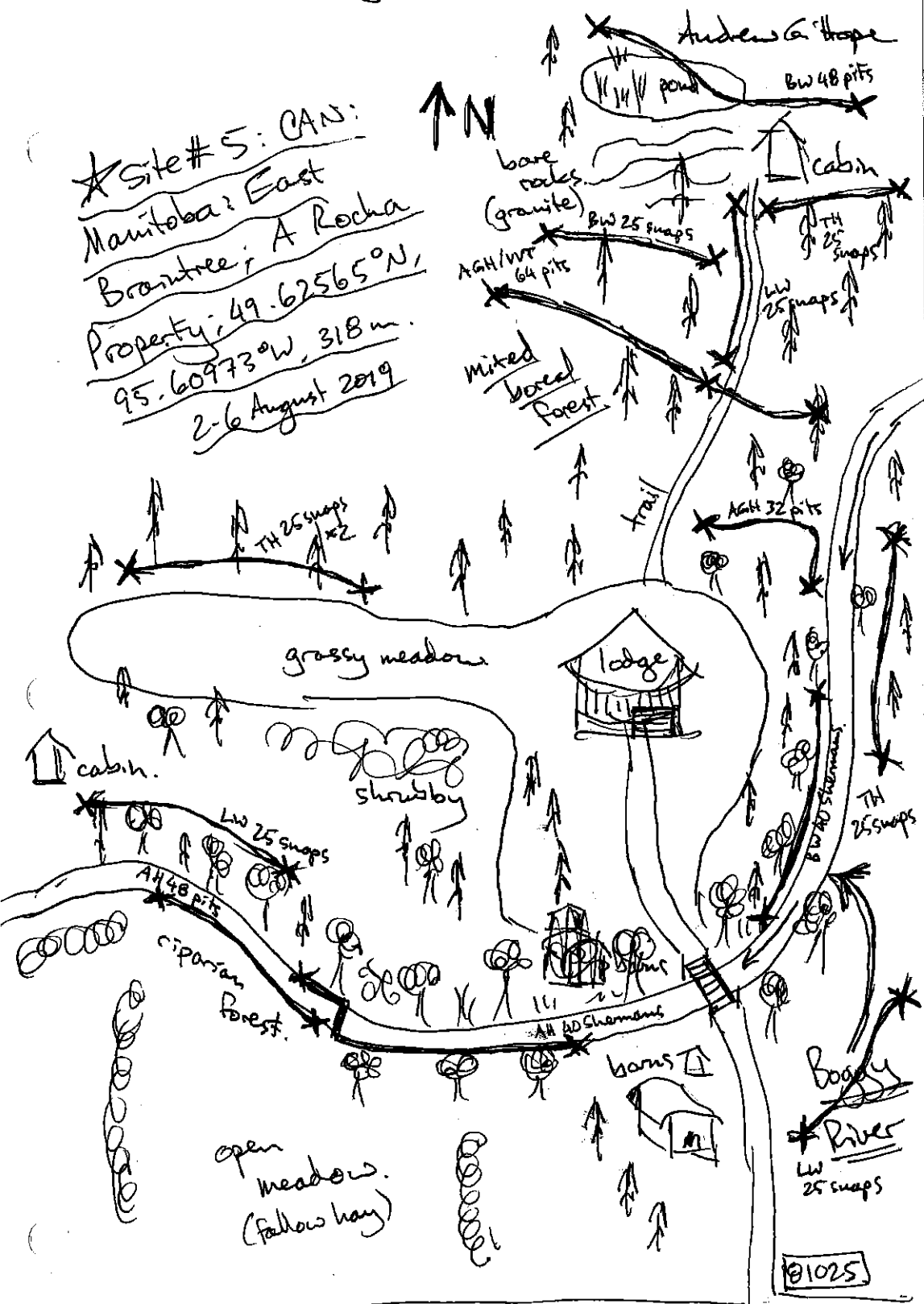
- 3. *Sorex cinereus*
- 6. *Sorex arcticus*
- 64. *Peromyscus maniculatus*
- 26. *Myodes gapperi*
- 1. *Tamiasciurus hudsonicus*
- 8. *Microtus pennsylvanicus*
- 3. *Microtus ochrogaster*
- 1. *Sylvilagus* spp.
- 13. *Ichthyomys tridecemlineatus*
- 8. *Zapus princeps*
- 1. *Glaucomys sabrinus*
- 2. *Tamias minimus*

TOTAL = 136 captures DIVERSITY = 12 species.

After writing notes I took 48 pits to set along the riverbank and also set a line of 40 Shermans in the same area. Ben set up a line of snags in the forest north of the lodge and others set more traps round about. In the evening I called Vasil Tkach in Grand Forks ND to ask if he wanted to join us and he seemed keen to come north the following day. Then we had dinner and bed by 22:00. Tommy caught 2 ~ 24 inch pike earlier which we ate for dinner.

