JOURNAL 1948

JAMES W. BEE

Topeka, Kansas

Jan 1, 1948

Approx. 3 inches of hail and snow on ground from yesterdays storm. Today high wind and light snow. This snow cover is the first cover this year and followed a mild, sunny period.

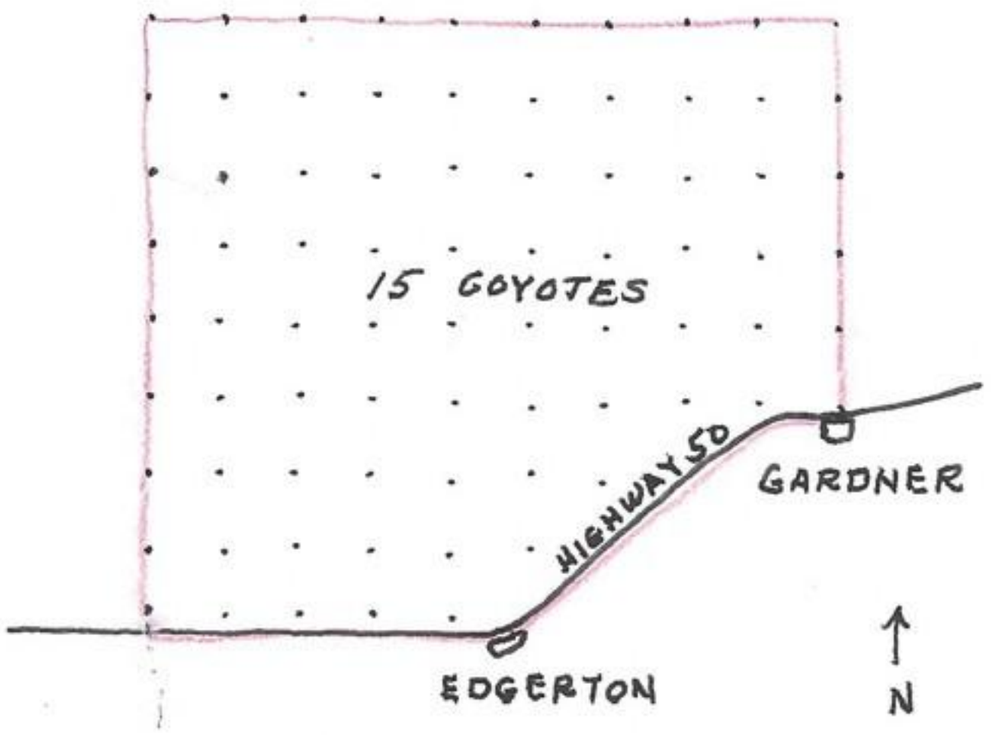
Jan. 2, 1948

Clear blue sky. no wind. Temp sub-zero. Second day back trouble.

Gardner, Johnson Co., Kansas

Jan 3, 1948

Coyote drive sponsored by Eudora group and organized at Gardner. This hunt included 64 sq miles and netted 15 Canis latrans latrans or .04 per square mile. The drive represents the largest area covered in one continuous drive. Several coyotes were known to have escaped the line of hunters, particularly at the beginning of the hunt when hunters were spaced farther apart. Most of the animals were killed in a relatively narrow circle at the final end of the drive.



Topeka, Shawnee Co., Kansas

Jan 6, 1948

Enroute from Topeka to Lawrence on highway 10 on south of river observed 18 Corvus brachyrhynchos, 3 Sciurus niger rufiventer and three Sylvilagus floridana mearnsi patterned in the road from car traffic. The fox squirrels were the first observed since Dec. 1.

Shawnee Lake, Shawnee Co., Kansas

Jan. 11, 1948

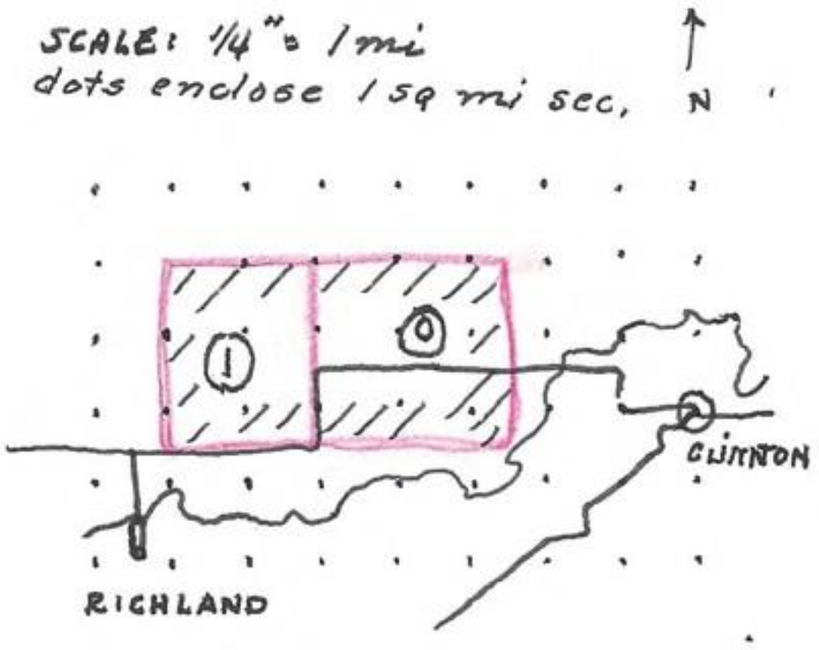
Lake 1/3 open and N end. Wind from S creating white caps. Reminded me of conditions in march but colder. Observed the following on

this lake: 23 Mergus merganser americana; 22 anas platyrhynchos; 1 Corvus b. brachyrhynchos; 2 Sciurus niger; 8 Otocoris alpestris. The mallards had changed their usual position on ice in center of lake to waters at the N end.

2 mi. S Stull, Douglas Co., Kansas

Jan 11, 1948

Two coyote drives this afternoon; one at 1:30 P.M and one at 3:15 P.M.



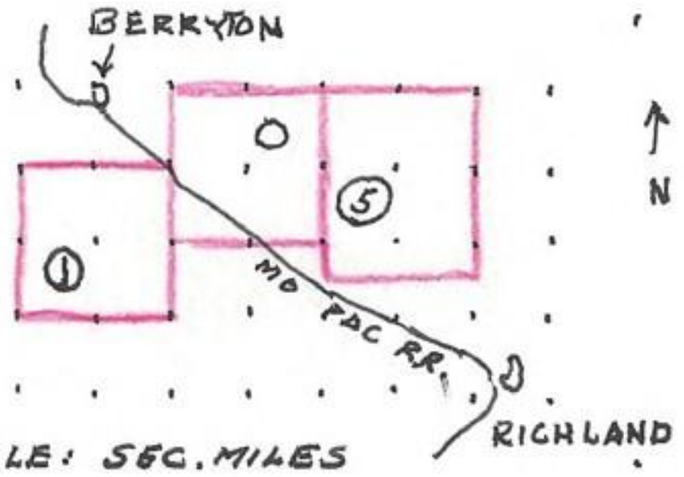
The two drives covered 11 sq. mi or .09 coyote per square mile - The coyote drive or "Wolf drive" had been given publicity the previous day thru newspapers and local radio stations. The first drive of 5 square miles on west end of area netted 1 coyote while the 6 square miles on east end did not support coyotes at 10:00 A.M, Stull was a quiet religious community a few cars and trucks orderly parked adjacent the small white church at 1:30 P.M this same community of one general store, a garage & a church changed to one of mass human aggregations and wild excitement. By 1:45 P.M 65 cars from neighboring communities had arrived and the hunters were preparing to leave for the hunting area. Six trucks were provided by the local hunters and carried the hunters into the field. These trucks placed the men around the edge of the area to be hunted at intervals of 200 or so feet. At a predetermined time all the hunters started to move into the center of the hunting area, converging closer together with the coyote finally helplessly trapped. The trucks then picked up the hunters (including several women) and organized them around the second hunting area and at the conclusion of this second drive returned both the hunters and the coyotes to Stull where the animals were auctioned to the highest bidder. Reports of the hunters on this drive were as follows: "Most of the coyotes on these drives are killed on the line before the final converging trap". "A few escape both either injured or otherwise", "The direction of the wind is a major consideration", "Coyotes average approx. 5 per square mile", "Highest number was 8 in 2 square miles." "Cannot explain why some areas will support many coyotes on one drive and none on subsequent drives." "One year we shot 4 coyotes on one drive

no coyotes the second year in the identical same area." "Coyotes tend to remain in the same area." "Coyotes will chase farmer dogs out of the fields." "Cross breeding with dogs is very unlikely," "Coyotes are frequently taken 2 or 3 miles from the outskerts of Topeka". "Coyotes can hole up under very small objects like logs, rocks, ledges". "Trails common in field after snow". "Many call regularly at night + morning from top of haystacks", "Farmers have hunted coyotes for the last 20 years but only the last 4 years as organized hunting parties", "Each hunting group will sponsor about 25 hunts per winter season." "Some of the older coyotes will do damage to sheep, calves and chickens but, on the average will not." "Areas inhabited by coyotes about 45% wheat, the remainning area shrubs, trees and other crops." "Last year we had to throw away six out of 12 cottontail rabbits, this year nearly all rabbits are fat and in good condetion, very little evidence of disease." Approx 250 hunters participated in this roundup. Thirteen hawks, mainly *Circus hudonicus* and Buteo boreatis were killed. The coyote killed today was purchased for 2 dollars and I will examine for tularemia tomarrow. Specimen number 6-1-12-48.

2 mi. n w Richland, Shawnee Co., Kansas

Jan 12, 1948

Joined coyote drive sponsored by Berryton farmers. These men are well organized and conduct their roundups with efficiency and obedience. No one allowes the lines to gap or lag and as a result they are generally more successful in getting the highest percent of coyotes in any one area. Six coyotes were shot in the three roundups, one hunt in the morning and two in the afternoon. I purchase seven coyotes for $2 apeece, the seventh one is one that was brought in from the field from a previous hunt.



1-1-12-48	♂ Canis latrans	1200-380-208-112	skull only. K.U no 21999	
2-1-12-48	♂	" "	1180-350-205-113	measurements only.
3-1-12-48	♀	" "	1175-350-189-111	" "
4-1-12-48	♂	" "	1181-340-191-112	skull only K.U no 22000
5-1-12-48	♀	" "	1190-320-194-112	skull only K.U no 22001
6-1-12-48	♀	" "	1130-330-193-108	skull only K. no 22002

7-1-12-48 ♂ Canis latrans 1240-360-208 skull only K.U. no 22003
8-1-12-48 ♀ Bubo virginiana No measurements

The great horned owl was one of seven killed on this hunt. Eight other hawks were taken including Circus hudsonicus and Buteo borealis. These two hawks were called chicken hawks by the farmers.

Watson, Shawnee Co., Kansas

Jan 14, 1948

annual coyote hunt at Watson. These hunts were prevously a once a year affair but this year they are weekly. Hunt sponsored by the local farmers at Watson. Well organized farmer hunters produced 6 in 11 sq. miles or .54 per square mile. Purchased the 6 coyotes at #2.00 per animal and recorded the following measurements:

1-1-14-48 ♀	Canis latrans	1170-360-198-112-26 lbs.	no emb. skull only
2-1-14-48 ♂	"	" 1160-332-205-113-30 lbs	skull only
3-1-14-48 ♀	"	" 1162-365-203-112-28 lbs	no emb. skull only
4-1-14-48 ♂	"	" 1220-370-211-114-34 lbs	skull only
5-1-14-48 ♀	"	" 1130-330-193-110-24 lbs	no emb. sk. only
6-1-14-48 ♂	"	" 1250-360-212-115-35 lbs	sk. only.

SEE MAR (OVER) ⟶

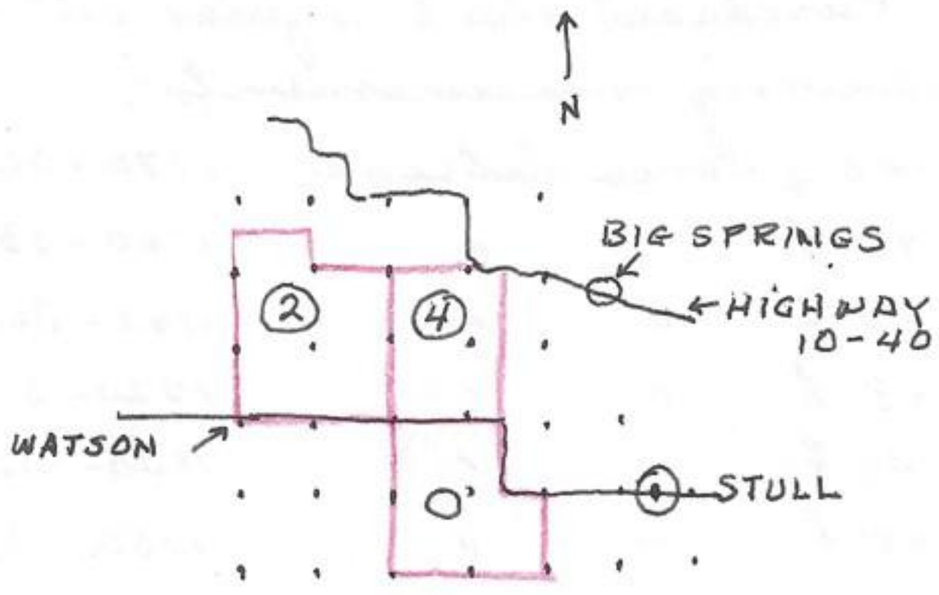
Shawnee Lake, Shawnee Co., Topeka

Jan 15, 1948

Observed the following at 11:00 A.M, day clear and fairly warm compared to previous days.

50 ♂ Mergus merganser americana
19 ♀ " " "
1520 Anas p platyrhynchos (actual count)
4 Corvus b. brachyrhynchos
4 Circus hudsonicus

mallards in one aggregate. watched 10 males following one female. In one group the male forced its position in front of female and repelled all other males. From Shawnee Lake drove to Eckland and recorded the following remarks from Mr. Henry Montford, a local furrier: 1) cottontails fat and healthy this year, last year were infected + poor 2) mink average 1 per mile along Wakarusa River and are becoming more numerous 3) Beaver increasing to point of inflicting property damage, price of beaver pelts 10 times higher ten years ago. Coyotes selling at that time for #12.00, now 50-75¢.



SCALE = SQ. MI. SEC

Five beavers taken from near Richland this week by Mr. Frey of Richland. Mr A.W Benander of 604 w 7th Topeka informs me that Paul Le Ger of Perry can supply me with beaver carcassas. Mr Burbank of 2 mi east Disney School near Berryton said that Sigmodon come in waves, like the present population number, some 40 years ago. They are rapidly increasing today. Mr T. J. Brown of Topeka, a furrier informs me that his men have been working for him for the last 11 years without contracting tularemia. Some men, however, get blood poisoning and a few lesions. He said that dogs cross with coyotes and the offspring have large heads & ears, less full tail and coarser hair. Mr Ogle, a furrier at Lawrence, informs me that the weasel were common in Lawrence at one time but are rare today.

Lone Star Lake, Douglas Co, Kansas

Jan 14, 1948

a trapper presented to me a carcass of a mink from this lake but mutilated and unsuitable for specimen or measurements.

Lawrence, Douglas Co., Kansas

Jan 15, 1948

Mr. Ogle, a furrier from Lawrence presented me with the carcasses of the following:

From Sibley, Douglas Co., Kansas.

1-1-15-48 ♂	Didelphis v. virginianus	770-338-72	measurements only	
2-1-15-48 ♂	"	"	"	780 340-72	"	"
3-1-15-48 ♂	"	"	"	850-375-73	"	"
4-1-15-48 ♀	"	"	"	760-320-64	"	"

From Clinton, Douglas Co., Kansas

5-1-15-48 ♀	Didelphis v. virginianus	680-295-60	skull only. no emb.	
6-1-15-48 ♂	"	"	"	760-340	measure only	
7-1-15-48 ♀	"	"	"	650-268-58	"	"	no emb.
8-1-15-48 ♂	"	"	"	651-278-62	skull only	
9-1-15-48 ♀	"	"	"	720-320-64	"	"
10-1-15-48 ♂	"	"	"	815-345-72	"	"
11-1-15-48 ♂	"	"	"	810-310-67	"	"
12-1-15-48 ♀	"	"	"	830-330-76	m. only, no emb	
13-1-15-48 ♂	"	"	"	680-305-61	skull only	

14-1-15-48 ♂ Didelphis v virginiana 690-290-65 skull only
15-1-15-48 ♂ " " " 635-280-60 m. only

From Richland, Douglas Co., Kansas

16-1-15-48 ♀ Didelphis v. virginiana 720-290-59 m. only, no emb.
17-1-15-48 ♀ " " " 740-300-62 " " " "
18-1-15-48 ♀ " " " 820-348-70-6½ lbs no emb.
19-1-15-48 ♀ " " " 780-350-68 m. only, no emb.
20-1-15-48 ♂ " " " 818-352-71 skull only
21-1-15-48 ♂ " " " 741-271-58 " "

From
Lone Star Lake, Douglas Co., Kansas

22-1-15-48 ♀ Mephitus m. avia 565-210-68
23-1-15-48 ♂ " " " 580-240-66, measure only.
24-1-15-48 ♀ " " " 645-288-66 " "
25-1-15-48 ♂ " " " 700-290-69 skull only
26-1-15-48 ♀ " " " 465-180-76 m. only
27-1-15-48 ♂ Mustela vison 600-220-49 skull only.

From Eudora, Douglas Co., Kansas

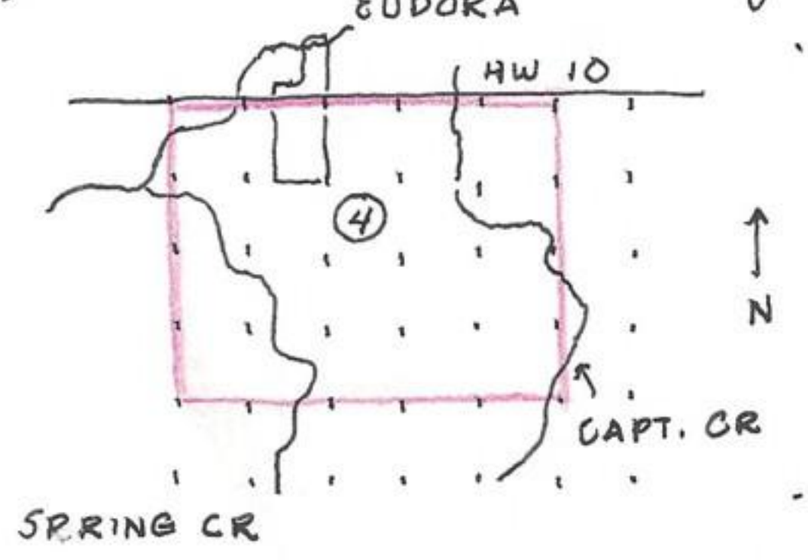
28-1-15-48 ♀ Mustela frenata 330-115-35 m. only

From Eudora, 3 mi S.

29-1-15-48 Mephitus m. avia 564-209-68. m. only

Eudora, Douglas Co., Kansas
Jan 17, 1948

Followed a coyote drove south of Eudora embracing 24 square miles. Four coyotes killed or .15 coyote per square mile. This hunt produced, in addition to 4 coyotes, one red fox and 9 hawks. Only one hunt conducted in the afternoon and sponsored by the local farmers and hunters from Lawrence & elsewhere. These coyotes had already been arranged for purchase by other individuals.



Vinland, Douglas Co., Kansas
Jan 17, 1948

The fourth annual coyote, sponsored by the Vinland farmers produced 4 coyotes in 47 sq miles or .085 coyote per square mile.

Lone Star Lake, Douglas Co., Kansas

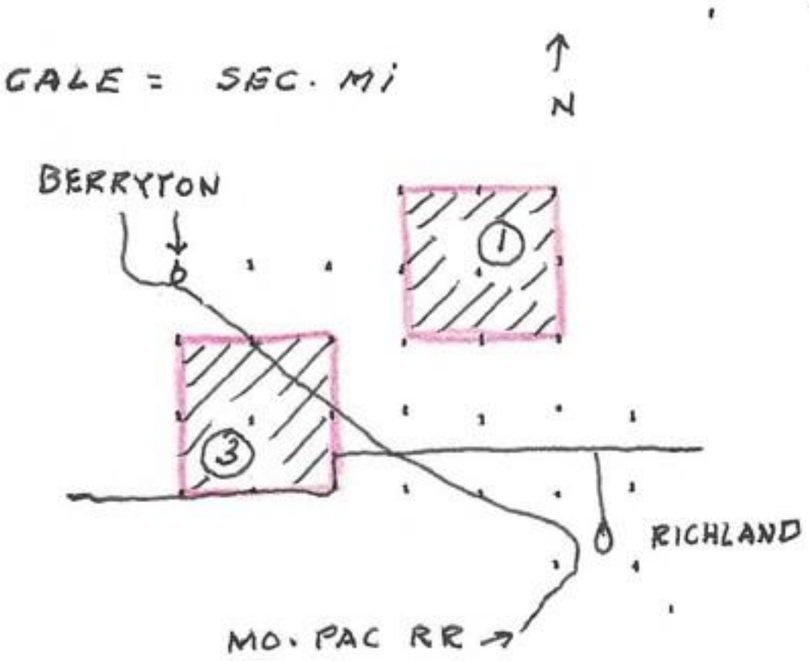
Jan. 17, 1948

Collected a mink from trapper at Lone Star Lake as foelows:
1a-1-17-48 mustela vison 401-210-69-2½ lbs ♂ skull only in good condition.