4 August 2019 - Woke @ 06:30, coffee then trap checking. A cooler night than last ~ 60°F and a cooler day, sunny with some cloud and breeze. A few drops of rain in the afternoon. Not too many animals but lots of diversity. ~~But to~~ 4 shrew species on my forest line of pits through fairly dry forest but mesic forest. Also I caught an ermine in a Sherman trap by the river. Lots of mammal prints in the mud including raccoon, mink, bear, coyote/fox. Also got northeastern deer mice with longer tails and big ears, and eastern chipmunks in riparian forest (aspen/tash).

*Site #5: CAN:
 Manitoba: East
 Brantree; A Rocha
 Property; 49.62565°N,
 95.60973°W, 318 m.
 2-6 August 2019



Boggy River Road

Andrew G. Hope

Trapping Results: Site #5; East Brantree; 4 August 2019

- 2. *Sorex cinereus*
- 1. *Sorex arcticus*
- 1. *Sorex hoyi*
- 1. *Blarina brevicauda*
- 1. *Synaptomys cooperi*
- 5. *Peromyscus maniculatus*
- 6. *Microtus pennsylvanicus*
- 2. *Tamias striatus*
- 2. *Zapus princeps*
- 1. *Mustela erminea*
- 1. *Tamiasciurus hudsonicus*

TOTAL = 23 captures Diversity = 11 species.

Prepped specimens from 09:30 → ~15:30. Made a good series of full skins too. Ben went to set a line of Shermans along the river and some rat traps in trees. Vasyl arrived ~16:00 and the two of us went to set a pitfall line through boggy boreal forest with lots of moss and saturated soil. I saw a small star-nosed mole hill so dug it up and set a pit under it (checked this in the following morning and it was full of dirt so reset it and the afternoon check found the pit had been pulled up by a bear, so probably took the mole!!). (Scott Gerbandt and his family also stopped by while we were processing to check out what we were doing. They spent some time canoeing in the boggy river. Scott also left us a bag of croissants and an 8-pack of 1919 belgian pale ale. All good stuff..). In the evening I cooked a Thai noodle dinner and we sat and talked before bed at ~23:00.

5 August 2019 - Again ~~no~~ no rain today except for a ~~few~~ few drops. Warm again too. Up at 06:00 and Vasyl and I went to check pitfall lines at 06:30. Not too

Andrew G. Hope

many but a few fresh ones with good worms. A good lot of species again. Ben caught a flying squirrel. We got both heather voles and bog lemmings on my boggy pitfall line. Prepped until ~16:00.

Trapping Results: Site #5: East Brantree; 5 August 2019

10. Sorex cinereus

1. Sorex hoyi
2. Phenacomys ungava
2. Synaptomys cooperi
1. Glaucomyss sabrinus
2. Zapus princeps
5. Microtus pennsylvanicus
5. Tamias striatus
6. Peromyscus maniculatus
2. Myodes gapperi

TOTAL = 36 captures Diversity = 10 species.

Vasyl went on a walk to collect blueberries while we made more full skins. We then went out to collect all the traps except for pitfalls and Bens over Shermans. Caught a couple more shrews so prepped those in the evening. Dinner of spaghetti sauce and macaroni. Then bed by 21:30. We also spent the evening preparing for our moving day, organizing kitchen boxes, doing laundry, cleaning up.

6 August 2019 - Woke @ 06:00. Vasyl and I went to collect pitfalls. A few shrews and bog lemming. The two of us prepped animals real fast then we all set to packing and cleaning everything. Tommy loaded the truck while I made some phone calls to Bob Wingley and Tim Teetart (NCC Tallgrass Reserve) and Eliza about the A Rocha property. We were all packed and pulled out at ~10:45. Vasyl followed us to Steinbach then went home.

Andrew G. Hope

Trapping Results: Site #5: East Brantree; 6 August 20194. *Sorex cinereus*1. *Sorex hoyi*1. *Synaptomys cooperi*1. *Microtus pennsylvanicus*.TOTAL = 7 captures. Diversity = 4 species.Trap Tallies: Site #5: East Brantree; 2-6 Aug 2019snaps: $(25 \times 2) \times 3 + (25 \times 2) \times 4 = 150 + 200 = \underline{350}$ Shermans: $(40 \times 2) + (40 \times 2) = \underline{160}$ pits: $(48 \times 4) + (32 \times 4) + (48 \times 2) + (64 \times 2) = 192$
 $+ 128 + 96 + 128 = \underline{544}$ rat traps: 4cage traps: $4 \times 2 = \underline{8}$ TOTAL = 1,066 trap nights.