Berryton, Shawnee Co., Kansas

Jan. 17, 1948

Participated in a coyote drive south and east of Berryton as indicated on the map. This hunt organized by local farmers and successful because of close cooperation of farmers in maintaining closed lines. 4 coyotes were shot in 8 square miles in two separate drives or, in one area, 75 coyote per square mile and in the other area, 25 coyotes per square mile. Measures of the four coyotes purchased for $2.00 are as follows:

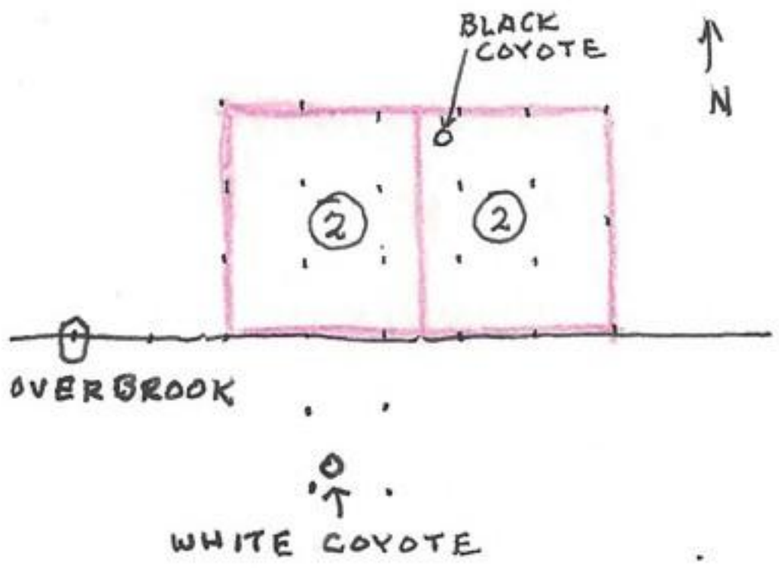


1-1-17-48	Canis l. latrans			1200-350-205-111-30 lbs
2-1-17-48	"	"	"	1185-320-203-110-30 lbs
3-1-17-48 ♂	"	"	"	1302-391-220-114-36 lbs.
4-1-17-48 ♀	"	"	"	1280-386-198-112-29 lbs 20 emb.

3 mi. N.E. Overbrook, Douglas Co., Kansas

Jan 18, 1948

4 Coyotes were killed on two separate drives of local farmers of the Overbrook area. One coyote, a 5th one, a melanistic one. while likely a cross with a dog, did possess the coyote characters of ears, feet, tail and head. The length of head was fore-shortened with a pronounced curvature of the rostrum. This animal had been previously observed in a group of coyotes, reacting at the time exactly like a coyote. An albino coyote was taken previously approx 4½ miles from the location of the black coyote taken today by a pack of hounds. The black coyote measured as follows:



1-1-18-48 ♂ Canis latrans 1150-353-185-110-28 lbs.

Stomach revealed capacity of cottontail rabbits and six inch sections of 1/8 inch leather belt. The other four coyotes were auctioned to members of the hunting party.

8 mi. E Topeka on highway 40, Shawnee Co., Kansas

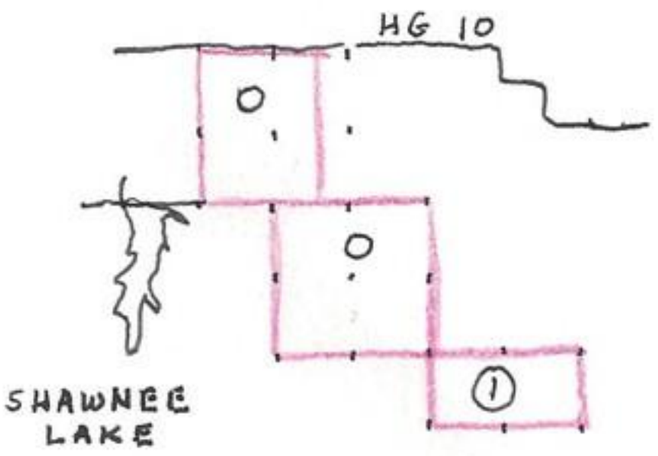
Jan 19, 1948

One Canis latrans killed on highway.

Watson, Shawnee Co., Kansas

Jan 21, 1948

Coyote drive N W & S E of Watson. 1 drive in forenoon and 2 in the afternoon.



Repeated reports of coyotes calling and numerous trails S of Tecumseh, prompted the Watson group to drive the area. The two drives nearest Tecumseh did not produce coyotes, although one black one was noted in the field. The third drive near Watson produced 1 animal.

measuring as follows:

1-1-21-48 ♀ Canis latrans 1200-350-198-28 lbs, skull only.

An addition specimen no. 2-1-21-48 of mephitis m. avia was purchased from a farmer who had shot it near his residence. Skull only.

Oklahoma-Kansas border (eastern section)

Jan 22, 1948

One mustela vison no 1-1-22-48 was collected by a trapper who sent it to T. J. Brown of Topeka. The carcass measured: 620-205-70-♂, skull only.

Lawrence, Douglas Co., Kansas

Jan 23, 1948

Mr. Ogle informed me as following:

Mammals become larger from east to west and from south to north. Hair becomes shorter as one goes south

1-1-24-48 Canis latrans ♂ 1230-380-211-36½ lbs. Pelage extraordinarily good.

Shawnee Lake, Shawnee Co., Kansas

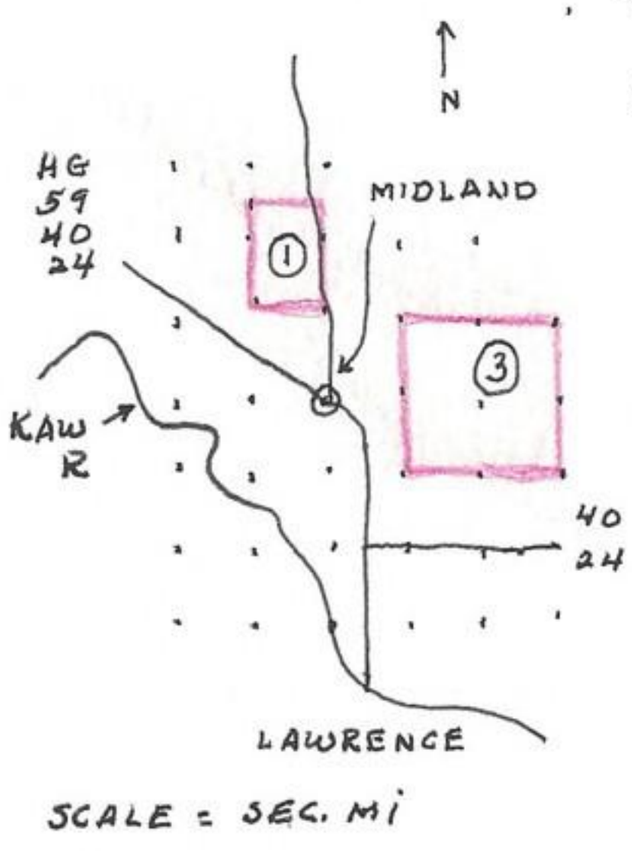
Jan. 24, 1948

Arrived lake 9:30 A.M to check ducks. At 9:45 there were 1220 Anas p. platyrhynchos in approx. 1 acre of open water at the N end of the lake surrounded by solid ice. This open water has been kept open this season by these ducks. At 9:50 A.M mallards started to leave in groups of 30 to 200 every 2 or three minutes, always in some kind of grouping. Departure continued until 10:15 A.M when approx. 900 had departed in such groupings. The remaining mallards remained at the lake. Groups were formed from all sections of the pond, not discreet groups within the flock. All flew east upon leaving the lake. Day temp sub zero and visibility approx 1/3 mile. Three Corvus brachyrhynchos circumnavigated the open pond and forced the mallards to leave the edge of the ice and enter the water. No american merganser on lake, although these birds used the lake up to this date.

Midland, Jefferson Co., Kansas

Jan. 25, 1948

Coyote drives of two separate units, one 1 mile north of Midland and 2 mi east Midland. Eighty cars and approx 320 people attended this hunt. 4 coyotes were taken, averaging in one unit approx 1 coyote per square mile and in the other case 3/4 coyote per sq. mile. The usual airplane observer was in the air directing the hunting operation below. This was the first hunt in which an accident occurred. At the general store a hunter accidently fired his shotgun which went up thru the ceiling into a room upstairs. no one was hurt. One fox was noted on this hunt but was able to evade the hunters in the dense timber & brush on the sidehill.



The four coyotes were purchased for $2.00 each and measured as follows:

1-1-25-48	♂	Canis latrans	1100-340-190-109-24 lbs	skull only	
2-1-25-48	♀	"	"	1210-355-203-111-31 lbs	"	" no emb.
3-1-25-48	♂	"	"	1253-354-202-112-33 lbs	"	"
4-1-25-48	♂	"	"	1448-445-213-115-45 lbs	"	"

Lawrence, Douglas Co., Kansas

Jan 26, 1948

Mr. Jim Ogle of Lawrence supplied me with the following carcasses:

From 2 mi S meridan, Jefferson Co., Kansas

1-1-26-48 Mustela vison 626-223. No foot measurement. Skull only

From Baldwin, Douglas Co., Kansas

2-1-26-48 mephitis mesomelas 686-291-79 skull only

3-1-26-48 Didelphis virginiana 770-320-71 " "

4-1-26-48 " " 721-285-66 " " no. emb.

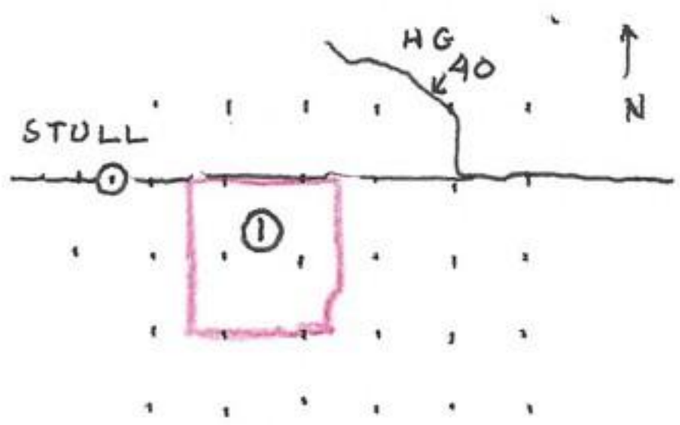
From 3 mi. S Lawrence, Douglas Co., Kansas

5-1-26-48 Ondatra zibethicus 530-270-86. measurement only.

2 mi. SE Stull, Douglas Co., Kansas

Jan 27, 1948

Coyote roundup at Stull. One coyote collected from this drive from 4 square miles. It was outstanding in that it was uniform grey without admixture of rufous. This area consisted of hillside and river valley. The coyote measured as follows:



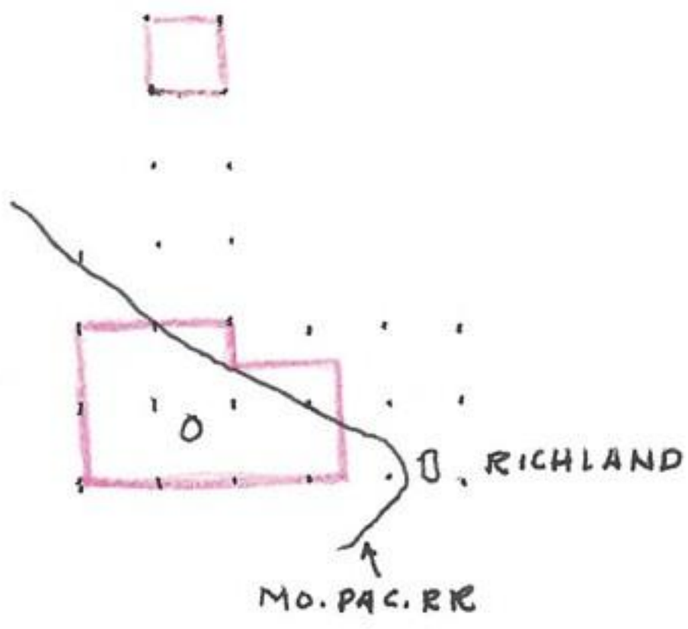
1-1-27-48 Canis l. latrans 1200-338-192-113-27½ lbs. no emb.

(see Dec 23, 1947 and Dec 27, 1947 for other coyote hunts)

Richland, Shawnee Co., Kansas

Feb. 1, 1948

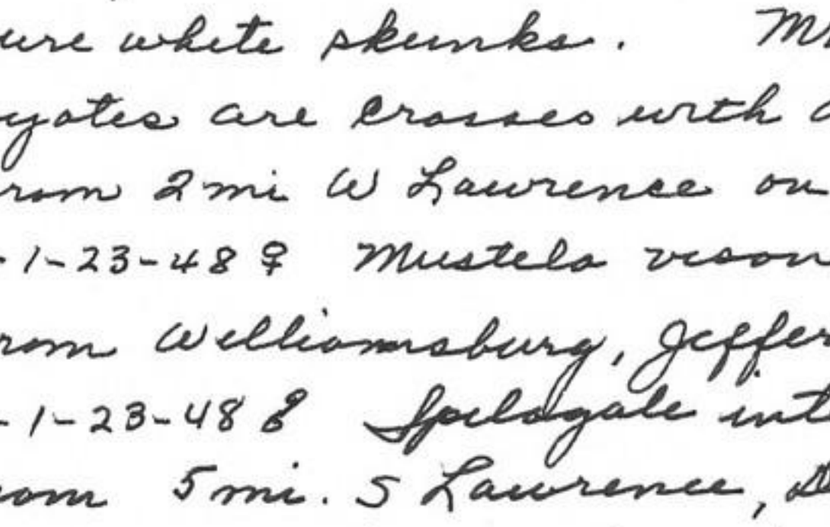
Berryton conducted two coyote drives. This drive included a considerable part of the Wakarusa river bottom but did not produce results. This area has always been considered ideal coyote



a railroad crew took 5 coyotes cubs near Leavenworth, which looked like collies pups with decededly short noses. The mother of these pups was a coyote. On Jan 12th several years ago at Lakeview, Douglas Co., Kansas a den of coyotes was found beneath a ledge of rocks. The young had not opened their eyes. Have received white beaver and muskrats from cottonwood area beyond (up stream) from Manhattan, Kansas. They have persistently showed up from that area. Two different kinds of mephitis west of Manhattan. Also received one white mink from that area. mink change to an ashy colored mink 30 miles S of Lawrence. Regardless of area trapped fur-bearing mammals change in size and pelage every 100 miles. Raccons of two varieties, one large and yellowish with coarse hair of the prairie and the other one at Lawrence are larger size and blacker color. The prairie raccoons have whitish faces. Skunks have better pelages near cities or habitations. The prairie raccoon to the west have 8 stripes while those at Lawrence have 6 only. Have received pure white skunks. Mr. Ogle is of the opinion that black Coyotes are crosses with dogs. The following were presented:

From 2 mi W Lawrence on Kaw River, Douglas Co. Kansas
1-1-23-48 ♀ Mustela vison 500-160-58, skull only, no emb.
From Williamsburg, Jefferson Co., Kansas
2-1-23-48 ♂ Spilogale interrupta 503-200-47, measure only.
From 5 mi. S Lawrence, Douglas Co., Kansas
3-1-23-48 ♂ Spilogale interrupta 478-192-45 M. only.
4-1-23-48 ♂ mephitus m. avca 580-220-71 skull only
5-1-23-48 ♀ " " " 658-281-65 skull only
6-1-23-48 ♂ Didelphis v. virginiana 750-305-69 skull only.

Eudora, Douglas Co., Kansas
Jan 24, 1948



Coyote drive at Eudora included 20 sq. miles. This area was the same hunted Jan. 17 at which time they captured 4 animals. The hunt today produced only 1 animal. This coyote was sold to a farmer for $2.00 and then resold to me. It measured:

hunting grounds. Several great horned owls were killed on this drive.

Lawrence, Douglas Co., Kansas
Feb. 1, 1948

Started bird census of an acre of pasture and elm groves at 307 3/4 W 23rd Street at the Carl Drake residence. Today counted 18 Junco h. hyemalis, 3 Spizella arborea, 1 Spizella pusilla, 20 Sturnus vulgaris.

Eudora, Douglas Co., Kansas
Feb. 2, 1948

Coyote drive (of unknown area) produced 2 coyotes. These measured:

1-2-1-48 Canis latrans 1260-360-210-124-35 lbs.
2-2-1-48 " " 1150-330-190-11K-23 lbs.

Lawrence, Douglas Co., Kansas
Feb 2, 1948

Census this A.M at 307 3/4 W 23rd (see above for area) 24 Juncos hyemalis, 12 Spizella arborea, 4 Spizella pusilla, 28 Sturnus vulgaris, 32 Turdus migratorius, 1 Zonotrichia querula

Oaerbrook, Shawnee Co., Kansas
Feb. 3, 1948

Purchased 5 Canis latrans from Mr. Claude Terril. These coyotes had been taken with hounds and rifle (holes thru skulls):

1-2-3-48 ♂	Canis latrans	1000-345-194-110-34 lbs	measure only	
2-2-3-48 ♀	"	"	992-335-198-105-30 lbs	" "
3-2-3-48 ♂	"	"	1035-300-200-114-32 lbs	" "
4-2-3-48 ♀	"	"	998-325-196-108-26 lbs	skull only
5-2-3-48 ♀	"	"	1032-365-197-109-24 lbs	measure only.

Lawrence, Douglas Co., Kansas
Feb. 3, 1948

Census this Am at 307 3/4 W 23rd. 4 Sialia sialis, 24 Juncos hyemalis, 12 Spizella arborea, 4 Spizella pusillus, 2 Passer domesticus, 2 Zonotrichia, 2 Corvus brachyrhynchos (overhead) no Sturnus vulgaris at this time.

Lawrence, Douglas Co., Kansas

Feb. 4, 1948

Bird census at 307 3/4 W 23rd. 30 Junco hyemalis, 2 Spizella arborea, 2 Spizella pusillus, 1 Zonotrichia querecula, 18 Sturnus vulgaris, 1 Dryobates pubescens medianus, 15 Passer domesticus.

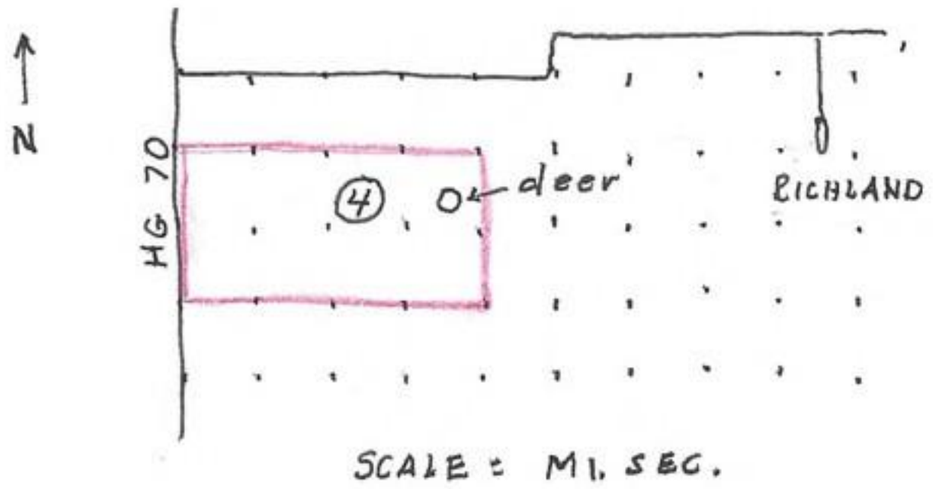
Feb 6, 1948

Bird census at 307 3/4 W 23rd St as follows: 28 Junco hyemalis, 3 Junco oregonus shufeldti, 3 Spizella arborea, 22 Sturnus vulgaris, 4 Turdus migratorius, 2 Sialia sialis, 2 Zonotrichia querecula, 4 Spizella pusilla.

5 mi. S Berryton, Shawnee Co., Kansas

Feb. 7, 1948

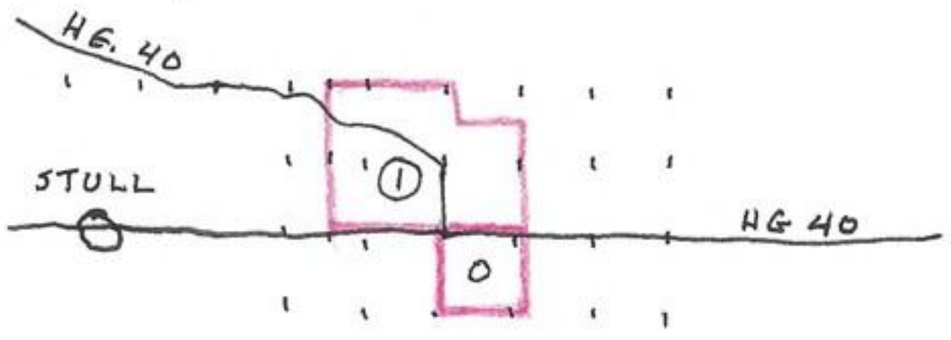
Coyote hunt in the Wakarusa valley west of Richland. Four coyotes taken, including the sight record of 7 white-tailed deer, which, while generally known to the farmers, were quite a surprise to the city participants. according to Mr. Benander, the group consists of 8 deer but one had recently been removed by a poacher. These deer are commonly found about 2 mi. SW of the Disney School House. Bury Creek seems to be the focal point. They have been seen at various times from Richland west to highway 75. The farmers claim there are two groups of 6 each of does. a buck is occasionally seen with group but generally remains apart from the does. One buck was recently observed 3 miles NE of Disney School House. The deer frequently run with cattle and were first observed some 8 years ago. Previous to that time there were no deer in this area. One farmer, a Mr. Brahms claims that a pregnant doe was released at Ottawa many years ago and that this herd is a result of its progeny. The farmers say they do no damage but one individual claims serious crop loss and desires reimbursement. This deer is Odocoileus virginianus macroura. Other herds are reported from Shawnee and Douglas Co but without definite location.



according to the Topeka Journal " deer scurried from timber about 2 miles southeast of Berry Creek school which is about four miles southeast of Berryton ... They stayed in the area for a while. when the coyote line was opened, they went into timber along the Wakarusa river. The deer seemed to be quite tame at first but after they saw the hunters, became more timid ... about 400 persons took part in the hunt ... and I expect at least a quarter of them saw the deer at one time or another. They also were sighted late in the afternoon ... another coyote hunt will start Sunday at 1:30 p.m. at the junction of US 50 and US 75.

7 mi W Lawrence, highway 40, Douglas Co., Kansas
Feb. 8, 1948

Two separate coyote drives this day at Kanrusa produced



one Canis latrans. It measured as follows:
1-2-8-48 ♂ Canis latrans 1220-360-198-112-28 lbs.

1½ mi E 11th Street, Lawrence, Douglas Co., Kansas
Feb. 10, 1948

Mr. Carson Ogle presented the following annual to me:
1-2-10-48 ♂ Ondatra zebethicus 522-250-80. This annual was presented to Don Vandevander at K.U for dissection.

6 mi. S Lawrence, Douglas Co., Kansas
Feb. 10, 1948

Mr. Carson Walden Ogle presented me with the following animals from trapper.

2-2-10-48 ♀	Didelphis virginianus	770-320-73	skull only	
3-2-10-48 ♂	"	"	708-278-71	" "
4-2-10-48 ♂	"	"	652-271-66	" "
5-2-10-48 ♀	"	"	653-283-63	" "
7-2-10-48 ♂	mephitus m avia		672-272-77	" "
8-2-10-48 ♀	"	" "	670-290-73	"
9-2-10-48 ♂	"	" "	592-230-69	" "
10-2-10-48 ♂	"	" "	591-225-72	" "

480210-14

2 mi. S Eudora, Douglas Co., Kansas
Feb. 10, 1948

Mr Ogle presented me with the following carcass:
4-2-10-48 ♂ Spilogale interrupta 498-191-51 skull only

1½ mi W on 23rd St., Lawrence, Douglas Co., Kansas
Feb. 10, 1948

One Canis latrans killed by car on county road. It measured: 1180-355-192 ♀. skull only. Stomach contested of approx. 2 quarts of Sigmodon hispidus texianus.

4 mi. S Lawrence, Douglas Co., Kansas
Feb. 10, 1948

A Canis latrans was taken on an organized coyote hunt approx. 4 mi. S Lawrence. It was displayed in a barber-shop window in town for several days before acquired by me. It measured 1298-390-208-41 lbs. ♂ This coyote was larger than other coyotes killed this winter and was considered a wolf by the majority of the farmer population. measurements only of this animal.

3 mi. E and 1 mi. S Lawrence, Douglas Co., Kansas
Feb. 10, 1948

Collected one Ondatra zibethicus measuring 522-250-80 ♂. Presented to Jan de Vander for dissection of hind leg musculature.

4 mi. S Lawrence, Douglas Co., Kansas
Feb. 10, 1948

Collected four Didelphis virginianus and measurements are:

770-320-73-♀	skull only	
708-278-71-♂	"	"
652-271-66 ♂	"	"
653-283-63 ♀	"	"

2 mi. S Eudora, Douglas Co., Kansas
Feb. 10, 1948

Collected one Spilogale interrupta. It measured:
498-191-51-♂ skull only.

6 mi. S Lawrence, Douglas Co., Kansas
Feb 10, 1948

Mr. Ogle of Lawrence presented me with the following

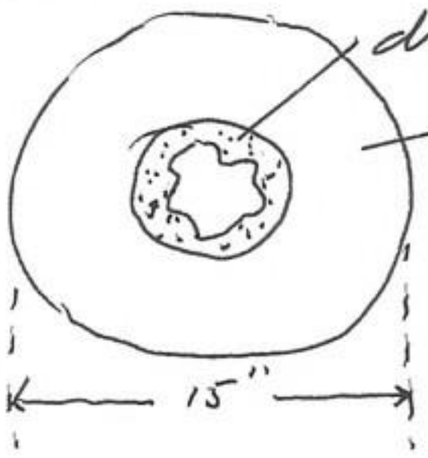
mephitis mephitis avia			672-272-77 ♂	skull only
"	"	"	670-290-73 ♀	" "
"	"	"	592-230-69 ♂	" "
"	"	"	591-225-72 ♂	" "

1½ mi. W and 2 mi. S Lawrence, Douglas Co., Kansas
Feb. 10, 1948

Last night a Canis latrans was struck by a car as the coyote crossed the road. In rural area with house every 10 acres. Ate fruits in cultivation. Stomach had several Sigmodon hispidus. The coyote measured 1180-355-192 - ♀.

4 mi. SW Lawrence, Douglas Co., Kansas
Feb. 15, 1948

Snow on ground and cold this A.M. In an area of approx. 4 acres, examined 15 nests of Neotoma. One nest 1-2-15-48 collected for ectoparasites. Nest placed at base of osage orange tree. Near nest collected a Sylvilagus floridanus for blood sample: Approx 150 feet from first nest a second one was found. This nest 3-2-15-48 of Neotoma floridanus osagensis, had a well constructed mass of sticks at the base of an osage orange tree and placed directly upon the ground over an inclining or prone trunk of tree. Approx. 6 ufeet away was a juniper tree with a second nest 25 feet above ground. The alternate nest was like a fox squirrel nest with an outer layer of freshly cut juniper limbs and an inner cup of dried leaves.



The outer layer neatly formed by overlapping, probably due to the inward pulling of the limb. As the neotoma left the ground nest, it ran immediately to this upper nest where it took refuge until dislodge by throwing a stick at the nest. The pack rat was collected and it measured: 385-161-39-25 gms ♂. A mockingbird passed through the tree during the period of observation. Another neotoma nest 4-2-15-48 was collected 50 feet from above. One Asio wilsonius was collected in this same area. This area supports a good growth of junipers.

4 mi. W Lawrence, Douglas Co., Kansas
Feb. 16, 1948

From a fence row of osage-orange trees counted 45 nests of Neotoma floridana in 4/10 of a mile. Collect the following neotoma

1-2-16-48 neotoma 361-157-39-25 ♀

Recorded 2 photographs nos:
2-2-16-48 of pictoral tree and barn and also 3-2-16-48 of Wakarusa

Watched a Cooper hawk feeding on a domestic pigeon. At one time it carried the pigeon in one claw while walking a distance of 3 feet. Also noted one compact flock of 6 yellow-shafted flickers and 56 crows in one loose flock. Purchased some coyotes from Lutz.

4 miles W Richland, Shawnee Co., Kansas
Feb. 20, 1948

Collected the following Neotoma floridana from one fence row of osage-orange trees:

1-2-20-48 Neotoma ♂ 378-165-39
2-2-20-48 " ♂ 376-152-39
3-2-20-48 " ♂ tail only 39
4-2-20-48 " ♂ 372-160-39.5
5-2-20-48 " ♀ 360-155-38
6-2-20-48 " ♂ 385-170-38

Baldwin, Douglas Co., Kansas
Feb 20, 1948

Collected the following coyotes from Baldwin.

7-2-20-48 ♂ Canis latrans 1280-360-205-34 lbs.
8-2-20-48 ♀ " " 1260-394-196-29 lbs
9-2-20-48 ♂ " " 1298-360-205-31½ lbs
10-2-20-48 ♀ " " 1260-378-200-29½ lbs.

Lone Star, Douglas Co., Kansas
Feb 20, 1948

11-2-20-48 ♂ Canis latrans 1269-389-203-29 lbs
12-2-20-48 ♂ " " 1224-331-199-29 lbs
13-2-20-48 ♀ " " 1178-368-189-23½ lbs
14-2-20-48 ♀ " " 1240-370-185-26 lbs.
15-2-20-48 ♀ " " 1230-370-194-27½ lbs
16-2-20-48 ♀ " " 1140-302-190-28 lbs.

Worden, Douglas Co., Kansas
Feb 20, 1948

Collected the following Coyotes:

17-2-20-48 ♂ Canis latrans 1138-315-186-23 lbs
18-2-20-48 ♂ " " 1230-360-192-31 lbs - mainge

Clinton, Douglas Co, Kansas
Feb. 20, 1948

19-2-20-48 ♂ Canis latrans 1233-305-192-31 lbs
20-2-20-48 ♂ " " 1170-340-190-24 lbs
21-2-20-48 ♀ " " 1195-362-189-26 lbs

Wakarusa, Douglas Co., Kansas Feb. 20, 1948

22-2-20-48 ♂ Canis latrans 1302-370-205-33 lbs
23-2-20-48 ♀ " " 1160-380-185-23 lbs
24-2-20-48 ♀ " " 1190-330-190- — mainge

480216-16

Stull, 6 mi W Lawrence, Douglas Co., Kansas

Feb. 16, 1948

The following coyotes were purchased from coyote drive this A.M as follows:

6-2-15-48 Canis latrans 1235-350-211-112-35 lbs. ♂ The stomach contained several Sigmodon hispidus

7-2-15-48 Canis latrans 1240-360-212-112-34 lbs ♂

8-2-15-48 " " 1220-355-209-113-34 lbs ♂.

The stomach contained legs of 3 chickens. As no feathers accompanied these legs, it is presumed that the feet were those of chickens clean for human consumption. In addition to this coyote, one Bubo virginianus was killed on the 2 hour hunt.

3 1/2 mi SSW Pleasant Grove, Douglas Co., Kansas

Feb. 21, 1948

This locality from Lawrence is 11 mi. S and 3 2/3 mi. W. Collected 11 Sylvilagus floridana from field of appro. 12 acres. Mr. Bailes who owns property to west of this field took 36 cottontails from this field 2 weeks ago on one afternoon hunt. Most of these rabbits were in nests covered with grass. Grass completely covering field and forming matted surfaces. Upper story of weeds sparsely plaled. The rabbits were examined for tularemia but all proved negative. Numbers 1-2-21-48 to 11-2-21-48 assigned to these mammals.

4 mi. W Pleasant Grove, Douglas Co., Kansas

Feb. 22, 1948

Collected one Sylvilagus floridanus 1-2-22-48 in roadway at twilight. 4 others in some area. Measurements only.

3 1/2 mi. SSW Pleasant Grove, Douglas Co., Kansas

Feb. 22, 1948

Set series of snap traps in Baile field and in a field belonging to Mr. Henry Florey as follows (afternoon clear but cold breeze): Research area #-2-22-48 in Baile field and consists of 50 traps set in runways among matted grasses. This field is about 12 acres and area trapped 100 x 20 feet. Traps every 10 feet. Research area 2-2-2-48 of 4 foot high sedges in perpendicular matted condition. Along water course of permanent condition 200 feet long. Traps 51-92 placed

every 10 feet in runways or what appeared to be usable areas of sedge stand. Research area 3-2-22-48 in 2 years feeld of weeds following wheat harvest. Weeds 3 feet high. Ground bare and muddy. No sign of persistent use of trails, sparse overhead protection. This place appeared to be one that would be unproductive but grass & weed cutting suggested presence of some type of mammal. This feeld is the first one south of Henry F. Florey's property. Traps 93-121. Research area 4-2-22-48 along fence line of grasses at south end of Florey property. Traps 122-140 at 10 feet intervals. Research area 5-2-22-48 in damp swamp or meadow of restricted area supplied by springs & without main water course. Grasses & sedges completely matted surface. Osage orange & Symphoricarpos beyond. Traps 141-184. Research area 6-2-22-48 among Neotoma area under piles of osage orange. Traps 185-229 Research area 7-2-22-48 in wet meadow of sedges and grasses supported by spring water. Traps 230-293. The above on Florey's property. One Sylvilagus floridanus in meadow under clump of grass. Wet on all sides. Returned to Lawrence at 11:45 P.M.

3½ mi. SSW Pleasant Grove, Douglas Co., Kansas

Feb 23, 1948

Enroute to Willow Springs observed a Falco sparverius dive 60° to a mouse in a feeld of weeds. Day cloudy & cold wind. Inspection of trapline as follows:
Research area 1-2-22-48: trap no. 9 microtus ochrogaster, 1-2-23-48; trap 11 Peromyscus maniculatus, 2-2-23-48; trap 12 Microtus ochrogaster, 3-2-23-48; trap 13 sprung; trap 14 Microtus ochrogaster, 4-2-23-48; trap 15 Reithrodontomys, 5-2-23-48; trap 16 sprung; trap 17 Pero. manic, 6-2-23-48; trap 19, Pero. manic, 7-2-23-48; trap 20 Reithro, 8-2-23-48; trap 21 Pero. manic, 9-2-23-48; 22-26 uneffected and not in runways; trap 27 Pero. manic, 10-2-23-48; trap 28, Microtus ochro. 11-2-23-48; trap 29 Pero. manic 12-2-23-48; trap 30 sprung; trap 31 sprung but not in a trail; traps 32-34, uneffected; trap 35 Pero. manic, 13-2-23-48; traps 36-45 uneffected; trap 46, Reithro, 14-2-23-48; trap 47, Reithro, 15-2-23-48; trap 48 uneffected traps 49-50 uneffected. One Sciurus jamaicensis & two Cervus hud-Cyaneus in feeld.

From research area 2-2-22-48 collected the following: traps 51-52 uneffected; trap 53 Pero leucopus, 16-2-23-48; traps 54-55 sprung; trap 56 Pero manic, 17-2-23-48; traps 57-58 sprung;

traps 59-64 uneffected; trap 65 sprung; traps 66-69 uneffected; trap 70 sprung; traps 71-81 uneffected; trap 82 microtus ochrogaster 18-2-23-48; traps 83-86 uneffected; trap 87 sprung; traps 88-90 uneffected; trap 91 sprung; trap 92 uneffected.

From research area 3-2-22-48 collected:

93	Reithro	19-2-23-48	103	Pero mane	28-2-23-48
94	"	20-2-23-48	104	uneffected	
95	"	21-2-23-48	105	Pero leucopus	29-2-23-48
96	"	22-2-23-48	104	" "	30-2-28-48
97	"	23-2-23-48	107	" mane.	31-2-28-48
98	"	24-2-23-48	108-114	sprung	
99	"	25-2-23-48	115	Segmodon hispidus	32-2-23-48
100	uneffected ±		116-118	sprung	
101	Reithro	26-2-23-48	119-121	uneffected.	
102	Pero. mane.	27-2-23-48			

Inspection research area 4-2-22-48: 5 sprung traps and no mammals.

Inspection research area 5-2-22-48: From traps 141-184 took the following:

Peromyscus leucopus	32-2-23-48	microtus ochrogaster	36-2-23-48
Reithro	35-2-23-48	" "	37-2-23-48

Inspection research area 6-2-22-48:

Pero leucopus	38-2-23-48	Peromyscus leucopus	40-2-23-48
" "	39-2-23-48	Segmodon hispidus	41-2-23-48

Research area 7-2-22-48 produced:

microtus ochrogaster	42-2-23-48	microtus ochrogaster	46-2-23-48
" "	43-2-23-48	Peromyscus leucopus	47-2-23-48
" "	44-2-23-48	" "	48-2-23-48
" "	45-2-23-48	" "	49-2-23-48

3 mi w Lawrence, Douglas Co., Kansas
Feb. 25, 1948

40 crows in one flock flying east.

2 mi. W on 23rd St., Lawrence, Kansas
Feb 26, 1948

On 2 mi. S & 1½ mi. W Lawrence. Set 300 traps in field of weeds. This field had, the previous year, was grown to wheat. Research area A-2-26-48 of three linear lines of traps at 10 foot intervals thus A B C ⋮⋮⋮⋮⋮⋮⋮⋮⋮⋮ → . Ground essentially bare between weed stems.

480227-19

2 mi W on 23rd St., Lawrence, Douglas Co., Kansas

Feb. 27, 1948

Inspected trap line set last night from research area A-2-26-48.
Listed from left to right: line A, line B, line C: ○ circle is field no plus rest of number.

trap number A	trap no B	trap no. C
	1 Pero manic ①	1 mus mus ②
4 Pero manic ③	4 Reithro ④	
9 Reithro ⑤		
	13 Pero manic ⑥	
17 Pero manic ⑦		
	19 Pero manic ⑧	
	20 " " ⑨	
27 Pero manic ⑩		
	28 Pero manic ⑪	
	30 Reithro ⑫	
47 Pero manic ⑫		
49 Pero manic ⑬	49 Pero manic ⑭	
50 Reithro ⑮		
	52 Segnodon h ⑯	
	53 Pero manic ⑰	
		54 Reithro ⑱
55 Pero manic ⑲		
58 " " ⑳		
	59 Pero manic ㉑	
	63 Segnodon ㉒	
64 Pero manic ㉓		
65 " " ㉕	65 Pero manic ㉔	
	71 " " ㉖	
	77 Reithro ㉗	
80 Pero manic ㉘		80 Pero manic ㉙
		85 Segnodon hisp ㉚
	81 Reithro ㉛	
	91 Segnodon h. ㉜	
94 Pero manic ㉝		
95 " " ㉟		
	99 Pero manic ㊱	

At least as many traps were sprung as held mammals.
Row A = 14 mammals. Row B = 16 mammals Row C = 4 mammals

Total catch = 23 Peromyscus maniculatus
7 Reithrodontomys megalotes
4 Segnodon Rufidus
1 Mus musculus
35

480228-20

1/2 mi. E Pleasant Grove, Douglas Co., Kansas

Feb. 28, 1948

Collected 8 Sylvilagus floridanus from erosional canyon populated with large deciduous trees. Cover main short shrubs in sparsely placed trees. 8 other cottontails observed in 1/2 mile.

2 mi. S & 1 mi E Pleasant Grove, Douglas Co, Kansas

Feb. 28, 1948

Collected 8 Sylvilagus floridanus from timbered canyon. In 1/2 mile of collecting noted 6 others. One Sciurus niger rufoventer in area. Sunny exposure and wind protected side of canyon support main rabbit population.

3 1/2 mi. SSW Pleasant Grove, Douglas Co., Kansas

Feb. 28, 1948

Collected 6 Sylvilagus floridanus from grass field. Same field as hunted Feb. 21 when 11 were taken. It seems remarkable that this field repopulation after each hunt. No other rabbits were observed in this field. Mr. Bacle reports 4 Lepus Californicus melanotis in a corn field nearby, also a Canis latrans. This evening set 286 traps in field of Mr Everett Beeghley at above location. This field adjoins the Henry Florey property. Traps set every 15 feet apart in an area 300 x 200 ft. This field had been used for wheat three years ago. Several bird nests in last years weeds. This set is designated 1A-2-28-48. On return to Topeka between twilight and dark, noted only 3 cottontails between Lone Star Lake & Topeka via Rickland, Disney Sch & Berryton. At 2 miles west of Lone Star Lake noted 1 Spilogale interupta cross the road. Moths appx 2 per mile at 1 hour after dark (in headlights of car). Between Willow Springs & Florey to Lone Star noted 8 cottontails in road, alive.

3 1/2 mi SSW Pleasant Grove, Douglas Co., Kansas

Feb. 29, 1948

Inspected old wheat field research area 1A-2-28-48 this A.M. Only positive trap results recorded.

8 sprung
10 Peromyscus manic 1-2-29-48
12 sprung
14 Perom manic 2-2-29-48
15-16 sprung
24 Pero manic. tail only
28 sprung
40 Pero manic 3-2-29-48
47 sprung
50 Pero. manic 4-2-29-48

51 sprung
68 "

72 Sigmodon hispidus 5-2-29-48
75 Pero manic 6-2-29-48
80 " " 7-2-29-48
82 " " 8-2-29-48
85 sprung
95 "
96 microtus ochrogaster 9-2-29-48
in runway at edge of field.
101 sprung
104 microtus ochrogaster 10-2-29-48
111 sprung
112 Pero. manic 11-2-29-48
115 " " 12-2-29-48
118 Reethro 13-2-29-48
119 " 14-2-29-48
120 Pero. manic 15-2-29-48
125 " " 16-2-29-48
128 " " 17-2-29-48
132 M. ochrogaster 18-2-29-48
from edge of feeld and from runway.
138 sprung
140 "
145 Reethro 19-2-29-48
146 sprung
147 Pero. manic 20-2-29-48
149 sprung
152 Reethro 21-2-29-48
172 " 22-2-29-48
175 Sigmodon 23-2-29-48
176 sprung
192 sprung
193 Pero. manic 24-2-29-48
194 sprung
199 Reethro 25-2-29-48
211 sprung
213 Pero manic 26-2-29-48
215 " " 27-2-29-48
220 sprung
221 Reethro 28-2-29-48
227 sprung
228 Pero manic 29-2-29-48
229 " " 30-2-29-48
230 Sigmodon hispidus 31-2-29-48
231 sprung
233 "
236 "
242 Sigmodon hispidus 32-2-29-48
243 sprung
244 Pero. manic 33-2-29-48
245 " " 34-2-29-48
246 " " 35-2-29-48
251 sprung
254 Pero Manic 36-2-29-48
256 " " 37-2-29-48
270 " " 38-2-29-48

Collected traps from this area and established research area 50-2-29-48 in pasture owned by Mr. Baele at 3½ mi. SSW of Pleasant Grove, Douglas Co., Kansas. Started line at 2:00 P.M. This field is unplowed and apprax 12 acres of 7 degree slope with a main erosional gully that drains the area. Soil gradient from dry to damp to supersaturated bottomlands. A spring strata issues from slope ½ up and at this point the grasses and sedges are more marshlike. Muhlenbergia sibirbori & Scirpus atroverus as dominant and a weedy overstory. Grasses completely cover feeld and give matted protection for runways. One feeld of native Andropogon adjoinning. no grazing at this time.

water in erosional channel and ice in protected exposures of gulch. During exceptionally periods of rain the banks overflow and inundate 10-20 feet of bordering creek edge. No trees in feeld. numerous Sylvilagus tracks and runways with grass shelters. a few coyote droppings. A red-tailed hawk and a marsh hawk in feeld or adjoining feeld. 291 traps in linear line 10 feet apart and in runways. At 3:15 P.M collected one microtus ochrogaster 51-2-29-48 from trap no. 12. The complete line was not reexamined at this time. Day cold and clouds forming for rain. At sundown (20 minutes before to sundown) reexamined trap line, 3 hours after setting, and collected the following:

1	microtus ochrogaster	52-2-29-48	
12	"	"	53-2-29-48
46	"	"	54-2-29-48
50	"	"	55-2-29-48
90	Sigmodon hispidus	56-2-29-48	
99	sprung		
100	"		
101	microtus ochrogaster	57-2-29-48	
111	"	"	58-2-29-48
120	Melospiza melodia	59-2-29-48	
162	microtus ochrogaster	60-2-29-48	
177	"	"	61-2-29-48
190	"	"	62-2-29-48
213	"	"	63-2-29-48
215	Sigmodon hispidus	64-2-29-48	
229	microtus ochrogaster	65-2-29-48	
252	Sigmodon hispidus	66-2-29-48	
278	Microtus ochrogaster	67-2-29-48	
287	"	"	68-2-29-48

Reset all traps

Number 60-2-29-48 had fecal pellet measuring 6 x 2 mm.

3½ mi SSW Pleasant Grove, Douglas Co., Kansas

March 1, 1948

This morning inspected research area 50-2-29-48 in a freezing rain storm. Ice formed on all vegetation making solid stocks of all the grasses and weeds. Under these conditions was not able to correlate traps and mammals. All traps were sprung.