★

Capture Tallies: Site #5: East Brantree; 2-6 August 201917. *Sorex cinereus*4. *Sorex hoyi*1. *Sorex arcticus*1. *Blarina brevicauda*2. *Peromyscus*
*ungava*1. *Zapus hudsonius*2. *Zapus princeps*.4. *Synaptomys cooperi*11. *Peromyscus maniculatus*12. *Microtus pennsylvanicus*7. *Tamias striatus*1. *Mustela erminea*1. *Tamiasciurus hudsonicus*1. *Glaucomys sabrinus*2. *Myodes gapperi*.TOTAL = 67 captures DIVERSITY = 15 species.Arrived at Stenbach conservation office at 11:45
and asked to speak with a conservation officer but

Andrew Gilgore

again none were available. I asked for the export permit paperwork but was not able to obtain any so I got the number of Bob Windsor who apparently is the best one to speak with. Then we grabbed a Subway sandwich and I took out cash to repay Bob Wrigley for our groceries from Costco, then we headed southwest to the NCC Tallgrass Prairie Preserve Interpretive Center, arriving at 14:00. We met ~~Jonathan~~ Jonathan a young guy working as groundskeeper for the summer and he let us in and showed us around. Tim T. was not coming down until tomorrow. Then Bob Wrigley showed up with Tim Reiner who he had ~~also~~ picked up in Stehbach. Tim is an expert taxidermist and great guy. We all talked for a while. Showed them some of our skin collections. Then we walked the short nature trail to look around. It started raining hard so we returned to the Interp. Center and waited it out, then Bob and Tim left and we set to unpacking.

★ Site #6: CAN: Manitoba's NCC Tallgrass Prairie Preserve; 49.15208°N, 96.72902°W, 236m
6-10 August 2019.

This is another nice site. Very different prairie from Kansas! Shorter grasses and lots of flat boggy areas. Also lots of shrublands and deciduous, mostly aspen woodland. Some areas of oak/aspen savanna (bur oak). I guess there are lots of drainage ditches through the area to drain the region for agriculture but it's still pretty wet. Tussocky grasslands look good for pitfalls in some areas. Lots of big bluestem and marsh milkweed (and monarchs). Lots of willows. Some dwarf birch around too. We unpacked all the trapping and prep gear behind the machine shed at the back of the center and set up our prep tent behind the shed. Then unpacked all kitchen and personal

gear in the center. The interpretive center is a nice house with the bottom floor set up as an exhibit of the prairie and species. Upstairs has 2 rooms with bunk beds, an office, shower room, kitchen, conference room, sofas, and a porch. We have wireless internet and phone service. Very comfortable. At ~17:00 we set up some short trap lines around the I.C. Then had dinner of pasta packets and then bed by 21:30. Lots of stormy weather to the south but mostly missed ~~up~~ us here. I spoke some with Lydia.

7 August 2019 - woke @ 06:30, coffee then trap checking. I caught nothing from my Sherman trap line out in the boggy area north of the I.C. Others got a few shrews and voles in drier prairie. Prepped until 11:00. Tim Teetaert arrived @ 09:30 and I spoke with him a bit about the place. He provided us keys and a map of all the NCE and partner sections in the area, and suggestions on where to go for higher drier prairie, gophers, ground squirrels etc. Then we had lunch and I sat to write notes and tried to contact folks about export permit but no luck. Tim left back to Winnipeg mid-afternoon and we will likely not see him again while we're here.

Trapping Results: Site #6: Tallgrass Reserve; 7 August 2019

1. *Sorex arcticus*

2. *Sorex cinereus*

0. *X. Microtus ochrogaster* } likely MIPE

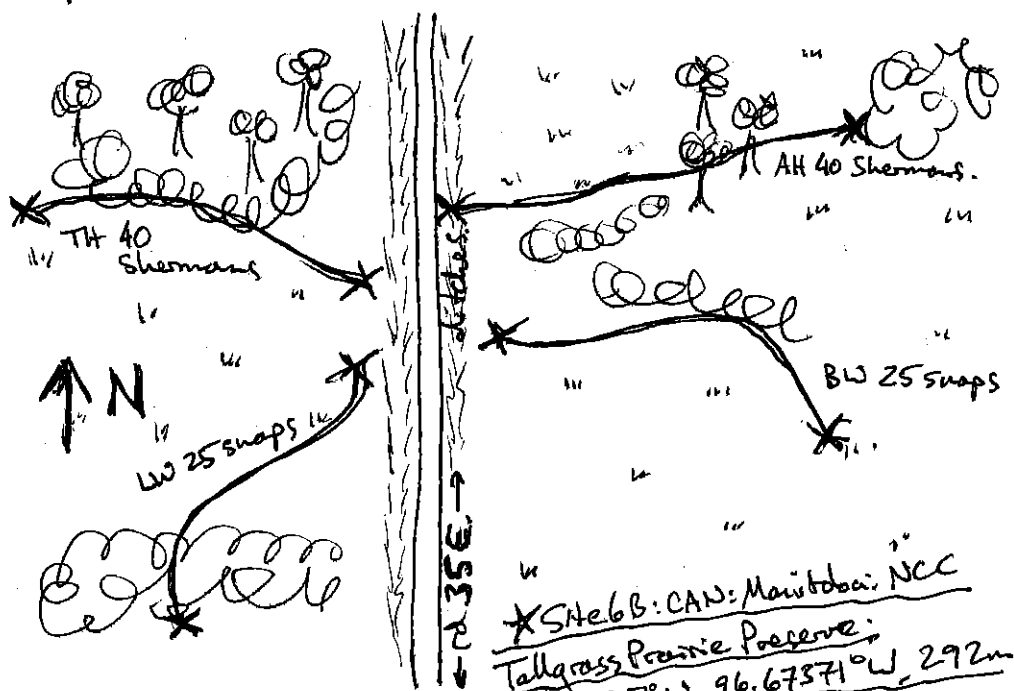
7. *6. Microtus pennsylvanicus*

TOTAL = 10 captures Diversity = 4² species

In the evening we drove out to a spot about 1 mi N. and 3 mi E of the field station on a dirt road continuing north from the intersection of 201 + 209.

Audens & Hope

Tim suggested this was a drier prairie site and there was pretty nice tall grass (big blue stem) there among shrubs and wooded islands of oak and aspen. Shrubs included dwarf birch, small aspen, lots of willow etc. Big ditches along the roads with cattails and Phragmites, lots of moss, some water. Possible place for moles though we saw no signs. We each set a line of traps around this spot both in open prairie and in wooded or shrubby areas.



Headed back to the

I.C. then get some more lines around the center. Tommy headed out to a patch of really nice big blue stem north at the section edge along a large drainage ditch. It was all big bunch grass but mixed in with dwarf birch and willow. Ben set up 64 pits near the tall grass area in lower wetter tussock grass and sedge. Litsa more in prairie along the nature trail. I set up a very short pit line north of the center. After setting we scouted some gopher spots in the

area, both north and south of the Roseau River. Tim directed us to a recently hayed field along 30E at ~13.5 mi. N. on the right. We found mounds in the vicinity of 49.20370°N , 96.77838°W . Bob Wrigley suggested that it was Thomomys north of the river and Geomys south but these mounds were large! We set 10 traps (5 sets) in this meadow and Ben also set some rat traps for 13-lined ground squirrels he spotted. We then headed south on S9 past Tolstoi and east on 4N for ~1.5 mi. to just past 30E, vicinity of 49.06063°N , 96.77247°W . An old residence and property recently obtained by NCC. Great old burr oak trees and tall fallow meadow and old out buildings. Enormous gopher mounds all around the front of the house. We had set all 10 gopher traps so marked this locality for the next day. Drove back to I.C. by 20:30 then cooked up venison with beans and chili with cheese quesadillas. Bed by 23:00. (I called Lydia for our 9th anniversary!! Great to talk at least...)

8 August 2019. - Woke @ 06:30, coffee, then drove to check our eastern trap lines. I got another ermine, some shrews, red-backed vole and meadow vole. Others all got shrews and voles. Then drove to check gopher traps. Ben got a Geomys so they are definitely north of the river. We reset all traps here to try for another then back to I.C. checked our lines here and pulled all of our first lines. Then processed specimens. Got a bunch of shrews. A couple crepus type that looked lighter and smaller, maybe haydeni. Also possibly back to the plains form of the deer mouse here. I made a call round 10am to Bill Watkins and he discussed options for export permit. Again suggested the Steinbach office. He said he'd help expedite the process as