1. Pero. m. 1-3-1-48; 3 Reithro 2-3-1-48; 5 microtus ochrogaster 3-3-1-48; 6 M. ochro 4-3-1-48; 8 Reithro 5-3-1-48; 18 Reithro 6-3-1-48; 10 M. ochro 7-3-1-48; 11 Pero. m 8-3-1-48; 12 Pero m 9-3-1-48; 16 M. ochro 10-3-1-48; 17- M. ochro 11-3-1-48; 27 Pero m 12-3-1-48; 41 M ochro 13-3-1-48; 45 Reithro 14-3-1-48; 48 M. ochro 15-3-1-48; 49 M. ochro 16-3-1-48; 59 M. ochro 17-3-1-48; 62 Reithro 18-3-1-48; 72 M. ochro 19-3-1-48; 74 M ochro 20-3-1-48; 80 M. ochro 21-3-1-48; 78 M. ochro 22-3-1-48; 79 Reithro 23-3-1-48; 86 M. ochro 24-3-1-48; 90 Micro. ochro 25-3-1-48; 95 M. ochro 26-3-1-48; 101 M. ochro 27-3-1-48; 115 M. ochro 28-3-1-48; 122 Pero maniculatus 29-3-1-48; 126 Pero m 30-31-48; 27 M. ochro 31-3-1-48 eaten thru eye and brain to neck region on one side; 128 M. ochro 32-3-1-48; 129 Pero m 33-3-1-48; 130 Pero m 34-3-1-48; 131- M. ochro 35-3-1-48; 137 Reithro 36-3-1-48; 144 M ochro 37-3-1-48;

148 Peromm 38-3-1-48; 163 Reithro 39-3-1-48 eaten thru brain case and all of neck. Pleural cavity not touched; 169 Reithro 40-3-1-48; 170 Reithro 41-3-1-48; 172 M ochro 42-3-1-48; 174 M. ochro 43-3-1-48; 178 Sigmodon 44-3-1-48; 208 Peromm 45-3-1-48; 209 M ochro 46-3-1-48; 213 Reithro 47-3-1-48; 215 M ochro 48-3-1-48; 213 Reithro 47-3-1-48; 215 M. ochro 48-3-1-48; 217 Reithro 49-3-1-48; 221 M. ochro 50-3-1-48; 222 M. ochro 51-3-1-48; 223 M ochro 52-3-1-48; 224 M. ochro 53-3-1-48; 225 M. ochro 54-3-1-48; 228 Reithro 55-3-1-48; 230 M. ochro 56-3-1-48; 235 M. ochro 57-3-1-48; 236 Pero. m. 58-3-1-48; 237 M. ochro 59-3-1-48; 240 Reithro 60-3-1-48 entire back & head eaten. Tail with long coarse hair; 245 Sigmodon 60-3-1-48; 246 M. ochro 62-3-1-48; 250 M. ochro 63-3-1-48; 251 Peromanic 64-3-1-48; 257 M. ochro 65-3-1-48; 259 M. ochro 66-3-1-48; 261 M. ochro 67-3-1-48; 264 M. ochro 68-3-1-48; 270 M. ochro 69-3-1-48; 281 M. ochro 70-3-1-48. Reset as many as possible but ice hindered. The intention was to leave traps in same position and reset tomorrow when climatic conditions were more favorable. now my fingers are too cold to use and entire body covered with a cake of frozen rain. This afternoon rain turned to snow so prospects are questionable for recapture of mammals.

Lawrence, Douglas Co., Kansas

Mar. 2, 1948

Rain & snow last night. Will leave traps in field until snow leaves ground. all traps should be sprung by rain & snow.

3½ mi. SSW Pleasant Grove, Douglas Co., Kansas

Mar. 13, 1948

Collected 20 Sylvilagus floridanus in Bailes field where research area 50-2-29-48 is established. Many rabbit tracks in snow. One hole in ground with trails and tracks leading into it. Seven cottontails were flushed from arched grass shelters at 3 feet. Only the back of rabbits visable. Most of these rabbits were from erosional gullies or along fence row adjacent the research field. One deep erosional gully supported 5 rabbits. Redtail hawk, two short-eared owls and 1 crow in field. Only two signs of microtus ochrogaster in snow lined trails. Old trapping area 50-2-29-48 completely covered with snow. It would appear that microtus is active before a storm and to an extent during the storm. It would be interesting to check effects of this excessive water and snow

on population numbers. Traps set (reset) mar 1 are still under the snow and all completely hidden from view. Rabbit no 7-3-13-48 in very poor condition. no 8-3-13-48 with conspicuous hydrocoeles. no. 11-3-13-48 with small white patches on lever. no. 12-3-13-48 with 130 mm embryos. no 17-3-13-48 with 3x1 emb 95 mm long.

3½ mi. SSW Pleasant Grove, Douglas Co., Kansas

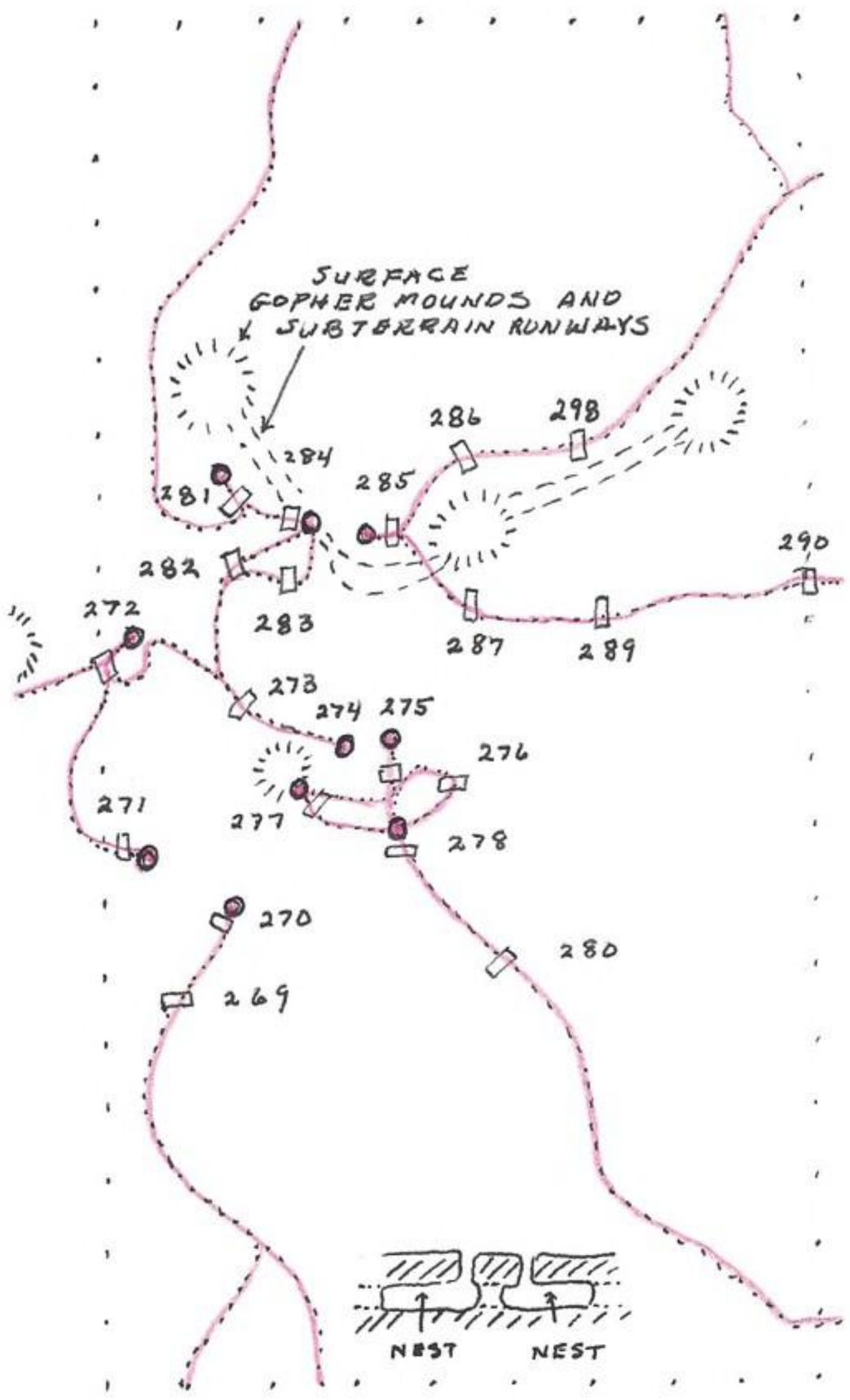
March 17, 1948

First opportunity to collect traps in research area 50-2-29-48, since covered with snow. These traps have been in feed since the second of march and produced the following mammals.

68	Peromyscus maniculatus	
75	Reithrodontomys.	completely eaten except bones.
99	Microtus ochrogaster	cleaned to the bones
101	Peromyscus maniculatus.	recent catch within the last 2 days.
114	Peromyscus maniculatus but old.	under water, untouched
115	Peromyscus maniculatus	recent & untouched
135	" "	old & eaten
151	Microtus ochrogaster	old & completely eaten
191	" "	" " " "
186	Peromyscus maniculatus	fresh

As all other traps were sprung by rain & snow the evidence is not too significant. Snow now gone except in protected exposures. all traps now in standing water. These traps were in bottomland among vegetation and while the area was standing in water it was not because of invading water from other areas but from melting of snows & rain in same area as trap, except in a small 1 foot wide channel running thru. On march 2, this part of the field was the most populated of the entire field, but today is abandoned. Drier slopes adjoined this area by about 20' distance.

Established research area A-3-17-48 on higher ground among dense matted grasses but paralleling the creek bottom by approx 40 feet intervening. Here the microtus community had suffered but not to the ettent of the lowlands where complete inundation occurred. In the new area A-3-17-48 the trails were wet and uninviting. Traps 1-267 in this linear research area. Traps placed 10' apart. Established research area B-3-17-48 in a small area of about 8x8 feet



where Geomys (abandoned) burrows offered nesting chambers for Microtus ochrogaster. Set 22 traps in main runways and at the entrances of all used holes. Traps will remain set for several days and checked at intervals to see which of the holes are used and how many mice are sharing the same holes & trails. Area divided, by stakes into foot square subdivisions. Other congregations of these gophers - Microtus associations were found. They are characterized by soft soil and frequent callapsing of roof of gopher subterranean runways when walking over them. Traps nos 269 to 290 in research area B-3-17-48. This area is located on a drained slope & soils about 30 feet from drainage creek and about 5 feet above the creek level and did not received drainage water except from direct impact of rains.

Observed one flock of Agelaius phoeniceus migrating to the north. One other male had already established a territory and was singing from the shrubs at edge of field. Eight Sylvilagus floridanus in field. One skeleton of a skunk in research area (B-3-17-48). Microtus ochrogaster were observed sunning themselves on matted grass in open exposed places but always near their trail (generally 5 or 6 inches away). When approached they would fumble around before gaining protection of runways. Inspected trapline at 3:00 P.M and (This line was started at 12:00 and completed at 2:30 P.M). Results of this line (research area A-3-17-48) as follows:

16 microtus ochrogaster 1-3-17-48 from runway, mouse going right.
20 " " 2-3-17-48 " " " " "
29 " " 3-3-17-48 " " " " left
100 " " 4-3-17-48 " " " " "
104 " " 5-3-17-48 " " " " "
116 " " 6-3-17-48 " " " " "
132 " " 7-3-17-48 " " " " "
174 " " 8-3-17-48 " " " " "
This last animal ran into trap as I approached with 3 feet of it.
182 microtus ochrogaster- from under trap!
191 " " 9-3-17-48 ran into trap at 3 feet as I approached and from the left side of trap.
206 Sigmodon hispidus 10-3-17-48 from right.
Checked research area B-3-17-48 but no mammals as yet. Checked again at sundown and found a microtus ochrogaster in trap 269 and it come from the hole. It must have bipassed trap 270. At this same time checked research area A-3-17-48 (R.W.R refers to R.W = runway, R = right or L left).

7	microtus ochrogaster	13-3-17-48	in runway (R.W), mouse from right (R).
8	"	14-3-17-48	R.W.R.
15	"	15-3-17-48	R.W.L
16	"	16-3-17-48	R.W R
21	"	17-3-17-48	R W L
29	"	18-3-17-48	R W L.
40	"	19-3-17-48	R W L
104	"	20-3-17-48	R W R
105	"	21-3-17-48	R W L
113	"	22-3-17-48	R W R
115	"	23-3-17-48	R W R
121	"	24-3-17-48	R W R
137	"	tail only	
167	"	25-3-17-48	R W R
191	"	26-3-17-48	R W L
211	"	27-3-17-48	R W L
220	"	28-3-17-48	R W L
223	Sigmodon hispidus	29-3-1748	R W R
224	Reithrodontomys	30-3-1748	R W R
231	Sigmodon hispidus	31-3-17-48	R W R
234	"	32-3-17-48	R W R
236	"	33-3-17-48	R W R
239	Reithrodontomys.	34-3-17-48	R W L

480318-27

3½ mi. SSW Pleasant Grove, Douglas Co., Kansas

March 18, 1948

This morning inspected trap line in Bailo feed, research area B-3-17-48.

trap 275 microtus ochrogaster 1-3-18-48.
" 284 " " 2-3-18-48

From research area A-3-17-48 collected the following:

trap 2 sprung
16 microtus ochrogaster 3-3-18-48 R W L
18 Reithrodontomys 4-3-18-48 R W L
29 microtus ochrogaster 5-3-18-48 R W R
29 sprung 55 sprung 71 sprung 92 sprung
104 " 106 " 109 " 118 "
112 microtus ochrogaster 6-3-18-48 R W R. a recent catch as body still warm.
113 microtus ochrogaster 7-3-18-48 R W R annual still alive in trap. Just before death, lower incisors tremble.
116 microtus ochrogaster. Completely eaten except intestines.
121 sprung 123 sprung
124 Peromyscus maniculatus 8-3-18-48 R.W.R
130 microtus ochrogaster 9-3-18-48 R.W.L
131 " " 10-3-18-48 R.W.R. This one and the one above from same runway.
132 sprung
152 microtus ochrogaster 11-3-18-48 R.W.R
159 Reithrodontomys 12-3-18-48 R W R
160 Microtus ochrogaster 13-3-18-48 R W R
163 " " 14-3-18-48 R W R
164 Calcarius pictus 15-3-18-48 R W
165 sprung
146 Microtus ochrogaster 16-3-18-48 R W L
177 " " 17-3-18-48 R W L
181 sprung
187 Peromyscus maniculatus 18-3-18-48 R W L
198 sprung
199 Microtus ochrogaster 19-3-18-48 R W R
204 " " 20-3-18-48 R W R
205 " " 21-3-18-48 R W R
207 Cryptotis parva parva 22-3-18-48 R W L
209 sprung

215 micratus ochrogaster 23-3-18-48 RWL
223 sprung 227 sprung 231 sprung 234 sprung
235 sprung 238 sprung
239 micratus ochrogaster 24-3-18-48 RWL
240 sprung 241 sprung
245 micratus ochrogaster 25-3-18-48 RWL
250 sprung 251 sprung 252 sprung 254 sprung
256 Peromyscus (tail only)
257 " maniculatus 26-3-18-48 RWL
267 micratus ochrogaster 27-3-18-48 R.WR
Reset and at sundown inspected again. Partly cloudy today.
At sundown inspected research area B-3-17-48
270 micratus ochrogaster 28-5-18-48 going into hole
269 " " 29-5-18-48 RWL
From research area A-3-17-48
3 sprung
7 micratus ochrogaster 30-3-18-48 RWL
8 " " 31-3-18-48 RWR
12 " " 32-3-18-48 RWR
15 sprung
20 micratus ochrogaster 33-3-18-48 RWR
29 " " 34-3-18-48 RWL
33 sprung
42 micratus ochrogaster 35-3-18-48 RWL
61 sprung
76 micratus ochrogaster 36-3-18-48 RWL
79 Sigmodon hispidus 37-3-18-48 out of a hole
90 micratus ochrogaster 38-3-18-48 RWL
93 " " 39-3-18-48 RWR
95 " " 40-3-18-48 RWL
100 " " 41. 3-18-48 RWR
104 sprung
105 micratus ochrogaster 42-3-18-48 R.WL
112 sprung
117 micratus ochrogaster 43-3-18-48 RWL
119 " " 44-3-18-48 RWR
120 sprung
128 micratus ochrogaster 45-3-18-48 RWR
130 " " 46-3-18-48 RWL
131 " " 47-3-18-48 RWL
132 " " 48-3-18-48 RWL
150 " " 49-3-18-48 RWL

158	Microtus ochrogaster	50-3-18-48	RWR
160	Sprung	167 sprung	
172	Microtus ochrogaster	51-3-18-48	RWR
175	"	52-3-18-48	RWR
177	"	53-3-18-48	RWL
178	"	54-3-18-48	RWR
191	"	55-3-18-48	RWR
198	"	56-3-18-48	RWL
205	"	57-3-18-48	RWL
204	"	58-3-18-48	RWR
205	"	59-3-18-48	RWL
214	"	60-3-18-48	RWR
215	"	61-3-18-48	RWR
229	"	62-3-18-48	RWR
241	"	63-3-18-48	RWR
247	"	64-3-18-48	RWR
254	Sprung		
257	Microtus ochrogaster	65-3-18-48	RWR

Rebaited traps with standard oatmeal.

3½ mi SSW Pleasant Grove, Douglas Co., Kansas

March 19, 1948

Rained at 10:00 P.M last night and left considerable water on surface of ground. Shelters used by Sylvilagus were water soaked on the floor surface. Runways of Microtus ochrogaster generally with supersaturated surface or standing water. Considerable amount of downed vegetation with standing H_2O. Microtus ground holes with water to brim. Creek increased volume ½ per cent. All traps sprung except no. 20. Frogs calling and meadowlarks singing. Since daybreak, weather clear. Inspected trapline at 8:30 A.M and finished at 9:45 A.M.

From research area B-3-17-48

269	Microtus ochrogaster	1-3-19-48	
285	"	2-3-19-48	

The following Microtus holes of the above research area were filled with water. Holes nearest the following traps 270-271-272-274-277-278-279-281.

From research area A-3-17-48 collected the following:

13	Microtus ochrogaster	3-3-19-48	RWR
15	Peromyscus maniculatus	4-3-19-48	RWR

17	Microtus ochrogaster	5-3-19-48	RWL	
22	" "	6-3-19-48	RWL	
29	" "	7-3-19-48	RWR	
65	" "	8-3-19-48	RWR	
68	" "	9-3-19-48	RWR	
69	Reithrodontomys	10-3-19-48	RWR	
83	Microtus ochrogaster	11-3-19-48	RWR	
180	Reithrodontomys	12-3-19-48	RWL	
191	Microtus ochro	13-3-19-48	"	
199	" "	14-3-19-48	RWR	
205	" "	15-3-19-48	RWL	recently caught
253	Pero maniculatus	16-3-19-48	"	
257	M. ochro	17-3-19-48	"	
262	" "	18-3-19-48	RWR	

Rebaited with oatmeal and in evening will check again. Sky clear. Checked Research area 20 min before sundown and ok but water still in holes. From research area A-3-17-48 Collected the following. Frogs calling continuously

7	Microtus ochrogaster	19-3-19-48	R.W.R
42	" "	20-3-19-48	" " "
66	" "	21-3-19-48	"
95	" "	22-3-19-48	"
107	" "	23-3-19-48	RWL
119	" "	24-3-19-48	"
124	Crayfish and young	25a 3-19-48	
152	Microtus ochrogaster	25-3-19-48	RWL
169	" "	26-3-19-48	"
174	" "	27-3-19-48	"
198	" "	28-3-19-48	RWL
205	" "	29-3-19-48	RWR
219	Thamnophis	30-3-19-48	RWR
237	Microtus ochrogaster	31-3-19-48	RWL

Completed check of trapline and reset at late twilight

3½ mi. SSW Pleasant Grove, Douglas Co., Kansas

March 20, 1948

Examined research area B-3-17-48 this A.M.

trap 269 sprung

271 Reithrodontomys 1-3-20-48

From research area A-3-17-48

25 sprung
29 Microtus ochrogaster 2-3-20-48 R.W.L

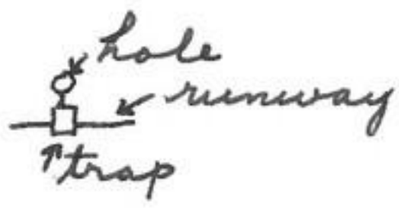
41 sprung 63 sprung 65 sprung
113 hair of Sylvilagus
119 microtus ochrogaster 3-3-20-48 RWR
124 " " 4-3-20-48 RWL
130 Reithro 5-3-20-48 RWL
167 sprung
257 Peromyscus maniculatus 6-3-20-48 RWL
267 Microtus ochrogaster 7-3-20-48 from a ground hole
Sylvilagus not reusing previously water soaked shelters. Sturnella magna singing. Rotating dry weeds start holes in ground. Osage orange fruit black and moldy but still being used as food by rabbits (and probably Neotoma) The field of consocies of Andropogon dry to touch. no matted condition at base of stems. This condition is not productive for Microtus ochrogaster and was not taken in a series of ten traps placed in the grass here. Microtus ochrogaster prefer damp or wet green matted grass with partially dry weed overprotection. The Andropogon may be climax and if so restricts Microtus to subclimax types. Reset + baited all traps. will pull trapline tomorrow after check.

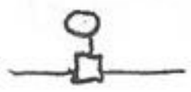
3½ mi. SSW Pleasant Grove, Douglas Co., Kansas
March 21, 1948

checked trapline this A.M. The 2 research areas have been unaltered in position for the last few days (Baile field). The position of each trap will be indicated as to whether placed in a runway etc. If an animal so caught, it will be indicated also. The information obtained in the last few day will indicate numbers of times and kinds of animals visiting each trap position.

From research area A-3-17-48 recorded the following

trap 1. open - not associated with microtus runway
2 " " " " " "
3 runway used mainly by microtus
4 " " " " "
5 " " " " "
6 " " " " "
7 " " " " "
8 " " " " "
9 " " " " "
10 open rabbit trail



trap 11. runway used by micratus
12 " " " "
13 on runway 
14 semi-runway,
15 exposed section of micratus runway
16 micratus runway
17 runway on crosional groove
18 " " " "
19 semi-developed runway
20 micratus runway
21-22 " "
23 hole by runway 
24 on matted grass
25 hole by runway 
26 likely micratus runway
27 " " "
28 runway
29 on " by hole 
30 probable micratus runway
31 micratuslike runway
32 " "
33 by micratus hole
34 " hole no runway approach
35 micratuslike runway
36-37 " "
38 likely micratus hole & runway 
39-40 micratuslike runway
41 hole by runway
42-47 micratuslike runway
48 hole by micratus runway
49-50 micratuslike runway
51 " "
52-53 hole by micratus runway 
54-55 micratuslike runway
56-57 " "
58 micratus hole - now holding H_2O
59-66 micratuslike runway
67 On mound in grass
68-70 micratuslike runway
71. open fanlike mound with yellow dirt
72-77 micratuslike runway.

trap 78-79 hole by runway dirt elevation.

80-90 microtuslike runway

91 hole by runway 

92 microtuslike runway

93 " and Microtus ochrogaster 30-3-21-48

94-121 "

122 hole near runway 

123 open grass matt

124-125 microtuslike runway

126 on open grass mat

127-134 microtuslike runway

135-136 rabbit runway

137-139 microtuslike runway

140-149 not represented

150-151 microtuslike runway

152 " " and Leithrodontomys 31-3-21-48

153-154 "

155-X Sylvilagus runway

156-160 microtuslike runway

161 (hole) open not near runway

162-165 microtuslike runway

164 " " and Microtus ochro 32-3-21-48

167-180 microtuslike runway

181 open and exposed, not near a runway

182-192 microtuslike runway

193-203 " "

204 runway, left. Microtus ochrogaster 33-3-21-48

205-207 " "

208-209 rabbit runway

210 microtus runway thru rabbit shelter

211 " " microtus ochrogaster 34-3-21-48

212 rabbit runway

213 microtus runway by partially dug hole

214-217 microtuslike runway

218-219 rabbit trail

220 by a dead meadowlark near runway

221-223 microtuslike runway

224-225 Sigmodonlike runway

226 partially open and not near runway

227-229 microtuslike runway

230-231 rabbit runway (cottontail)

trap 232 semi-open mat by trail
234 micratus like runway
235 semi-micratus like runway like a Segnodon
236-237 micratus like runway
238 open on mat grass
239 micratus like runway
240 Segnodon runway
241-247 micratus like runway
248-251 around a 1 sq. foot yard of dirt from hole
252-256 micratus like runway
257 " " M. ochro. 35-3-21-48
258-260 " "
261 on matted grass mat by runway
262-267 " " " " "

Mr. Baile reported 2 coyotes in this field 2 weeks ago. Returned to Lawrence.

3½ mi. SSW Pleasant Grove, Douglas Co., Kansas
March 22, 1948

Set 30 live traps in Baile field on north side of drainage creek at 3:00 P.M. At 6:00 P.M caught 4 micratus ochrogaster. three of them captured at convergence of three runways ⊹⊢ At 9:00 P.M collected 2 more. These specimens were examined for tularemia.

3½ mi. SSW Pleasant Grove, Douglas Co., Kansas
March 23, 1948

Examined line traps of yesterday setting this A.M and collected six from line. Placed live specimens in cages for tularemia examination. When these mice were placed in a tube they ran continually around bottom edge as if they were going somewhere in a straight course. They can jump 14 inches on the sides. When one female was placed in a wire container it rested (S) with head under body in perpendicular curl or with head straight forward —S— It yawned occasionally. Side of her body showed palpating embryos. Sometime between 1 & 3:00 P.M, and this afternoon she gave birth to 5 young.

307 W 23rd St., Lawrence, Douglas Co., Kansas
Mar. 24, 1948

At trailer observed thousands of grackles arriving and

roosting in trees of a 1/2 acre grove just w of the Drake residence and n of our trailer. They come in from all directions at about sundown and are noisy until late twilight. Frequently they shift as a group during the night. In the morning the ground is covered with excrement at 2 or 3 inches intervals.

Lawrence, Douglas Co., Kansas
March 24, 1948

Left at 5:00 P.M this date for Mena, Arkansas for collecting vertebrates for tularemia project. Cliff Hopla accompanied. Made the following observations enroute. Red winged blackbirds, Dº, on territories. Grackles dominant birds, one flock of approx. 2,000 birds at Martin City. At Belton noted 8 Sylvilagus around one brush pile in old wheat field. Also at Belton noted an Asio flammeus. Stopped at Noel.

Noel, Missouri
March 25, 1948

Left Noel at sunrise. 4 crows, redwings on area. Old timers informed me that there have never been gophers in the area. At Gravatte saw 1 starling, crow, bluebird, meadowlark, mockingbird, redwing blackbirds. At Bentonville collected a Sylvilagus floridana (1-3-25-48). noted one about 1 hundred yards away. No rabbit road kills so far. One ~~Sciurus~~ Sciurus niger ran across the road. noted robin at Bentonville. At mounds 2 mi. S of Bentonville noted yellow-shafted flicker, Passer domesticus, flock of grackles, mockingbird, red-winged blackbird and meadowlarks. At Rogers noted robins, starling, meadowlarks, Eng. sparrows, red winged blackbirds, crow. At Springdale Sylvilagus in road (rd kill), opossum, meadowlark, mockingbird, Eng sparrows, red winged blackbirds, Crows. Entering Boston Mts, few birds including yellow-shafted flicker. Apricots in blossom at Mt. Burg and Forsyth. At Forsyth noted meadowlarks, cardinal, shrike, crow, flicker, grackles. At Van Buren the willow leaves are green along Arkansas River. At Ft. Smith noted grackles, Eng sparrows, meadowlarks, opossum, Sylvilagus, crow large hawk (likered tail) and is the first hawk noted since leaving Lawrence, 200 rusty blackbirds, 2nd redtaillike hawk. 10 miles S of first one noted above. At Huntington noted a blue jay, Crow, bluebirds. At Waldron 5 crows, mourning dove

bluebird and English sparrow. This area looks good for Microtus. Arrived mena at 11:30 A.M, Collected the following birds at mena.

2-3-25-48 Turdus migratorius
3-3-25-48 Richmondena cardinalis
4-3-25-48 White-throated sparrow.

Turkey vulture (4) in area, also 12 bobwhites.

Set 60 museum special traps 3 miles SE of Mena. These traps were placed in what I believed the runways of Pitymys. also set 100 traps at contact between the deciduous forests and the grasses of open field. One set of 100 in a wet pasture of grasses and sedges. a line of 83 traps bordering a wooded plat and cut over field. Along these traplines not 2 Sylvilagus. One frog (Pseudacris?) called like a spotted sandpiper with volume intensity to make one's ears vebrate. Noted a shrike and 5 cottontail robbet at Hatfield.

(9:00 P.M)

This evening, inspected traplines at this late afternoon as fallows. (from line of 60 traps)

6-3-25-48 Pitymys nemoralis ♂ 100-21-17-15 gms
7-3-25-48 " " ♂ 115-24-17.5-11-27 gms
8-3-25-48 microtus ochrogaster ♂ 134-28-19-12-30 gms
9-3-25-48 Pitymys nemoralis ♂ 128-33-18-11-29 gms

All runways in typical form ⌒ below level of ground. At 11:30 rained hard & then afterword intermittently.

Mena, Arkansas
March 26, 1948

Inspected trap line of 60 traps as fallows:

1-2-26-48 Pitymys nemoralis 142-28-18-10-33 gms (3×2 embryo. 7 mm ca. rumps)
2-2-26-48 " " 105-25-17-10-13 gms testis 3 mm ♂
3-2-26-48 " " 145-28-18.5-12-33 gms. ♀ no embryos
4-2-26-48 Sturnella neglecta shot for tularemia specimen
5-2-26-48 Sayornis phoebe shot for tularemia specimen.

Appox 95% of traps sprung by rains of last night.

From traps in contact between deciduous forests & grass field:

6-2-26-48 Golden crowned kinglet shot in area
7-2-26-48 Mockingbird shot in area
8-2-26-48 Reithrodontomys 152-82-19.5-14-11 gms skull only
9-2-26-48 " 165-90-20.5-15-10 gms testis 7 mm
10-2-26-48 Peromyscus 204-91-24.5-25-25 gms ♀ no embryos

Other birds that near this trapline are:

11-3-26-48 Melospiza melodia
12-3-26-48 mockingbird
13-3-26-48 White-throated sparrow
14-3-26-48 " " "
15-3-26-48 brown creeper
16-3-26-48 Audubon Warbler
17-3-26-48 Melospiza melodia
18-3-26-48 White-throated sparrow
19-3-26-48 " " "
20-3-26-48 " " "

noted also one copperhead snake, 1 brown thrasher, black-copped chickadee, towhee, blue jay & turkey vultures.

The 100 traps set in damp pasture of sedge & grass did not yield a single animal although I judge this field to be the most productive. Rain damage may have been the main factor as a greater percentage of traps were sprung.

From the 83 traps set along forest edge produced the following:

21-3-26-48 Reithrodontomys 160-90-20-14-10gms testes 8mm.
22-3-26-48 " 170-95-21-12 gms testes 8mm
23-3-26-48 Pitymys nemoralis 129-26-18-11.5=30gms no embryos
24-3-26-48 " " 89-19-15-8-8gms ♂
25-3-26-48 " " 135-28-18-11.5-46gms (2x1 emb. 26mm)
26-3-26-48 " " 135-27-18.5-11-31gms ♂ testes 8mm
27-3-26-48 " " 105-24-17-10-15gms ♂
28-3-26-48 " " 102-26-16.8-10.5-15gms ♀

Mena, Arkansas

March 27, 1948

Last night extremely cold with high march wind. morning cold Inspected line of 60 traps and caught the following:

1-3-27-48 Pitymys nemoralis 133-29-19-♂ skull only. testes 9mm
2-3-27-48 Swamp sparrow. caught in trap.
3-3-27-48 Pitymys nemoralis 118-26-17.♂ skull only, testes 5 mm
4-3-27-48 Sturnella neglecta caught in trap.

From set of 83 along edge of forest & open grass field caught:

5-3-27-48 Pitymys nemoralis 118-24-16.5-11-16gms ♂
6-3-27-48 " " 120-25-16.5-10-23gms ♂ testes 5 1/2 mm
7-3-27-48 Reithrodontomys 138-75-19-14-8gms (no embryos)
8-3-27-48 " 145-77-19-14-8gms testes 4mm

5c

480327-38

9-3-27-48	Reithrodontomys		152-84-19.5-14-9 gms testes 8 mm.
10-3-27-48	Peromyscus nemoralis		138-29-18-10-36 gms ♂
11-3-27-48	"	"	118-24-16.5-11-16 gms testes 12 mm
12-3-27-48	"	"	124-27-17-11-26 gms ♀
13-3-27-48	"	"	126-29-16.5-11-26 gms ♀ (2×0 emb 6mm)
14-3-27-48	"	"	118-26-17-10-21 gms ♂ testes 6 mm
15-3-27-48	"	"	127-28-18-11-27 gms ♂ testes 9 mm
16-3-27-48	Peromyscus (light)		161-76-19.5-16-20 gms ♀ no embryos

This morning pull all traps except lines of 60 and 83. The other lines were not productive and they (~~300 traps~~ and others to make 300 traps) were set at Cove, Arkansas in the late afternoon.

Mena, Arkansas

March 28, 1948

This A.M inspected trap lines as follows:

3 mi SE of Mena (trap line of 60 traps)

1-3-28-48	Peromyscus nemoralis		128-29-17-10-30 gms ♀ (1×1 emb 6 mm)
2-3-28-48	"	"	136-27-18-11.5-32 gms ♂ testes 8 mm
3-3-28-48	"	"	120-27-18-11-22 gms ♂ testes 5 mm
4-3-28-48	"	"	92-24-16-9-9 gms ♂
5-3-28-48	Bobwhite - shot near trapline		♀
6-3-28-48	Wilson snipe "	"	" ♀
7-3-28-48	Kenslow sparrow ♂		

From trap line of 83 traps.

8-3-28-48	Peromyscus nemoralis		111-23-16-9-18 gms ♂ testes 5 mm
9-3-28-48	"	"	112-24-17.5-9-14 gms ♀ no embryos
10-3-28-48	"	"	105-21-16-9-13 gms ♀ no embryos
11-3-28-48	"	"	100-21-16-8.5-10 gms ♀ no embryos
12-3-28-48	"	"	101-21-16.5-8.5-11 gms ♀ no embryos

From Cove, Arkansas of 300 traps set yesterday afternoon:

13-3-28-48	Peromyscus nemoralis		121-24-17-10-#21 gms ♂ testes 6 mm
14-3-28-48	"	"	129-29-17-9.5-26 gms ♀
15-3-28-48	"	"	128-27-17-10-15 gms ♂ testes 10 mm
16-3-28-48	"	"	130-26-17-10-25 gms ♀ no emb.
17-3-28-48	"	"	142-28-17.5-11-35 gms ♀ (2×1 emb 13 mm)
18-3-28-48	"	"	132-29-18-11-31 gms ♂ testes 9 mm
19-3-28-48	"	"	138-30-18-10.5-33 gms ♂ testes 9 mm
20-3-28-48	"	"	140-29-17-10-38 gms ♀ (2×1 emb 22 mm)
21-3-28-48	"	"	138-28-18.5-11-30 gms ♀

In the Cove area noted a bobcat constructing a nest. a Mr T.L. Crawford claims he kill a bobcat last year. Returned to mena, prepared mammals, packed and departed for Lawrence at 5:00 P.M at mileage 22870. In mena area the foliage is not evident and only green is catkins approx 1 inch long and a few buds of other trees. Arrived Noel about 9:30 P.M and remained overnite.

Noel, Missouri

March 29, 1948

Departed noel this A.M, arrived Lawrence, Kansas in P.M with mileage 23 295 or 425 miles from mena to Lawrence.

1/2 mi. S Willow Springs, Douglas Co., Kansas

March 30, 1948

Set 14 live traps (neotoma size) along a downed fence line of osage-orange this evening.

March 31, 1948

From the above trap line collected 2 neotoma this A.M

1-3-31-48 neotoma floridana osogensis

2-3-31-48 neotoma floridana osogensis

In the evening set 16 more live traps in some area. and 10 snap traps in meadow adjacent.

April 1, 1948

From live trap line collected the following (traps 40' apart)

1-4-1-48	neotoma floridana	trap	1
2-4-1-48	"	"	"	8
3-4-1-48	"	"	"	11
4-4-1-48	"	"	"	16
5-4-1-48	"	"	"	18
6-4-1-48	"	"	"	19
7-4-1-48	"	"	"	21
8-4-1-48	"	"	"	23
9-4-1-48	"	"	"	26
10-4-1-48	"	"	"	28
11-4-1-48	"	"	"	29
12-4-1-48	"	"	"	31

From snap traps:

20-4-1-48	meratus ochrogaster		"	2
21-4-1-48	"	"	"	6

5e

480401-40

Two turkey vulture at trapping site and the first noted this season

Louisiana Ave and 23rd St., Lawrence, Douglas Co., Kansas

April 1, 1948

In field S and W of trailer on 23rd, the grackles are still in area and number between 8 to 10 thousand. Harris sparrows still in area.

1/2 mi. S willow Springs, Douglas Co., Kansas

April 5, 1948

This evening set 31 live traps in same general area as of march 30 but along creek course (line traps for neotoma)

April 6, 1948

From the above traps caught the following mammal. the traps were aligned as follows.

trap 1 → 30 feet, trap 2 → 40 feet; trap 3 → 30 feet; trap 4 → 20 ft; trap 5 → 50 feet; trap 6 → 20 ft; trap 7 → 10 feet; trap 8 → 45 feet; trap 9 → 20 feet; trap 10 → 50 feet; trap 11 → 20 feet; trap 12 → 30 ft; trip 13 → 30 ft; trap 14 → 30 ft; trap 15 → 15 ft; trap 16 → 50 ft; trap 17 14 feet; trap 18 → 45 ft; trap 19 → 60 ft; trap 20 → 50 ft; trap 21 → 85 ft; trap 22 → 45 ft; trap 23 → 60 ft; trap 24 → 120 ft; trap 25 → 60 ft; trap 26 – 100 ft; trap 27 → 20 ft; trap 28 → 20 ft.; trap 29 → 30 ft; trap 31 → 98 feet – end of live trap line. The mammals are: Trap one = neotoma; trap 3 = neotoma; trap 16 = neotoma; trap 25 = Peromyscus leucopes; trap 29 = neotoma

This evening set 28 snap traps in sedges & grass at a spring area. The live traps were left open best in passetoie

April 7, 1948

From 28 snap traps collected

Trap 1 microtus ochrogaster; trap 3 microtus ochro; trap 4 microtus ochro; trap 6 microtus ochro; trap 10 Peromyscus maniculatus; trap 16 microtus ochro; trap 19 Peromyscus maniculatus; traps nos. 22, 23, 24, 25, 26, 27 all with Microtus ochro. Also collected one lizard 41-4-7-48 and a Pituophis 40-4-7-48. This evening reset line trap (for Neotoma) in same place and also set 28 snap traps in same spring area. This spring was surrounded by deciduous trees with an undergrowth among trees of Symphoricarpos

April 8, 1948

From above traplines caught the following:

From 21 line traps. Trap 6 Peromyscus 1-4-8-48; trap 7 neotoma floridana 2-4-8-48; trap 8 neotoma floridana 3-4-8-48; trap 16 neotoma 4-4-8-48;

From 28 traps set at spring: Trap 1 microtus ochro 10-4-8-48; trap 3 microtus ochro 11-4-8-48; trap 19 microtus ochro 12-4-8-48; trap 23 microtus ochro, 13-4-8-48.

Noted the following birds in area, 3 prs of crows, 2 prs of great horned owls, brown thrasher.

En return to Lawrence from Wilaw Springs noted the following birds: meadowlark, field sparrow, cardinal, red winged blackbird, marsh hawk, turkey vulture, red-tailed hawk, horned lark, Harris sparrow, common grackle, sparrow hawk, marsh hawk, black-capped chickadee, robin, bobwhite, downy woodpecker, bluebird, cowbird, Sap phoebe, Eng. sparrow, slate colored juncos, purple martin flew from gravelled road, loggerhead shrike.

April 9, 1948

Pulled traps (small line of 28 traps) and caught 5 microtus ochrogaster from traps no. 4-5-16-21-23. Noted a second instance this spring of a microtus ochro. sunning itself at the edge of a runway and caught sleeping.

<u>muscotah marsh</u>, <u>approx 2 miles S of Muscotah</u>, <u>Atchison Co.</u>, <u>Kansas</u>.

April 9, 1948

Set traps this P.M at muscotah marsh. Just before arriving at muscotah, turned S from main highway with mileage at 4.7; arrived Beach Springs at 6.0; and H.F. Cloverts residence of road to west at 8.7 which is just SE of main marsh. Set 300 museum special traps from free flowing springs on east side of marsh to a point SW along edge of marsh in grasses inward from high cattails. Traps set every 10 feet and in runways.

April 10, 1948

Checked traps at muscotah set last night. At turnoff to S at eastern limits of muscotah noted an American coot and a shoveller duck in pond at edge of the road.

Checked trap line of 300 traps and caught the following:

trap 2 Synaptomys; 3 Synaptomys cooperi; 5 Peromyscus maniculatus; 10 Pero. maniculatus; 11 Pero. maniculatus; 12 Pero maniculatus; 16 Pero maniculatus; 18 Synaptomys; 19 Peromyscus manic.; 20 Reithrodontomys; 21 and 22 Peromyscus maniculatus; 25 Microtus ochrogaster; 27 Pero. maniculatus; 28 Microtus ochro; 29 Reithro; 30 Synaptomys; 31 and 32 Reithro; 33 Pero manic. 35 Pero. manic; 36 Pero. manic.; 38 M. ochro; 41 Pero. manic; 42 Cryptotis; 43 Pero. manic; 44 Microtus ochro; 53 Pero. manic; 58 Pero manic; 62 Pero manic; 75 Pero. manic; 79 Pero manic; 88 Pero manic; 93 Reithro; 98 Pero manic; 100 Pero manic; 101 Pero. manic; 102 and 103 Pero. manic; 104 Microtus ochro; 105 Synaptomys; 117 and 118 Pero. manic; 122 Pero. manic; 143 Reithro; 165 Synaptomys; 178 Reithro; 192 Synaptomys; 246 Synaptomys; 248 shrew.

It will be noted that there is a disparity of mammals in last part of trapline. This is because the setting toward the end of the line was made after dark and trap set without selectively, mainly on top or in depression among grass and not in runways or among or under the sedges & grasses. Examined a Synaptomys in which the back was scarified with dirt and stems of vegetation adhering; the green feces were 6 mm in length.

Lawrence (Iowa street and 21st), Douglas Co., Kansas

April 13, 1948

On the property of Klopfel (feed SE of corner of Iowa & 21st) set 1 live 24 traps in runways of Microtus ochrogaster, late this evening.

April 14, 1948

At 8:00 A.M collected 1 Reithro only. at 5:00 P.M collected 4 Sigmodon hispidus and 4 microtus ochrogaster. A Spilogale was in same field and almost stepped upon it.

April 15, 1948

At 7:00 A.M collected 3 Sigmodon hispidus and 5 microtus ochrogaster and 1 Reithrodontomys.

In the evening collected 1 Sigmodon hispidus and 2 Microtus ochrogaster, one of which was dead. This area is surrounded by either a highway or homes. The slope is just enough so that surface hold water and as a results soils are slightly damp.

480416-43

Muscotah marsh, approx. 2 miles S Muscotah, Atchison Co., Kansas

April 16, 1948

This evenng set 300 snap traps in marsh area in grasses and sedges associated with the marsh. Traps set 10 feet apart. Annette & James Robert camped with me at the marsh. Birds noted in the immedeate area of the marsh observed this afternoon: Eastern meadowlark, Eng. sparrow, crow, starling, turkey vulture, cardinal, grackle, eastern kingbird, robin, mourning dove, shrike, cowbird, killdeer, blue winged teal, marsh hawk, pheasant, greater yellowlegs, wilson snipe, bittern.