Andrew G. Hope

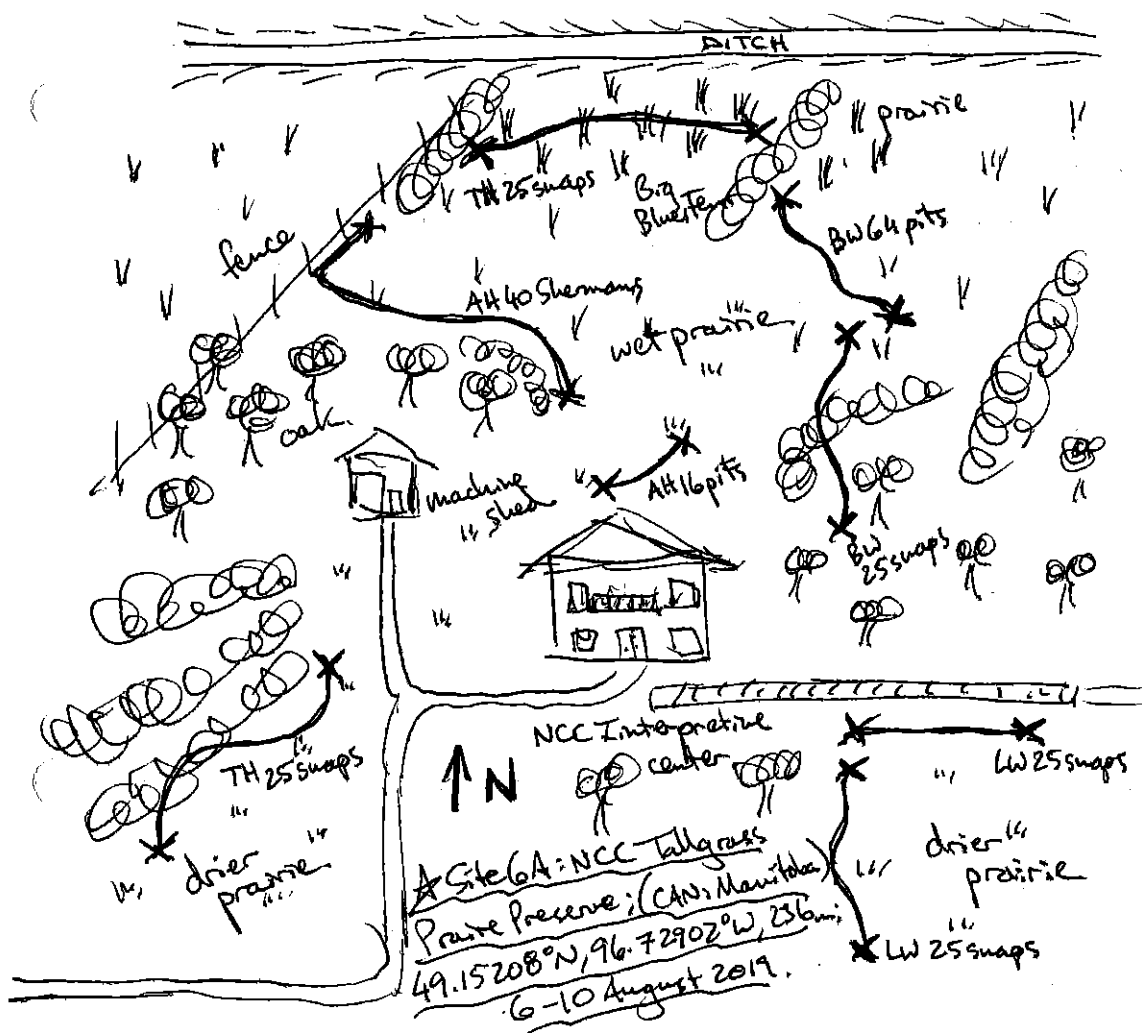
needed. So I called Bob Windsor and got him on the phone. He was very helpful. He had gotten my message and was setting up to do the permit. He asked if I could come in that morning so I jumped at the chance. I sent him a list of all specimens via email. We only needed a permit for furbearers (red squirrels and ermine) but I asked if he could append the whole list so that it was all there for crossing into the US. I then left the others to process and I drove into Steamboat ~45 mins. arrived before noon and the export permit was completed signed and waiting when I arrived. I spoke with Bob briefly about our work and successes and he seemed interested and glad to help. I then headed back to NCC I.C. after picking up some more beer. Then I joined in processing and we finished by ~17:00.

Trapping Results: Site #6: NCC Tallgrass; 8 August 2019.

- 10. *Sorex cinereus*
- 5. *Sorex arcticus*
- 2. *Sorex haydeni*
- 1. *Zapus hudsonius*
- 1. *Peromyscus maniculatus*
- 18. *Microtus pennsylvanicus*.
- 4. *Myodes gapperi*
- 1. *Mustela erminea*.

TOTAL = 42 captures DIVERSITY = 8 species

Drove out to the northern gopher area and pulled all traps. Ben got another gopher here. We then headed down to the south-of-river spot and set 10 gopher traps there. Really deep tunnels, some ~2 ft. deep and very wide. Big warrens of tunnels. Then drove back. Mac'n'cheese for dinner and bed by 22:00. Two warm days ~80°F. Mostly sunny with some cloud. Not too hot...



9 August 2019 - Wake @ 06:30. Coffee. (All the gopher activity is offset in my notes one day too early). Drove over to pull our east site lines. More shrews, voles, plus I caught 3 *Zapus* in Shermans. Weird! Then picked up all gopher traps. Ben and Tommy both got a *Onychomys* from the south site. I struck out for gophers this trip... Not normal, but no prob... (picked up these gophers on the 10th). Back to I.C. pulled all traps except for the pit falls then processed another good day. The evening before I sent all our specimen information to Tom Donnellum and on Friday 9th he uploaded all info. to USFWS web site to report on 3-177 form. He then called the Pembina

Andrew G. Hope

Port of Entry and spoke to a Wildlife officer (Matthews) who said ~~everything~~ everything looked good but since we were planning on coming through on Sunday, he would not be working so he cleared all specimens and provided an import permit that day! I printed it off at the NCE center so we're pretty much set to go...

Trapping Results: Site #6: NCC Tallgrass; 9 August 2019

- 7. *Sorex cinereus*
- 5. *Sorex arcticus*
- 1. *Sorex haydeni*.
- 2. *Geomys bursarius*
- 1. *Ictidomys tridecemlineatus*
- 11. ~~10~~ *Microtus pennsylvanicus*
- 3. *Zapus hudsonicus*
- 1. *Myodes gapperi*

TOTAL = 26 captures DIVERSITY = 8 species.

Finished processing by ~17:00, then more gophering stuff, dinner of tortilla pizzas and bed by 22:00. Got some good skins today too.

10 August 2019 - Woke @ 06:30 then coffee and off to pull final gopher traps then back to pull remaining pitfalls and processed a few more shrews and gophers to finish off all trapping for the trip! ~770 specimens!

Trapping Results: Site #6: NCC Tallgrass; 10 August 2019

- 2. *Geomys bursarius*
- 2. *Sorex arcticus*
- 1. *Sorex haydeni*.
- 1. *Sorex cinereus*
- 1. *Sorex hoyi*
- 1. *Microtus pennsylvanicus*

TOTAL = 8 specimens DIVERSITY = 6 species

Andrew G. Hope

Trapping Tallies: Site #6: NCC Tallgrass; 6-10 August 2019

$$\text{Snaps: } ((25 \times 2) \times 3) + ((25 \times 2) \times 2) + ((25 \times 2) \times 2) \\ = 150 + 100 + 100 = \underline{350}$$

$$\text{Shermans: } (40 \times 2) + ((40 \times 2) \times 2) = 80 + 160 = \underline{240}$$

$$\text{Pits: } (64 \times 3) + (16 \times 3) = 192 + 48 = \underline{240}$$

$$\text{Gophers: } (10 \times 2) + 10 = \underline{30}$$

$$\text{Rats: } \underline{4}$$

$$\text{TOTAL} = \underline{864} \text{ trap nights}$$

★

Capture Tallies: Site #6: NCC Tallgrass; 6-10 August 2019.13. *Sorex arcticus*.20. *Sorex cinereus*37. *Microtus pennsylvanicus*4. *Sorex haydeni*.1. *Sorex hoyi*.4. *Zapus hudsonius*1. *Peromyscus maniculatus*5. *Myodes gapperi*1. *Mustela erminea*4. *Geomys bursarius*1. *Ictidomys tridecemlineatus*.

$$\text{TOTAL} = \underline{91} \text{ captures DIVERSITY} = \underline{11} \text{ species}$$

We processed until ~13:00, including some more skins. After lunch we packed up all the lab and trapping gear. Just finished before it rained. Hot day ~90°F but big clouds and breezy in the afternoon. Our plan is to catch up on all data stuff this evening then clean and pack our stuff. Then head out early ~ by 07:00 Sunday morning (11th), take 201 West to 75 S. to the border and a long drive home ~ I wrote notes up to this point...

(11 Aug 2019 - border crossing was smooth. No issues. Drove south, arriving in Manhattan @ 19:45. Crossed border at ~08:30. Took 30 mins.)

Trapline Coordinates: CAN: Manitoba

1.

2019

1AH3S: 51.58308°N, 100.85122°W, 679m

1AH3E: 51.58253°N, 100.85106°W, 676m.

1AH2S: 51.56348°N, 100.84072°W, 675m.

1AH2E: 51.56413°N, 100.83994°W, 678m.

2AH1S: 50.40853°N, 101.31324°W, 401m

2AH1E: 50.40826°N, 101.31021°W, 402m.

2AH2S: 50.40257°N, 101.30245°W, 446m.

2AH2E: 50.40285°N, 101.30342°W, 450m

1FC1S: 51.56195°N, 100.84370°W, 679m

1FC1E:

1FC2S:

1FC2E:

1FC3S: 51.56169°N, 100.84421°W, 679m

1FC3E: ~~51.56169~~¹²⁰¹°N, 100.8~~4421~~⁸⁴³⁴⁰°W, 679m

2FC1S: 50.40869°N, 101.3150°W, 322m

2FC1E: 50.40852°N, 101.3127°W, 415m

2TH2S: 50.40274°N, 101.30197°W, 440m

2TH2E: 50.40308°N, 101.30199°W, 434m

2TH1S: 50.41048°N, 101.31181°W, 448m

2TH1E: 50.40949°N, 101.31036°W, 417m

1TH5S: 51.56181°N, 100.84277°W, 669m

1TH5E:

1TH4E: 51.56217°N, 100.84314°W, 671m

1TH4S: 51.56305°N, 100.84285°W, 674m

1TH6S: 51.58530°N, 100.85268°W, 665m

1BW1S: 51.61086°N, 100.92084°W, 852m

1BW1E: 51.61012°N, 100.92060°W, 719m

1BW2S: 51.56116°N, 100.84385°W, 701m

1BW2E: 51.56027°N, 100.84422°W, 686m

1BW3S: 51.58546°N, 100.85165°W, 678m

1BW3E: 51.58604°N, 100.84992°W, 673m

2BW1S: 50.40022°N, 101.27946°W, 387m

2BW1E: 50.40035°N, 101.28010°W, 387m

2BW2S: 50.40928°N, 101.31331°W, 424m

2BW2E: 50.40980°N, 101.31293°W, 430m

Trapline Coordinates : CAN : Manitoba 2.