April 17, 1948

Check the 300 traps set yesterday evenng. The number of the trap is the field number (example 18-4-17-48 = 18 trap number)

7-4-17-48	Reithrodontomys	120-58-17-11-7 gms ♂ testes 4 mm.
16-4-17-48	Peromyscus leucopus	190-90-25-28 gms ♀ no embryo
22-4-17-48	Peromyscus leucopus.	195-92-23-28 gms ♂ testes 10 mm
23-4-17-48	" "	178-78-23-14-28 gms ♂ testes 13 mm
23-4-17-48	" "	180-80-22-15-26 gms ♀ no emb.
28-4-17-48	" "	180-86-24-14-28 gms ♀ (0×4 emb 6 mm)
30-4-17-48	Blarina brevicauda	108-25-14-14 gms ♀ no emb.
34-4-17-48	Peromyscus leucopus	168-71-22-14-32 gms ♀ (3×2 emb. 14 mm)
35-4-17-48	" "	174-78-23-15-27 gms ♂ testes 12 mm
40-4-17-48	" "	170-74-21½-15-26 gms ♂ testes 12 mm
48-4-17-48	" "	116-22-19-10-27 gms ♂ testes 4 mm.
49-4-17-48	" "	185-84-23-30 gms. 4×2 emb 3 mm.
56-4-17-48	Sigmodon hispidus	(230)-(72)-31.5-18-119 gms ♂ testes 18 mm
58-4-17-48	Peromyscus leucopus	190-88-22-15-40 gms ♀ suckling
75-4-17-48	Reithrodontomys	140-65-17-11-12 gms ♂ testes 8 mm
86-4-17-48	microtus ochrogaster	161-42-20-11-51 gms ♀ emb 5×0,5 mm
119-4-17-48	Reithrodontomys	142-71-17-11-12 gms ♀ no emb.
126-4-17-48	"	stubbed tail.
128-4-17-48	microtus ochrogaster	140-32-20-10-37 gms ♂
138-4-17-48	Reithrodontomys	141-66-17-12-12 gms ♀ no emb.
144-4-17-48	Synaptomys cooperi	135-23-19-10.5-39 gms ♀ 2×1 emb 6 mm crossuise on uterus
169-4-17-48	Synaptomys cooperi	133-22-19.8-11-49 gms ♀ 2×2 emb 5 mm
207-4-17-48	microtus ochrogaster	146-35-19.5-10-40 gms ♂ testes 11 mm
208-4-17-48	" "	160-44-20-11-40 gms ♀ no emb.
226-4-17-48	Synaptomys cooperi	145-27-20-11-53 gms ♂ testes 6 mm

237-4-17-48 Microtus ochrogaster 138-34-18.5-10-30gms ♂ testes 8 mm
241-4-17-48 " " 158-40-20-11-43gms ♂ testes 14 mm
257-4-17-48 Synaptomys cooperi 138-24-19.8-11.5-49gms ♂ testes 6 mm
258-4-17-48 Blarina brevicauda 111-26-14.5-16gms testes 11 mm.
263-4-17-48 Synaptomys cooperi 125-23-20-11-37gms ♂ m. only
264-4-17-48 Microtus ochrogaster 156-38-20-11-50gms ♀ 3x3 emb 4 mm

Trap nos. 18, 25, 26, 27, 28, 29, 35, 37 Crayfish, 41, 42, 48, 54, 55, 56, 63, 64, 67, 68, 81, 83, 84, 122, 123, 242, 260, 267, 279 were sprung.
Photos 301-4-17-48 to 312-4-7-48 of this area and family.

3 mi. Sw Lawrence, Douglas Co., Kansas
April 19, 1948

Photographed small cottontail.

Lawrence (Mena Arkansas trip), Douglas Co., Kansas
April 21, 1948

Made trip to Mena, Arkansas for collecting material for tularemia analysis. This area has a high degree of incidence of this disease. Left Lawrence in the afternoon and kept record of birds observed between Lawrence and the Missouri border to the east where we picked up N-5 Missouri highway. Crow, wilson snipe, red wing blackbird, meadowlark, mourning dove, Eng sparrow, grackle, yellow-shafted flicker, starling, robin, purple martin, blue jay, bobwhite, cardinal, red-tailed hawk and Chimney swift. Arrived Noel late tonight.

Noel, Missouri
April 22, 1948

Left Noel at 6:30 A.M and drove to Mena. Kept list of birds between Noel & Mena. Kingfisher, Eng sparrow, raben, meadowlark, crow, kingbird, brown thrasher, bluebird, red-winged blackbird, bobwhite, mockingbird, blue jay, grackle, Dogwood in blossom. Arrived Mena 11:30 A.M. Set 300 traps (mus. specials) and 40 live traps one mile south of Mena in grasses, shrubs and meadow bordering trees. Traps 20 feet apart. In trapping area noticed a great number of snakes. Collected one black snake 1-4-22-48 and a small black & yellow snake no. 2-4-22-48. A tree frog no. 3-4-22-48 and a bufo 4-4-22-48 in trapping field. 12 turtles in same field using grass runways. Several were mating ♂♀. In a fire area of 8 x 5 feet noted a charred blue racer in curled repose, and a charred turtle.

Late this evening drove to 3 miles N of mena at base of mountain where I collected a Piranga rubra 6-4-22-48 and a Seiurus aurocapellus from dense deciduous forest. A luna moth 7-4-22-48 from same area. This mountain is covered with a mixture of conifers and deciduous trees. Other birds observed in this area are: Turkey vulture, brown thrasher, eastern bluebird, catbird, mockingbird, robin, blue jay, eastern ruby-crowned kinglet, Cooper hawk, and Coccyzus pileatus. Chaetura pelagica (12 or more) flying over mena. Zenaidura macroura in city limits.

Cove Co.
Mena, Arkansas

April 23, 1948

Examined trap line of 300 traps 1 mile S of mena. Also the 40 line traps:

1-4-23-48	Pitymys nemoralis	134-33-17.5-10.5-30gms ♂	Trap 25
2-4-23-48	" "	125-25-18-11-23gms ♀	" 51
3-4-23-48	" "	166-93-19-15-9 gms ♀ (2×2 8mm)	" 70
4-4-23-48	Reithrodontomys	162-87-20-15.5-12gms ♂ testes 8mm	" 112
5-4-23-48	Icteria virens	no measurements	" 130
6-4-23-48	Reithrodontomys	138-68-18-12-8gms ♂ testes 3mm	" 204
7-4-23-48	Thyrothorus ludovicianus	no measurement	" 208
8-4-23-48	Mus musculus	did not save	" 242

Traps 18, 19, 35, 58, 59, 64, 167, 194, 249, 260 and 280 sprung.
While on trap route observed 9 turtles one approx 2 1/2" long. Also 2 Sylvilagus and 8 bobwhites. Pulled traps.
Set 20 line traps at Hatfield. While there collected a Storeatus grammacus 9-3-23-48.
At 3 miles SE of mena set 280 traps + 30 line traps. The 280 were set under yellow pine either on grass (first half of traps) or on dead leaves (second half of traps). Returned to Mena.

Mena, Cove Co., Arkansas.

April 24, 1948

Checked traps at 3 miles S E of mena. no mammals in line traps. Snap traps (280) held 4 Reithrodontomys, these on traps set on grass:

2-4-24-48	Reithrodontomys	175-103-21-15-15gms ♂ testes 9 mm.	
3-4-24-48	"	170-85-18.5-14-17gms ♂ testes 7 mm	
4-4-24-48	"	179-103-21-15-14gms ♂ testes 8 mm	
5-4-24-48	"	156-78-18.5-14-16gms ♀ no embryos	

A bufo 1-4-24-48 from a trap set in deciduous trees

35k.

480424-46

Inspected traps at Hatfield worthant success in mammals (pulled traps)
Catch. At Cave set 38 live traps in a Petymyp field.
At Cove, after setting traps collected herps which are ex-
tremely common in this area and included;

6-4-24-48 · a black & yellow snake
7-4-24-48 black snake
8-4-24-48 " "
9-4-24-48 Camelean
10-4-24-48 Cnemadophorus
11-4-24-48 Sceloporus
12-4-24-48 Poleoptela caerulea

At Dayoff collected:

13-4-24-48 Crotalus. 37 inches in length.

Pholograph 14-4-24-48 of the above snake

Photo 15-4-24-48 and 16-4-24-48 of a place 2 mi. E of Dayoff near Hatfield.

Photo 17-4-24-48 of Pitymyp field at Cove, Arkansas. This field has yielded several Pitymyp on two trapping expeditions.

Photos 18-4-24-48 and 19-4-24-48 of roadside pond halfway between Mena and Hatfield. Returned to Mena, and drove over to Dr. Smiths summer home. In evening went on a fox hunt with neighbors. The dogs killed 2 striped skunks one of which was nearly albino with pure white tail and 90 per cent of back white. Returned to Smiths at 4:00 A.M in the morning, having run dogs all night, then returned to Mena. Pete Hart says Chipmunks are in area around Mena, as there are bobcats. The red fox is represented as 1 to 50 of the gray fox.

Mena, Cove Co., Arkansas

April 25, 1948

Picked up live traps at Cove with only one Pitymyp. Noted 4 snakes and several turtles in same field. Snakes and turtle and Pitymyp are considerably more numerous in this area than at Lawrence, Kansas. Left Mena at 11:30 A.M and arrived in Lawrence at 10: P.M at night.

Lawrence, Douglas Co., Kansas.

April 29, 1948

AT trailer west on 23rd Street took several photographs:

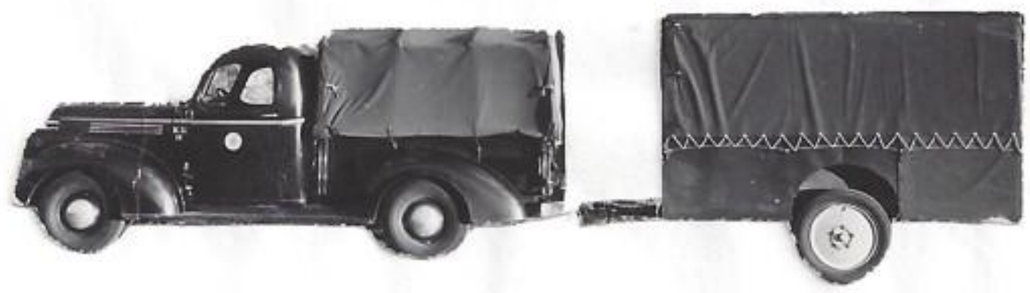
1-4-29-48 Jannes Rabat Bee
2-4-29-48 " " "
3-4-29-48 " " "

480626-47

ITINERARY FIELD TRIP 1948

June 26, 1948

O = BASE CAMPS



480626-48

Collecting Localities.

11 1/2 mi. S and 2 mi E Robertson, 9200 ft., Uinta Co., Wyoming.
9 mi. S Robertson, 8400 ft., Uinta Co., Wyoming.
14 mi. S and 2 mi E. Robertson, 9000 ft., Uinta Co., Wyoming
10 mi S and 1 mi. W Robertson, 8700 ft., Uinta Co., Wyoming
9 1/2 mi. S and 1/2 mi. W Robertson, 8600 ft., Uinta Co., Wyoming
8 mi. N and 16 mi E Encampment, 8400 ft., Carbon Co., Wyoming
9 mi. N and 3 mi E Encompment, 6500 ft., Carbon Co., Wyoming
11 mi. N and 3 mi. E Encampment, Carbon Co., Wyoming
1/4 mi. N Silver Lake, 10,600 ft., Carbon Co., Wyoming (Divide, Snowy Range, Highway 130).
1 mi. S Lake Marie, 9600 ft., Carbon Co., Wyoming
1 mi. NNW Silver Lake, 10,280 ft., Carbon Co., Wyoming
1 mi. NW Silver Lake, 9620 ft., Carbon Co., Wyoming
Centennial, 8120 ft., Albany Co., Wyoming
1/2 mi. E Barber Lake, 8700 ft., Albany Co., Wyoming
8 mi. N and 19 1/2 mi. E Savery, 8800 ft., Carbon Co., Wyoming
5 mi. N Laramie, 7200 ft., Albany Co., Wyoming
1/4 mi. N Riverside, 7380 ft., Carbon Co., Wyoming
7 7/10 mi. SSW Laramie, 7200 ft., Albany Co., Wyoming.
3 1/2 mi. W Loveland, 5030 ft., Larimer Co., Colorado
7 mi. W and 2 1/2 mi. S Loveland, 5370 ft., Larimer Co., Colorado
6 mi. W and 1/2 mi S Loveland, 5200 ft., Larimer Co., Colorado
9 1/4 mi. W and 1/2 mi. N Loveland, 5600 ft., Larimer Co., Colorado
12 mi. W and 1 1/2 mi. N Loveland, 6020 ft. Larimer Co., Colorado
16 mi. W Loveland, 6840 ft., Larimer Co., Colorado
19 1/2 mi. W and 2 1/2 mi. S Loveland, 7280 ft., Larimer Co., Colorado
1/4 mi. N Moraine Park museum, Rocky Mt. National Park, 8500 ft., Larimer Co., Colorado.
Univ. of Wyoming Summer Camp, Albany Co., Wyoming
Lake Marie 10,440 ft., Carbon Co., Wyoming
24 mi. W and 2 1/2 mi. S Casper, 5250 ft., Natrona Co., Wyoming.
2 mi. W and 7 mi. S Casper, 6370 ft., Natrona Co., Wyoming
6 8/10 mi. S and 2 mi. W Casper, 6120 ft., Natrona Co., Wyoming
6 9/10 mi. S and 2 mi. W Casper, 6200 ft., Natrona Co., Wyoming
7 mi. S and 2 mi. W Casper, 6300 ft., Natrona Co., Wyoming
6 mi. S and 2 mi. W Casper, 5900 ft., Natrona Co., Wyoming
3 2/10 mi. E and 6/10 mi. S Cody, 5020 ft., Park Co., Wyoming
[3 1/5 mi. E and 3/5 mi. S Cody, 5020 ft., Park Co., Wyoming]
1 mi W and 8/10 mi S Buffalo, 4800 ft., Johnson Co., Wyoming
5 1/2 mi. W and 1 mi. S Buffalo, 5600 ft., Johnson Co., Wyoming

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6 mi. W and 1 mi. S Buffalo, 5700 ft., Johnson Co., Wyoming
4 1/2 mi. W and 1 mi. S Buffalo, 5420 ft., Johnson Co., Wyoming
6 1/2 mi. W and 1 mi. S Buffalo, 5600 ft., Johnson Co., Wyoming
6 1/2 mi. W and 2 mi. S Buffalo, 5620 ft., Johnson Co., Wyoming
7 1/2 mi. W and 1 mi. S Buffalo, 6500 ft., Johnson Co., Wyoming
1/4 mi. E Klondike, 5160 ft., Johnson Co., Wyoming
1 1/2 mi. W Klondike, 5750 ft., Johnson Co., Wyoming
2 mi. W Klondike, 5980 ft., Johnson Co., Wyoming
3 mi. W Klondike 6280 ft., Johnson Co., Wyoming
4 mi W and 1 mi. S Klondike, 6500 ft., Johnson Co., Wyoming
6 1/2 mi. W and 2 mi. S Buffalo, 5620 ft., Johnson Co., Wyoming
4 1/2 mi. W and 1 mi. S Buffalo, 5440 ft., Johnson Co., Wyoming
15 mi. S Custer, 2940 ft., Big Horn Co., Montana
7 mi. N Raymond, Sheridan Co., 2340 ft., Montana
3 mi. S Medicine Lake, 1880 ft., Sheridan Co., Wyoming
2 mi. E and 1 mi. S Culbertson, 1980 ft., Roosevelt Co., Montana
3 mi. E and 5 mi. S Culbertson, 1860 ft., Rockland Co., Montana
1 mi W and 1 mi. N Malta, 2248 ft., Phillips Co., Montana
1 mi. W Cut Bank, 3650 ft., Glacier Co., Montana
4 mi. E and 10 mi. S Blackfeet, 3900 ft., Glacier Co., Montana
Springdale, 4100 ft., Park Co., Montana
8/10 mi. S Greybull, 3788 ft., Big Horn Co., Wyoming.
1 mi. S Greybull, 3795 ft., Big Horn Co., Wyoming
7 1/2 mi. E Greybull, 4050 ft., Big Horn Co., Wyoming
3 1/2 mi. E and 10 mi. N Greybull, 7580 ft., Sheridan Co., Wyoming
Alcova, 5180 ft., Natrona Co., Wyoming
8 3/4 mi E and 6 1/2 mi. S Laramie, 8200 ft., Albany Co., Wyoming
31 1/4 mi. N and 12 mi. E Laramie, 6160 ft., Albany Co., Wyoming
26 mi. N and 4 1/2 mi. E Laramie, 6960 ft., Albany Co., Wyoming
35 1/4 mi. N and 18 mi. E Laramie, 5500 ft., Platte Co., Wyoming
32 mi. N and 12 1/2 mi. E Laramie, 6080 ft., Albany Co., Wyoming
29 3/4 mi. N and 9 1/2 mi. E Laramie, 6350 ft., Albany Co., Wyoming
29 mi. N and 8 3/4 mi. E Laramie, 6420 ft., Albany Co., Wyoming
28 1/4 mi. N and 7 1/4 mi. E Laramie, 6500 ft., Albany Co., Wyoming
27 3/4 mi. N and 6 3/4 mi. E Laramie, 6600 ft., Albany Co., Wyoming
26 3/4 mi. N and 6 1/2 mi. E Laramie, 6700 ft., Albany Co., Wyoming
26 3/4 mi. N and 5 1/2 mi. E Laramie, 6760 ft., Albany Co., Wyoming

(see other equivalent locality designations for the above 11 localities under notes of Sept. 2, 1948)

Lawrence, Douglas Co., Kansas

June 26, 1948

Departed for summer feeld work in Colorado, Wyoming and Montana for the investigation of Microtus ochrogaster. Mileage at Lawrence 25567. Will pull trailer all the way. The objectvie is to pick up James Lonngeust who is with Cochrum's party in western Wyomming (Fort Bridger) and then continue in feeld until September 10. Remained at Burnett Culbertsons in Topeka the first night.

Topeka, Shawnee Co., Kansas

June 27, 1948

departed this A.m and drove to Phillipsburg, Kansas where I remained overnight.

Phillipsburg, Phillips Co., Kansas

June 28, 1948

Continued n this A.m. The Republican River had subsided to level where car could cross bridge although water was up to motor for 3 blocks of inundated bridge. As I advanced westward, observed a gradual change of grass life-form, becomming shorter and more lawnlike as I moved to the west. The hills throughout Kansas & Nebraska are covered with complete grass stance. As one goes west, the color changes from the vivid greens of eastern Kansas to a more grayish green to the west. In Wyomming, it changes to a dull green withaut the vivid tone. The change of grass would appear to be due to a rain supply factor. Observed the first Citellus richardsoni appros. 40 miles east of the Wyomming border on the Lincoln Highway. East of this point the annual would appear to be entirely missing and then, at one point and ~~then~~ as in an almost abrupt 40 feet or so it appear in the feeld and then was commonly observed across the remaining state of Nebraska and to western Wyomming. The topography so far has been flat with stight undulating curves. The altimeter indicated a gradual increase from Lawrence, Kansas to the base of the Rocky Mountains. At appros. 40 miles E of Wyomming border, on the Lincoln Highway recorded the "bluffs" at appros. 1 mi. SW of Pine Bluffs, Wyomming. This plate 1-6-28-48 shows the nature of these isolated bluffs and represents the first such topography on the approach to

480628-51

to the Rocky Mountains. Formerly the country was essentially flat and without such bold relief. The Pinus scopulorum made their first appearance at this locality and with a few Juniperus constitutes the main tree cover. These trees are confined mainly to tableland and slopes of the bluffs. A close inspection of the area would indicate the Tamias may not be represented, however, everything is ideal for this mammal. Good microtus ochrogaster runways were in area beyond cattle in picture and if time permitted would almost guarantee a 40 per cent catch. Grassland still typical with rare shrub or open streams. The talus slopes now offer additional ecological niches in an otherwise flat surrounding country. The elevation of photo approx 5060 feet. The lark bunting, Calamospiza melanocarys, made its first appearance and there, was very common. One Lybuclagus ran across road 3 mi. w Pine Bluffs. Continued west on Lincoln Highway and at point 12 mi. S & 13 mi. E Laramie, Albany Co., Wyoming took photo 4-6-28-48 of the Pole Mountain Game Refuge in the Medicine Bow National Forest. This photo was taken just beyond the Forest Boundary on the approach from the east and shows the refuge to the N. It will be noted that the slope is gradual and is retained eastward until it merges with the Great Plains which can be seen plainly in the extreme right hand side of the photo The grassland is still the dominant association and retains the characteristic life-form of the plains. At this point the grassland shares with Pinus scopulorum of the more rugged rocky slopes and the stream bed which supports Populus tremuloides and willow. Degree of slope and influence of riparian conditions make the defference. These soils are mainly a form of disintegrated granite and in certain areas produces (the granite) hoodoo formations of considerable scenic value. The appears to me to be a place where Microtus montanus and Microtus ochrogaster might conceivably inhabit the same community of damp meadows. Five Odocoileus hemionus (Sp?) were observed in this area and indicated, from their actions and approachabelety that they had received protection from molestation. One Lepus californicus (Sp?) ran across road at about 5:30 P.M. Continued toward summit of this range and at a point about half way

from above picture and summit, recorded two shots of the truck and trailer. The Pole Mt. Game Refuge in the background with distant view of country. The greaterpart of this refuge is of this type of vegetation and topography. Many of the yellow pine (P. scop.) are anchored in isolated outcroppings of these granite boulders either because of lack of competition from grasses, or seeds lodged there by cone eating squirrels. Populus tremuloides share the area with the other species of pine and fir but are mainly confined to canyons and valley floors. Photo 1-6-28-48 as above, showing the 1/2 ton truck and trailer used thruout the 2 1/2 month field trip. This home made trailer was designed and constructed for skinning mammals in a wind swept plains or a cold mountain environment. The upper half of the sides are screen, thus permitting an escape from mosquitoes in areas where M. ochrogaster would normally be found. The side flaps of canvas permit a regulation for sun or rain. Linoleum on floor permitted an easy surface for cleaning. Its greatest value is in keeping winds from interfering with operations and as a place for retreat during periods of inclement weather. This trailer cost $170.00 to make (not including labor costs). The back right wall (½ screen) continues to the floor, thus assuring adequate ventilation in periods of excessive heat. Continued to Laramie where I met Prof. Mickey of the Univ. of Wyoming and then retired at the side of the road north of the city. Inspected Prof. Mickeys mammal collection at his home but Microtus ochrogaster not represented, nor had it been collected in the immediate area of Laramie.