2019

2BW3S: 50.40184°N, 101.30219°W, 449m
 2BW3E: 50.40147°N, 101.30177°W, 455m
 3BW1S 49.48219°N, 99.84475°W, 384m
 3BW1E 49.48243°N, 99.84607°W, 390m
 3BW2S 49.48261°N, 99.84500°W, 379m
 3BW2E 49.48264°N, 99.84562°W, 381m
 3BW4S 49.47927°N, 99.85282°W, 411m
 3BW4E 49.47876°N, 99.85320°W, 416m
 4BW1S 49.66515°N, 99.16331°W, 353m
 4BW1E 49.66490°N, 99.16411°W, 350m
 4BW2S 49.70778°N, 99.26348°W, 347m
 4BW2E 49.70758°N, 99.26246°W, 348m
 4BW3S 49.68016°N, 99.27332°W, 342m
 4BW3E 49.67974°N, 99.27332°W, 342m
 4BW4S 49.66711°N, 99.26896°W, 323m
 4BW4E 49.66699°N, 99.26964°W, 322m
 5BW1S 49.62737°N, 99.60300°W, 308m
 5BW1E 49.62785°N, 99.60313°W, 313m
 2BW4S 50.41173°N, 101.29053°W, 448m
 2BW4E 50.41238°N, 101.29240°W, 450m
 2BW5S 50.40335°N, 101.28120°W, 449m
 2BW5E 50.40289°N, 101.28252°W, 452m
 3AH1S 49.48356°N, 99.84674°W, 390m
 3AH1E 49.48343°N, 99.84884°W, 397m
 3AH2S
 3AH2E 49.48111°N, 99.85478°W, 428m
 3AH3S 49.48005°N, 99.85638°W, 452m
 3AH3E 49.48027°N, 99.85717°W, 448m
 4AH1S 49.67004°N, 99.16651°W, 363m
 4AH1E 49.67272°N, 99.16765°W, 357m
 4AH2S 49.70840°N, 99.26740°W, 349m
 4AH2E 49.70824°N, 99.26899°W, 353m
 4AH3S 49.68199°N, 99.27404°W, 340m
 4AH3E 49.68407°N, 99.27527°W, 351m

Trapline Coordinates: CAN: Manitoba 3.

2019

4AH4S: 49.66556°N, 99.27010°W, 336m.
4AH4E: 49.66519°N, 99.27240°W, 347m.
SAH1S: 49.62692°N, 95.60651°W, 311m.
SAH1E: 49.62667°N, 95.60671°W, 310m.
SBW2S: 49.63144°N, 95.60255°W, 324m.
SBW2E: 49.63175°N, 95.60297°W, 323m.
SBW3S: 49.62694°N, 95.61047°W, 324m.
SBW3E: 49.62742°N, 95.61152°W, 325m.
SBW4S: 49.62660°N, 95.60835°W, 319m.
SBW4E: 49.62597°N, 95.60750°W, 317m.
6BW1S: 49.15329°N, 96.72526°W, 288m.
6BW1E: 49.15457°N, 96.72430°W, 289m.
6BW2S: 49.15528°N, 96.72225°W, 279m.
6BW2E: 49.15271°N, 96.72153°W, 283m.
6BW3S: 49.17269°N, 96.67295°W, 289m.
6BW3E: 49.17192°N, 96.67179°W, 288m.
SAH2S: 49.62529°N, 95.61115°W, 308m.
SAH2E: 49.62612°N, 95.61193°W, 304m.
SAH3S: 49.62582°N, 95.61323°W, 310m.
SAH3E: 49.62603°N, 95.61210°W, 312m.
SAH4S: 49.62780°N, 95.60400°W, 304m.
SAH4E: 49.62715°N, 95.60352°W, 304m.
6AH1S: 49.15451°N, 96.72788°W, 296m.
6AH1E: 49.15604°N, 96.72685°W, 293m.
6AH2S: 49.17391°N, 96.67363°W, 281m.
6AH2E: 49.17454°N, 96.67127°W, 305m.
6AH3S: 49.15304°N, 96.72773°W, 290m.
6AH3E: 49.15297°N, 96.72650°W, 291m.

Trapline Coordinates, CAN, Manitoba:
2019

4.

1LTPW1S: 51.60766°N, 100.91863°W, 696m.

1LTPW1E: 51.60755°N, 100.91936°W, 683m.

1LTPW2S: 51.60855°N, 100.91872°W, 687m.

1LTPW2E:

1LTPW3S: 51.60633°N, 100.91912°W, 681m.