Laramie, Albany Co., Wyoming

June 29, 1948

Departed for Ft Bridger at daybreak. Followed Lincoln highway entire route. Approx. 5 mi. N Laramie observed first Antilocapra americana on trip. Valley of Laramie would appear to be influenced by Great Plains in being dominated by grasses. The grassland from Laramie to Rawlins were used by antelope. They were in groups of 3 - 2 - 5. Several singles were observed, one of which had an injured leg and was limping. If one continued to drive along these mammals would remain along side of road (200 feet) and were content just watch but when cars

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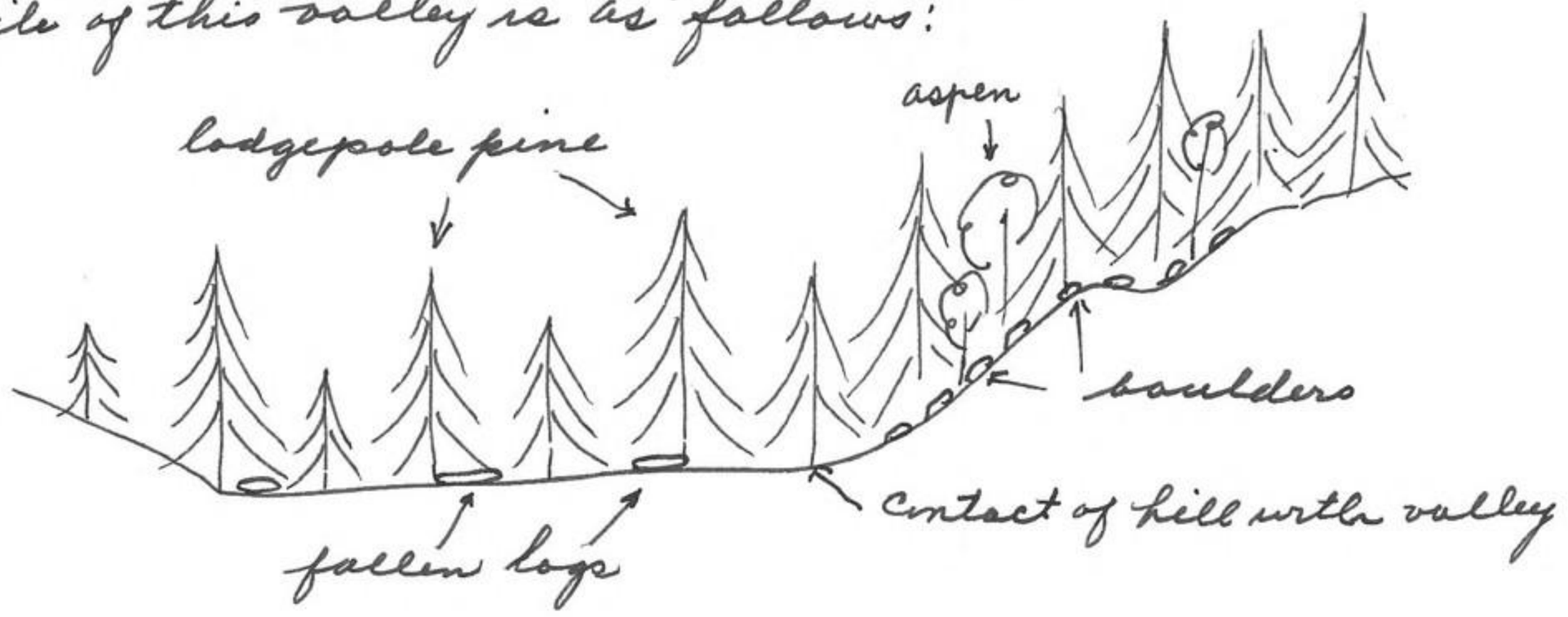
10-6-29-48

stop, they would leave. Antelope were also noted west of Rawlins. Early morning is best time to observe antelope but even during the day they can be seen, feeding, resting. At Greenriver (3mi. w Sweetwater Co.) recorded photo 8-6-29-48 of the river gorge. The vegetation is desert types with bunchlike stands of grass + covering of shrubs. Photo 9-6-29-48 approx 1 mi. w of above and shows remnant of Greenriver as created by highway grade. Cottonwoods line the shoreline on the east and north side. The vegetation around the shoreline consists of rushes and tules with sedges & grasses where water conditions permit. Microtus runways were observed around the edge of the pond above the level of the supersaturated soils. From Green River west observed Citellus armatus (Sp?) at approx. 8 per mile. Their frequency varied from place to place according to the topography of the country. They are in more arid parts of the country. Noted one Cynomys feeding along edge of road at Leyman. Lepus & Sylvilagus at about 8 per mile in the more favorable sections between Green River and Leyman. Citellus flattened in road at about same frequency. 14 mi. E Lyman along highway 30 photographed an erosional formation and the associated vegetation of this desert country, in picture 10-6-29-48. Uinta Mountains of Utah, in background. It is at the base of these mountains where our first transect will be established. This desert country is inhospitable to agriculture except in better water valleys where the abundant water supply issues from the headwaters of the Uintas. At Fort Bridger received information as to location of Cochrums party. From Mountain View continued south and at approx 14 mi. S Fort Bridger recorded photo no. 12-6-29-48 showing broad alluvial confluent fan of stream worn boulders leading 5/8 from the artemisia flats to the N to the edge of the aspen for association of the Tran-continental Coniferous forests. The predominance of vegetation is artemisia but in the lower valley floor the iris occupies considerable areas. The iris, is at this time, in full bloom and with many other flowering plants, added color to the greenish blue of the sagebrush. The clouds are typical were the Uintas are in contrast and central the formation of the clouds. Observed only one Citellus armatus in such a situation from Mountain View to camp. Arrived in camp just in time for a supper of

Lepus americanus. The camp is situated 9 mi. S Robertson, Uinta Co., Wyoming among typical lower montane association of aspen, fir and spruce with artemisia on open slopes and willows in creek bottoms and around beaver ponds. This evening set 156 museum traps 20 feet apart in a consocies of Pinus murryana at 11 1/2 mi. S and 2 mi E Robertson, 9200 ft, Uinta Co., Wyoming. All traps at base of an inactive rock slide on canyon floor level. Pinus murryana dominated throughout valley floor and on side hill, except for a few Populus tremuloides among rocks. Old trees on ground and about every 15 feet in all directions. Ground devoid of vegetation except matted leaves of pine. no water in canyon. Lodge poles of various sizes. Soil sandy and coarse. Valley approx. 300 ft. wide. Growth continuous except where road runs through forest. The rock slide offered a slight relief from the continuous growth of conifers and offered holes for small mammals. The profile of this valley is as follows:



In this area during period of trap setting observed three Odocoileus hemionus, one of which was in velvet. Several Hylocichla audubonii, 2 Perisoreus capitalis canadensis, 18 Spizus p. pinus. and 4 Turdus migratorius. Enroute to camp at 12 1/2 mi. S & 2 mi. S Robertson, shot 3 Lepus americanus and one Lepus (white-tailed) at 2 mi. S E Camp. Yesterday 10 Lepus americanus from this area. This area represents a broad valley with willows on floor & aspen, fir contacting on sides of valley. Snowshoe rabbits prefer the outer edges of willow patches and are there at evening and late twilight. The trailer proved valuable as a place to prepare material and to write notes in the comfort of a warm trailer free of mosquitos.

480630-58

11½ mi. S and 2 mi. E Robertson, Uinta Co., Kansas

June 30, 1948

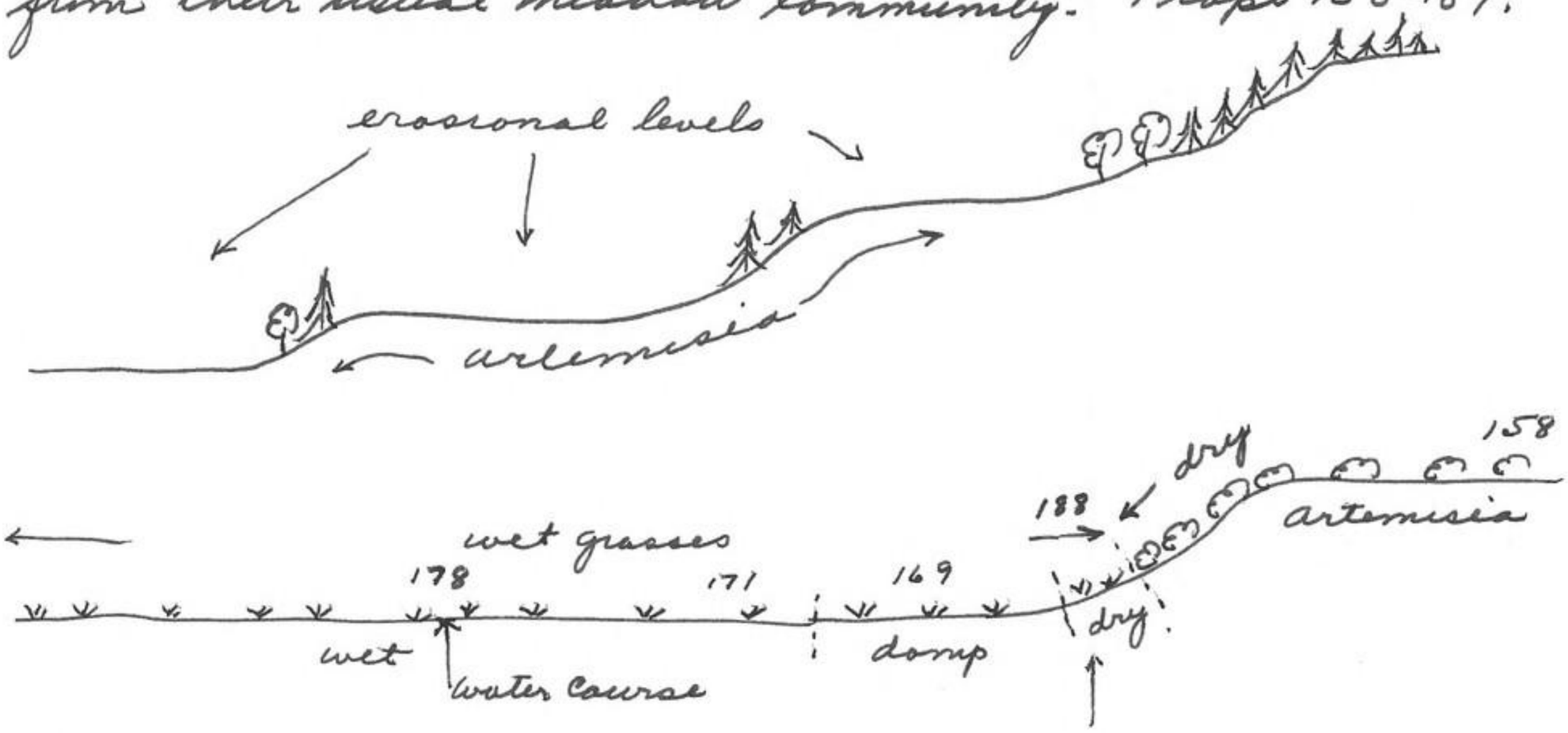
Collected following mammals from trapline set last evening. Condition of trapline is indicated:
1.-3 uneffected. 4 sprung, 5-33 uneffected.
34 Clethrionomys gapperi at edge of log under cover of Pinus murrayana with dry needles & debris on floor, No 1-6-30-48; 63 sprung, bait gone; 64 uneffected; 65 Peromyscus 2-6-30-48 at base of sealed rock slide and canyon floor. Slight vegetation and more exposed than consocies of Pinus murrayana; 66-67 uneffected; 68 Peromyscus maniculatus 3-6-30-48 same as above but at edge of log; 69 sprung and bait gone; 70 Peromyscus maniculatus 4-6-30-48 on canyon floor among ponderosa pine 12 feet high with sleight covering of understory vegetation; 71-76 uneffected; 77 sprung, bait gone; 78-82 uneffected; Peromyscus maniculatus 5-6-30-48; 83-90 bait gone; 91-93 bait gone; 94 uneffected; 95-113 uneffected; 114 Peromyscus maniculatus 6-6-30-48 at base of ponderosa pine, vegetation in rock slide partially open; 115-128 uneffected; 129 sprung, bait gone, fresh Odocoileus tracks along base of rock slide; 130-156 uneffected.

From a trap line of gopher traps set by Cochrum the night before and in same area collected one Thomomys talpoides 7-6-30-48 from 9 traps. These gophers prefer the edge of the road thru the Pinus murrayana. Returned to camp and prepared the following from above traplines.

1-6-30-48 ♂ Clethrionomys gapperi 148-43-19-14.5-25 gms testes 11 mm
2-6-30-48 ♂ Peromyscus maniculatus 170-81-20-18-20 gms leg normally stuffed.
3-6-30-48 ♂ " " 178-82-21.8-18-25 gms
4-6-30-48 ♂ " " 148-65-20-19-18 gms
5-6-30-48 ♂ " " 150-65-19.5-17-16 gms.
6-6-30-48 ♂ " " 144-63-20-17-15 gms meas. only
7-6-30-48 ♂ Thomomys talpoides 248-82-31-7-171 gms testes 18 mm

This evening at 9 mi. S Robertson, 8400 ft., Uinta Co., Wyo. set traps in various plant communities, principally for Microtus. All sets adjacent camp. At camp started one set up canyon to east on south side of creek. This canyon is relatively narrow with just enough room on the N side for the narrow road and appox 50 feet on the S side of creek where traps were set. The creek proper occupies most of the canyon floor with flat canyon floor which is periodically

flooded. The side hill bore conifers & aspen & cottonwoods in creek bottom. Several dwarf junipers offered excellent habitat for Clethrionomys and Rhexeomys. Traps set every 20 feet from 1-84. The second set from 85-157 placed every 10 feet thru artemisia at contact of aspens. The end of this line bordered a meadow 20 feet away and with 10 feet of dry area between line & damp soils of meadow. The third set a transect across an erosional flat of sagebrush and Populus tremuloides down an incline to meadow & across latter. This line to give idea of distribution of Microtus laterally from their usual meadow community. Traps 158-187.



slugs appear & carry to left thruout grasses & sedges

The fourth set included 12 traps (188-200) placed 1 foot apart on a board (plank) in the meadow grasses. Burrows here. The number of traps effected would indicate population associated with this board. The fifth & final set in Creek bottom in an old stream channel (abandoned) grown to meadow grasses. Stream bed 1 foot wide & 3 inches deep but had developed 20-30 feet of soil on either side so that sedges & grasses were forming typical meadow. Over this old creek bed, willows grew 10 feet high & arched over the stream bed. At point where soil conditions permitted, aspens formed the dominant tree. An occasional spruce & fir were among aspen. The dominant understory plants included. mertensia, nine bark, columbines etc. Castor canadensis associated in area. A creek 20 feet wide & impossible to ford with knee boots borders the north side of area and a steep incline on the south, beyond which is an aspen stand on erosional bench. This area can be considered

an intermontaine bog. Traps 201-250 set here.

9 mi. S Robertson, 8400ft., Uinta Co., Wyoming.
July 1, 1948

This A.M inspected traplines set last night. The second set of traps (85-157) was inspected first as follows:
85 Peromyscus maniculatus 1-7-1-48; 86-88 sprung, backgone; 89-112 uneffected; 113 Peromyscus maniculatus 2-7-1-48; 114-117 uneffected; 118 Peromyscus maniculatus 3-7-1-48; 119-136 uneffeeled; 137 microtus longicaudus 4-7-1-48 in rock pile among artemisia on bare soils 30 feet from wet meadows, soils dry & unmuching (more fit for a lizard); 138-143 uneffected; 144 Peromyscus maniculatelx 5-7-1-48, in artemisia, rocky, dry with few blades of grass, 30' from meadow; 145 Zapus princeps 6-7-1-48, same as above but with a few aspen 30 feet from meadow. This case and no 4-7-1-48 were two instances of mammals leaving normal community and entering less favorable ones (dry). I doubt whether Microtus montanus has this degree of adaptiveness; 146-157 uneffected.

The third trap line produced; 158-181 uneffected; 182 Microtus longicaudus 7-7-1-48, high grass and matted understory, no runways but along fallen log; 183 Microtus longicaudus 8-7-1-48 at side of log and otherwise as above; 184-186 uneffected; 187 microtus longicaudus 9-7-1-48 base of ninebark in dry deep grasses among aspen, soil dry, no runways. It is quite evident that microtus longicaudus inhabits tall grasses where soils + ground are free of other grasses outside of the bases of the high grasses + plants. Mertensia is always good trapping or among bare soils beneath dead willows stands or abandoned pool bottoms. This is in contrast to the short grasses of wet open meadows where most of the regularly used runways of microtines are found. M. longicaudus is less dependent of established rhnways and move about extensively + widely beneath the high overhead protections of vegetation underwhich the vegetation is sparse.

The fourth trap line is as follows:
188-194 uneffected; 195 Peromyscus maniculatus 10-7-1-48; 196-200 uneffected. The above area was 12 feet long and one foot wide or 8.3% of total area. One immature Microtus longicaudus taken alive last night when a board was removed in a depression where no 195 trap was placed.

Trapline no 1 revealed the foelowing, 201 sprung and carried 3 feet; 202-203 uneffected; 204 Microtus longicaudus 11-7-1-48 in damp socls among Mertensia. These plants are in pure stands along edge of creek and offered efcellent passage among bases of stems. 205-206 uneffected; 207 sprung, bait gone; 208 Microtus longicaudus 12-7-1-48 among Mertensia in standing water; 209 sprung; 210-211 uneffected; 212 Microtus longicaudus 13-7-1-48 from standing water, 1½ foot grasses & sedges; 213 microtus longicaudus 14-7-1-48 same as above; 214 sprung; 215-218 uneffected; 219 Microtus longicaudus 15-7-1-48 from similar as 13-7-1-48; 220-222 uneffected; 223 sprung; 224-226 uneffected; 227 Microtus richardsoni macropus 16-7-1-48 from standing water among 2 foot high vegetation of grasses and sedges; 228-233 uneffected; 234 Microtus longicaudus 17-7-1-48 from standing water among dense grasses; 235-237 uneffected; 238 Microtus longicaudus 18-7-1-48 from damp soil but not wet among old willows along water course, near lone spruce tree; 239 Microtus longicaudus 19-7-1-48 same as above; 240 uneffected; 241 uneffected; 242 Microtus longicaudus 20-7-1-48 damp ground but not wet, among grasses; 243-245 uneffected; 246 Sorex vagrans among willows and damp grasses, not wet but covered with mosses on ground. no runways. This situation is characteristic of Sorex vagrans as well as Microtus longicaudus in that bare soil and dense overhead protection is required; 247-250 uneffected. In the above area observed 5 Melospiza lincolni, several frogs (Rana and Pseudacris) and several Odocoileus hemionus tracks. The first setting of last night produced the following results. 1 sprung; 2-6 uneffected; 7 Microtus longicaudus 22-7-1-48 among fallen aspen logs, artemisia, Juniperus sibericus on dry sandy soils of old creek overflow. Creek approx 18 feet away. no good grass stands; 8-10 uneffected; 11 microtus longicaudus 23-7-1-48 under Juniperus sibericus, aspen standing all around. This animal taken 40 feet from water and no typical grass stand, soil sandy from periodic creek overflow; 12 sprung; 13-19 uneffected; 20 Microtus longicaudus 24-7-1-48. same as no 23-7-1-48; 21-24 uneffected; 25 Peromyscus maniculatus 25-7-1-48, sandy, water edge; 26 Peromyscus maniculatus 26-7-1-48 from sandy soil, rocks + sparse grasses; 27-29 uneffected; 30 Microtus longicaudus 27-7-1-48 from beneath Juniperus sibericus on creek plain; 31 Peromyscus maniculatus (tail only); 32-33 uneffected.

34 sprung; 35 microtus longicaudus 28-7-1-48; 36 sprung; 37 Peromyscus maniculatus 29-7-1-48; 38-42 uneffected; 43 sprung; 44-45 uneffected; 46 Clethrionomys gapperi 30-7-1-48 on sidehill bordering creek from side of fallen log among aspen; 47-64 uneffected. The traps among conifer and aspen forest and in area where has always been poor but where Phenacomys and Clethrionomys are frequently taken; 65 Peromyscus maniculatus 31-7-1-48 from beneath Juniper trees; 66-76 uneffected; 77 Microtus longicaudus 32-7-1-48 from beneath Juniperus scopulorum on sandy soils; 78 uneffected; 79 Junco concepa 33-7-1-48; 80-84 uneffected.

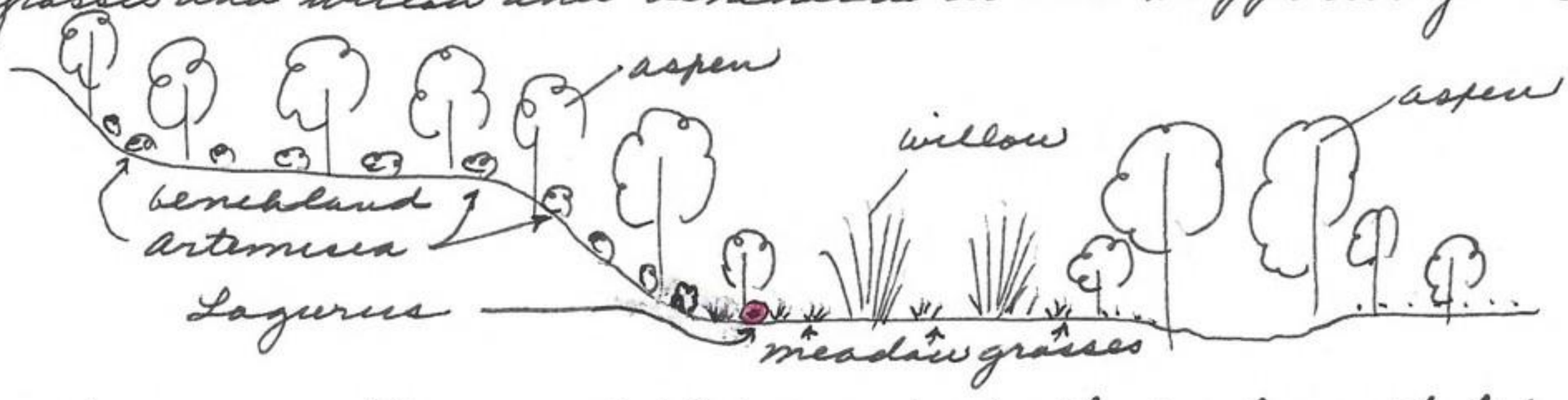
Returned to camp and measured and prepared the above. This evening set 261 traps in research area A-7-1-48 in Creek bottoms. This area included part of the fifth setting of this morning. It represented a typical montane valley with a dominance of aspen and understory of Symphoricarpos and the usual montane flora of Mertensia, Geranium etc. Within this aspen complex a spring issued and formed a water course down thru the aspen and entralled the clearing between the aspen. Here willows followed the immediate spring course and grasses plus beautiful flowering plants, Castelleja in particular, formed the open meadow. Considerable dense willow patches formed impenetrable masses where old creek had left a depression ~~on~~ along its course. On one side of the valley the erosional level was dominated with Artemisia and gave an abrupt boundary while the steep mountain as aspen and artemisia bordered the opposing edge of the valley. The main creek of apprx 15 feet in width traversed the entire length of the valley. Numerous Castor canadensis ponds, dams and tree cutting were associated with this research area. While setting these traps, observed one Lepus americanus under one of the willow patches beneath the aspen stands. Also one Erethizon epixanthus was in a recess formerly the tunnel entrance of a beaver house. It was as surprised as I when contact was made. Chordeiles called continually above the area. One nest of Bonasa umbellus noted. It was placed on ground at base of a 6 inch diameter Populus tremuloides and among Symphoricarpos rotundefolia and Artemisia on an erosional bench of aspen above the river valley. The eggs were all in almost perfect halves with each half telescoped into one another. Returned

to camp and weighed mammals.