1LTPW3E: 51.60563°N, 100.91819°W, 680m.

1LTPW4S: 51.56246°N, 100.84204°W, 674m.

1LTPW4E: 51.56136°N, 100.84167°W, 675m.

1LTPW5S: 51.56118°N, 100.84169°W, 678m

1LTPW5E: 51.56120°N, 100.84253°W, 679m

1LTPW6S:

1LTPW6E: 51.58373°N, 100.85030°W, 677m

2LTPW1S: 50.40859°N, 101.31301°W, 406m

2LTPW1E: 50.40849°N, 101.31371°W, 354m

2LTPW2S: 50.40859°N, 101.31215°W, 406m

2LTPW2E: 50.40862°N, 101.31181°W, 406m

2LTPW3S: 50.40190°N, 101.30315°W, 456m

2LTPW3E: 50.40266°N, 101.30402°W, 454m

2LTPW4S: 50.41018°N, 101.29617°W, 464m

2LTPW4E: 50.41021°N, 101.29425°W, 450m

2LTPW5S: 50.40487°N, 101.28346°W, 452m

2LTPW5E: 50.40396°N, 101.28349°W, 454m

3LTPW1S: 49.48323°N, 99.84396°W, 388m

3LTPW1E: 49.48317°N, 99.84496°W, 389m

3LTPW2S: 49.48016°N, 99.84964°W, 390m

3LTPW2E: 49.47938°N, 99.84970°W, 394m

3LTPW3S: 49.47850°N, 99.84890°W, 400m

3LTPW3E: 49.47761°N, 99.84936°W, 409m

4LTPW1S: 49.66522°N, 99.16985°W, 354m

4LTPW1E: 49.66521°N, 99.17142°W, 356m

4LTPW2S: 49.71073°N, 99.26586°W, 339m

4LTPW2E: 49.71144°N, 99.26461°W, 342m

4LTPW3S: 49.68301°N, 99.26971°W, 333m

4LTPW3E: 49.68264°N, 99.26862°W, 333m

Trapline Coordinates: CAN: Manitoba
2019

S.

4LTPW4S: 49.66673°N, 99.26891°W, 318m

4LTPW4E: 49.66724°N, 99.26867°W, 318m

5LTPW1S: 49.62640°N, 95.61684°W, 306m

5LTPW1E:

5LTPW2S: 49.62502°N, 95.60820°W, 320m

5LTPW2E: 49.62554°N, 95.60691°W, 318m

5LTPW3S: 49.62710°N, 95.60571°W, 309m

5LTPW3E: 49.62736°N, 95.60374°W, 310m

6LTPW1S: 49.15161°N, 96.72718°W, 295m

6LTPW1E:

6LTPW2S: 49.15137°N, 96.72572°W, 289m

6LTPW2E: 49.15071°N, 96.72658°W, 289m

6LTPW3S: 49.17302°N, 96.67521°W, 307m

6LTPW3E: 49.17180°N, 96.67530°W, 305m

2TH3S: 50.40953°N, 101.29695°W, 453m

2TH3E: 50.40820°N, 101.29672°W, 457m

2TH4S: 50.40505°N, 101.28188°W, 448m

2TH4E: 50.40397°N, 101.28258°W, 449m

3TH1S: 49.48389°N, 99.84248°W, 375m

3TH1E: 49.48364°N, 99.84380°W, 381m

3TH2S:

3TH2E: 49.48127°N, 99.85350°W, 430m

3TH3S: 49.47755°N, 99.84893°W, 373m

3TH3E: 49.47762°N, 99.84942°W, 387m

4TH1S: 49.66595°N, 99.17150°W, 341m

4TH1E: 49.66642°N, 99.17073°W, 342m

4TH2S: 49.70830°N, 99.25809°W, 347m

4TH2E: 49.70736°N, 99.25787°W, 342m

4TH3E:

4TH3S: 49.68302°N, 99.27131°W, 333m

4TH4S: 49.66658°N, 99.26862°W, 316m

4TH4E: 49.66611°N, 99.26888°W, 313m

5TH1S: 49.62560°N, 95.60686°W, 310

5TH1E: 49.62575, 95.60596°W, 311

Trapline Coordinates: CAN: Manitoba 6.
2019

5TH2S: 49.62658°N, 95.61743°W, 314m
5TH2E: 49.62722°N, 95.61662°W, 313m
5TH3S: 49.62809°N, 95.60195°W, 312m
5TH3E: 49.62755°N, 95.60087°W, 313m
6TH1S: 49.15298°N, 96.73148°W, 286m
6TH1E: 49.15288°N, 96.73323°W, 285m
6TH2S: 49.15563°N, 96.72061°W, 284m
6TH2E: 49.15550°N, 96.71902°W, 283m
6TH3S: 49.17360°N, 96.67513°W, 296m
6TH3E: 49.17522°N, 96.67802°W, 271m