9 mi. S Robertson, Uinta Co., Wyoming.

July 2, 1948

Inspected trapline this AM in research area A-7-1-48 as follows: 1 uneffected; 2 Zapus princeps 1-7-2-48; 3 uneffected; 4 Microtus longicaudus 2-7-2-48; 5-8 uneffected; 9 Microtus longicaudus 3-7-2-48; 10 Melospiza lincolni 4-7-2-48; 11-14 uneffected; 15 Zapus princeps 5-7-2-48; 16 Bufo sp.? 6-7-2-48; 17-18 uneffected; 19 Microtus richardsoni macropus 7-7-2-48; 20 Bufo (sp.?) 8-7-2-48; 21 Zapus princeps 9-7-2-48; 22-23 uneffected; 24-35 sprung; 36-46 uneffected; 47-48 sprung; 49 Sorex vagrans (sp.?) 10-7-2-48 in center of a willow clump on elevated mound, among dry leaves and some 30 feet from water or wet soils, no runways present; 50-57 uneffected; 58 Lagurus pauperimus 11-7-2-48 at contact of meadow of grasses and willow and benchland above supporting Artemisia



and aspen. It was, at this point in the rank vegetation of the meadow community but only about 2 feet from its more usual artemisia community; 59 uneffected; 60 Microtus longicaudus 12-7-2-48 among horsetail plants at edge of water course supersaturated soils of boggy consistency; 61 sprung; 62-63 uneffected; 64 sprung; 65-68 uneffected; 69 Microtus longicaudus 13-7-2-48 from base of willow patch on bare, damp soils; 70 uneffected; 71-73 sprung; 74 uneffected; 75 Microtus longicaudus 14-7-2-48; 76 uneffected; 77 Microtus longicaudus 15-7-2-48; 78-79 uneffected; 80-82 sprung; 83 uneffected; 84-85 sprung; 86 Microtus longicaudus 16-7-2-48; 87-93 uneffected; 94 Microtus longicaudus at edge of willow bordered lake on bare soils; 95-104 uneffected; 105 Microtus longicaudus 18-7-2-48; 106 uneffected; Zapus princeps 19-7-2-48 among downed aspen and dead willows at edge of beaver pond; 108 uneffected; 109 Zapus princeps 20-7-2-48 from area similar to vegetation of the Northwest (U.S.). Plants with large leaves, soil damp. Upper story dense; 110 sprung; 111 Clethrionomys gapperi 21-7-2-48 like Zapus above but under a dead willow mass on bare soils, no

green vegetation, soil damp, willows impenetrable to human trespass. The overhead protection would appear to be exactly the requirement for Zapus, Clethrionomys and Microtus longicaudus; 112 uneffected; 114-116 sprung: deer tracks by sprung traps; 117-130 uneffected; 131 sprung; 132 Microtus montanus 22-7-2-48; in same general area as M. richardsoni, no runways, grasses dense but short; 133-135 uneffected; 136 Zapus princeps 23-7-2-48; from a microtus runway probably M. richardsoni, in 1 foot high meadow grasses in boggy area among willows, wet situation; 137-139 uneffected; 140 Zapus princeps 24-7-2-48 from standing H_2O; 141 uneffected; 142 Microtus longicaudus 25-7-2-48; 143-146 microtus longicaudus 26-7-2-48 from the same trap position as Sorex vagrans of yesterday; 147 uneffected; 148 Sorex vagrans 27-7-2-48 from middle of 3 foot willow patch where sparse vegetation prevailed, mass dense but basal ends bare; 149-151 uneffected; 152 Zapus princeps 28-7-2-48, soils damp and typical dense overhead vegetation; 153-157 uneffected; 158 Microtus longicaudus 29-7-2-48; 159 sprung; 160-161 sprung; 162 Microtus longicaudus 30-7-2-48; 163 uneffected; 164 Microtus longicaudus 31-7-2-48; 165-168 uneffected; 169 Microtus longicaudus 32-7-2-48; 170 uneffected; 171 sprung; 122-174 uneffected; 175 Clethrionomys gapperi 33-7-2-48 among aspen-Symphoricarpos community slight vegetation more lush and great variety of flowering plants. Not as dense as meadow habitat. Soils dry but damp in depressions; 176 uneffected; 177 Thomomys talpoides 34-7-2-48; in a damp depression among aspen and Symphoricarpos, dry aspen leaves covered ground, vegetation sparse at this particular spot. Old gopher diggings some 50 feet away. It would indicate that there is a certain amount of night peregrinations or that it had been forced from its subterranean chamber by other adult gophers or some other natural enemy; 178 uneffected; 179 sprung; 180 Clethrionomys gapperi 35-7-2-48; in old depression among dead willows; aspen dominated area; 181 Sorex vagrans 36-7-2-48 in aspen stand among dead willows and lush vegetation; 182-187 uneffected; 188 Melospiza lincolni 37-7-2-48; 189-192 uneffected; 193 Microtus longicaudus 38-7-2-48; 194-196 uneffected; 197 Microtus longicaudus 39-7-2-48; 198 Microtus longicaudus 40-7-2-48; 199 uneffected; 200 Microtus longicaudus 41-7-2-48; 201 Microtus longicaudus 42-7-2-48; 202 Peromyscus maniculatus 43-7-2-48; 203 Microtus longicaudus 44-7-2-48,

204-206 uneffected; 207 sprung; 208-217 uneffected; 218 Microtus longicaudus 45-7-2-48; 219 Zapus princeps 46-7-2-48; 220-224 uneffected; 225 sprung; 226 Clethrionomys gapperi 47-7-2-48 associated with dead willows among aspen stands. These dead willow formerly lined an abandoned stream or spring course and are now incorporated into the aspen community; 227 sprung; 228-230 uneffected; 231 Sorex vagrans 48-7-2-48; 232 Zapus princeps 49-7-2-48; 233-236 uneffected; 237 Microtus longicaudus 50-7-2-48 from dense willows along beaver pond; 238-239 uneffected; 240 end of meadow-aspen set. The second variation of this trapline included a strip down the bench land of aspen-artemisia and Symphoricarpos bordering the meadow and with the following results:

241-243 sprung; 244 uneffected; 245-246 sprung; 247-261 uneffected. end of trapline. From the above trapping in research area A-7-1-48 made these observations: Clethrionomys gapperi must have bare soils under supporting upper canopy such as willows, aspen, fir trees etc. Soils may be damp or dry. In other terms, this community must have overhead protection and sparse vegetation beneath. In the case of the Microtus longicaudus, young are in less desirable area of community in dryer and more heterogeneous complexity of plant forms while the adult animals were associated with the more climax or typical plant communities of the montane aspen-willow set-up. In other words the adults shared with Clethrionomys and Zapus in the more dense and lush areas of the newer stands of vegetation. Microtus montanus prefers open fields of short grass beyond the limits of trees or overhead vegetation in contrast to Microtus longicaudus which prefers dense plant stands among willows or trees where soil permit exceptionally tall plants to grow. Apparently Microtus longicaudus does not usually make runways and when found is using other runways made by other animals. Sorex vagrans prefers a plant community like the ones used by Clethrionomys, particularly dry bases of willows where vegetation is sparse, however, it is also found in wet and even runways of Microtus with standing water. Zapus princeps use the plant communities where vegetation is rank and matted conditions missing at the lower layer. In otherwords it prefers areas where it can navigate freely but at the same time have overhead protection.

Returned to camp, measured specimens and prepared represent-
ative series. This evening drove up canyon to the east of camp
and ended at 14 mi. S and 2 mi. E Robertson 9000 ft. Summit, Uinta Co.,
Utah, passing from the lower montane at camp to what I
would take as uppermost lower montane and near the upper
montane. The characteristic trees are Populus tremuloides,
abies concolor, Pseudacrys taxifolium, a few spruce and
Pinus murrayana. The topography is a broad intermontane
valley with sleight elevations or hills bordering and is the
outwash plain of the higher glacial plateform. The exten-
sive conifer covered mountains are the broad bases of
the Uintas proper. Several lakes dotted the valley some
extinct and others in varies stages of development. It would
appear that the more closely a lake approximates the closed
lake the more productive was the mammal catch. The
broader meadow lands supported more typical grasses and sedges
with occasional clusters of willows as these willows
approached streams or beaver ponds would dominate the
vegetation and produce an impenetrable mass. In some
areas of the upper limits of this valley, the willows completely
occupy the floor where beaver controlled the valley with dams.
In this intermontane valley set 237 museum special traps
in the following distinct associations: 1-65 meadow of
grasses and sedges; 66-81 among willows bordering creek; 82-118
around edge of lake among sedges & grasses where soils were
damp to saturated; 119-163 meadow as in area of 1-65 traps;
170-198 bog area with tall grasses and spongy surface; 199-237
in meadow bordering creek and an ofbow. The above series of
traps were nearly all sedges and grass sets and are considered
as research area A-7-2-48. Cattle in area and frequently seen feeding
or resting in the area of trapping. Photographs the following
day will indicate the nature of this area. After setting trap
line returned over a part of the line and found that some
Microtus montana had already been caught. It was not too
uncommon to see this vole active during the afternoon. Re-
turned to camp at 9 mi. S Robertson.

9 mi. S Robertson, 8400 ft., Uinta Co., Wyoming.

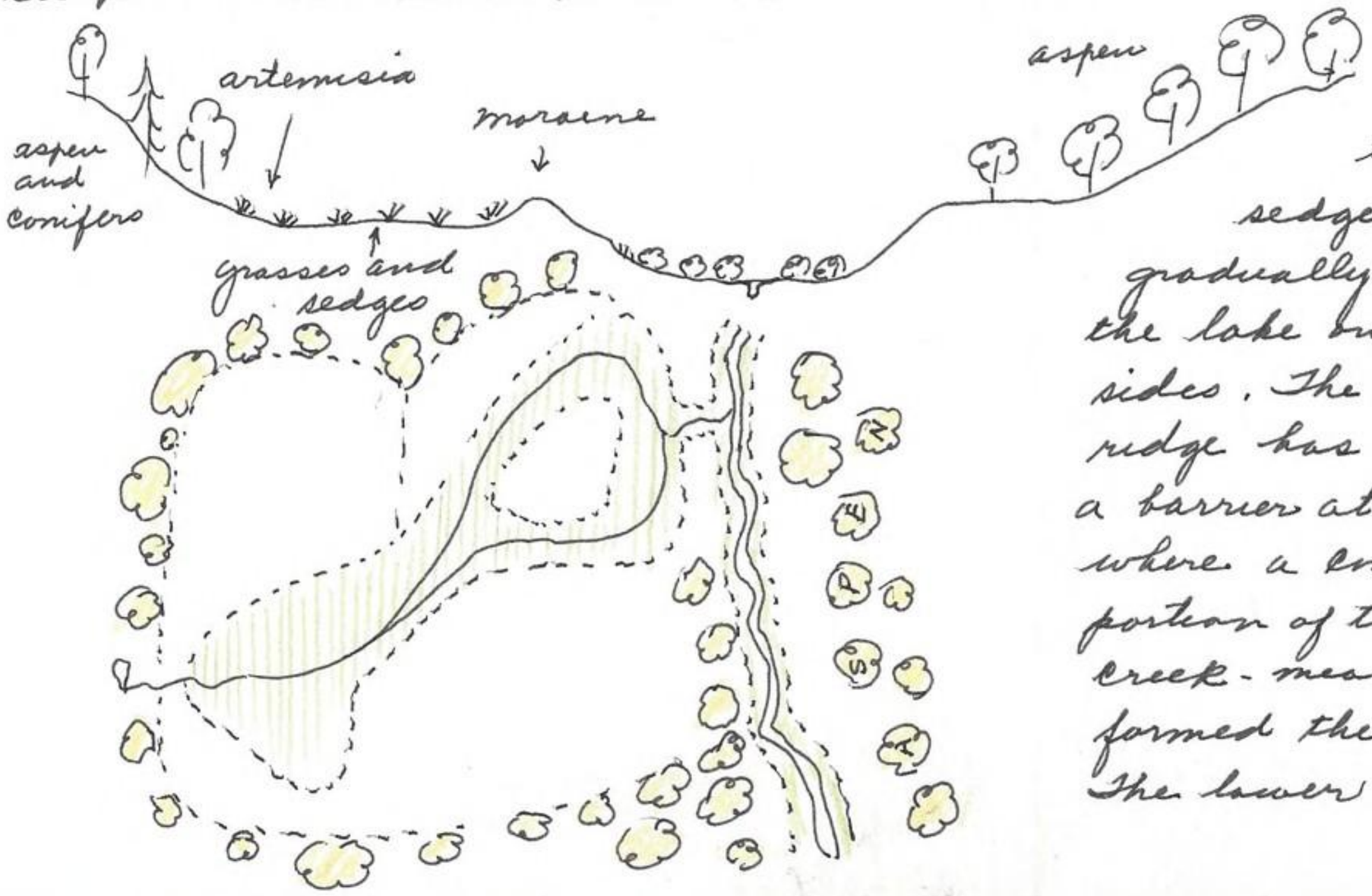
July 3, 1948

This morning made early start for research A-7-2-48 at
14 mi. S and 2 mi. east Robertson, 9000 ft, Summit Co., Utah. En-

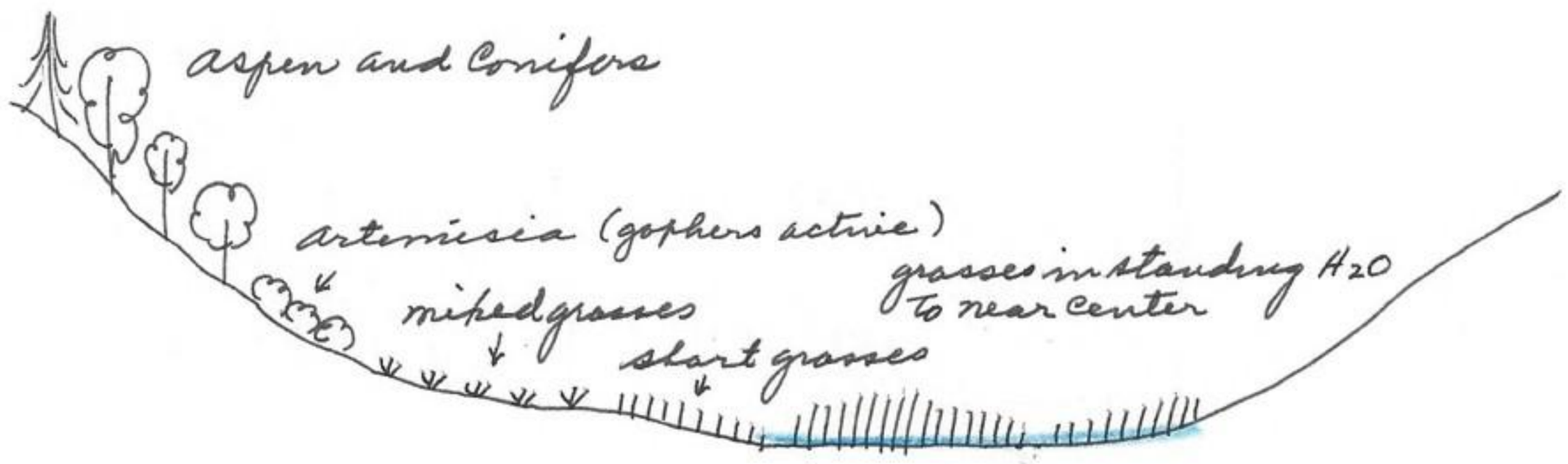
route. observed 4 Tamias and heard a few Tamiasciurus.
mammals from trapline as follows:
1 Microtus Montanus 1-7-3-48; 2 sprung; 3 uneffected; 4 Microtus montanus 2-7-3-48; 5-7 sprung; 8 Microtus montanus 2a-7-3-48; 9-10 sprung; 11 Zapus princeps 3-7-3-48; 12-13 uneffected; 14 sprung; 15 uneffected; 16 sprung; 17-25 uneffected; 26 sprung; 27 uneffected; 28 sprung; 29-32 uneffected; 33 sprung; 34-35 uneffected; 35 Clethrionomys gapperi 7-7-3-48; 36-40 uneffected, bare damp soil around willows; 41 Sorex vagrans 8-7-3-48, base dead willow patch on bare damp soils; 42 sprung; 43 sprung; 44 Peromyscus maniculatus 10-7-3-48; 45-48 uneffected; 49 Clethrionomys gapperi 13-7-3-48; 50 Microtus longicaudus 14-7-3-48; 51-55 uneffected; 56 Peromyscus maniculatus 56-7-3-48; 57-58 uneffected; 59 sprung; 60 sprung; 61-65 uneffected; 66 Sorex vagrans 66-7-3-48; 67 Peromyscus maniculatus 67-7-3-48; Peromyscus maniculatus 68-7-3-48; 69-71 uneffected; 72 Zapus princeps 72-7-3-48; 73 uneffected; 74 Zapus princeps 74-7-3-48; 75 Sorex vagrans 75-7-3-48; 76 uneffected; 77 sprung; 78-79 uneffected; 80 sprung; 81 uneffected; 82 sprung; 83 Microtus montanus 83-7-3-48; 84-95 uneffected; 96 Clethrionomys gapperi 96-7-3-48; 97-99 uneffected; 100 Clethrionomys gapperi 100-7-3-48; 101 Zapus princeps 101-7-3-48; 102-109 uneffected; 110 sprung; 111-115 uneffected; 116 sprung; 117 Peromyscus maniculatus 117-7-3-48; 118 uneffected; 119 Microtus richardsoni macropus 119-7-3-48; 120-122 uneffected; 123 Bufo 123-7-3-48; 124 sprung; 125 Microtus montanus 125-7-3-48; 126-129 uneffected; 130 Microtus longicaudus 130-7-3-48; 131-134 uneffected; 135 Microtus longicaudus 135-7-3-48; 136-139 uneffected; 140 sprung; 141 Microtus montanus 141-7-3-48; 142 uneffected; 143 Microtus montana 143-7-3-48; 144-155 uneffected; 156 sprung; 157-159 sprung; 160 uneffected; 161 montanus richardsoni macropus 161-7-3-48; 162 uneffected; 163 sprung; 164-168 uneffected; 169 sprung; 170-172 sprung; 173-175 sprung; 176 uneffected; 177-180 uneffected; 181 sprung; 182-184 uneffected; 185 Peromyscus maniculatus 185-7-3-48; 186 uneffected; 187 sprung; 188 Microtus montanus; 188-7-3-48; 189-192 uneffected; 193 Bufo; 194-197 uneffected; 198-206 uneffected; 207 Microtus montanus 207-7-3-48; 208-210 uneffected; 211 Lana or Pseudacris 211-7-3-48; 212-222 uneffected; 223 Peromyscus maniculatus; 224-227 uneffected; 228 Peromyscus maniculatus; 229-236 uneffected; 237 sprung - end of line. During the collection of mammals took several photographs to indicate general area. no. 251-7-3-48 of a lake that is nearing the final stages of

of its succession with sedges practically converging at the deepest point. It was around the peripheral edge of this lake that the traps of one section were placed. The Uintas can be discerned in the background with the conifer covered mountains adjoining the meadow. Traps were also placed among willows in the foreground and meadows in the distance. Photo 252-7-3-48 apprax 2 mi. S of previous photo or about 16 mi. S & 2 mi E Robertson, Uinta Co., Utah and at apprax 9200 feet. The entire valley is controlled by Castor Canadensis with the dominant plant. The beaver had used the sidehill for forage and had cut aspen as far as 60 feet from water. Photo 253-7-3-48 at 14 mi S and 2 mi. E Robertson and in an area where traps were placed. The immediate foreground of down timber from isolated growth while the middleground shows the main meadow where the greater majority of traps were placed. This meadow is a typical meadow for Microtus montanus, particularly where depression remain as a result of former creek channel excavation or early spring overflow. Uintas faintly shown as background. Collected the following grasses in this area & represented grasses of equal dominance; 250 (1)-7-3-48; 250(2)-7-3-48; 250 (3)-7-3-48; 250(4)-7-4-48; 250 (5)-7-3-48; 250 (6)-7-3-48; 250(7)-7-3-48; 255(2)-7-3-48.

This evening set trapline at 10 mi. S and 1 mi. W Robertson 8700 ft., Uinta Co., Wyoming in Research area 4-7-3-48; This open field consists of an old lake that has been filled in except a small section at the lower end, where even here the sedges are gradually invading the lake on all sides. The moraine ridge has set up a barriers at a point where a considerable portion of the old creek-meadow has formed the area. The lower end is



boggy and rests as if at the edge of a hanging valley. The main creek valley has eroded some 30 feet where it now forms a valley dominated by willows and a few grasses. The moraine is at present bare but formerly supported Conifer trees. Their absence is due to fire or natural death. Thomomys talpoides completely occupies this moraines. a transect of grasses would appear like this:



The spring on the hillside furnished water for the bog area and damp meadow. a creek is adjacent and permits a thoroughfare for wandering aquatic mammals through the area. 200 traps were placed around the edge of this lake and among the wet meadows leading to the spring. Traps completed at sundown and on rechecking line collected 20 Microtus montanus nanus from meadow. These were given numbers 201-7-3-48 to 320-7-3-48, This represents a period of about 1½ hr activity before sundown. At several places noted Microtus running in trails. One Microtus montanus ran into a hole and immediately another one left a hole 1½ feet away. In one trap caught 4 M. montanus. after sundown returned to camp & prepared specimens.

9 mi. S Robertson, 8400 ft., Uinta Co., Wyoming
July 4, 1948

After breakfast checked research area A-7-3-48 at 10 mi. S & 1 mi. W Robertson, 8700 ft., Uinta Co., Utah and inspected trapline. Only traps with mammals were recorded, many spring traps were present, however:

1	Microtus	montanus	nanus	1-7-4-48	12	Microtus	montanus nanus 7-7-4-48
2	"	"	"	2-7-4-48	15	"	" " 8-7-4-48
5	"	"	"	3-7-4-48	22	"	" " 9-7-4-48
6	"	"	"	4-7-4-48	23	"	" " 10-7-4-48
7	"	"	"	5-7-4-48	24	"	richardsoni macropus 11-7-4-48
11	"	"	"	6-7-4-48	28	"	montanus nanus 12-7-4-48

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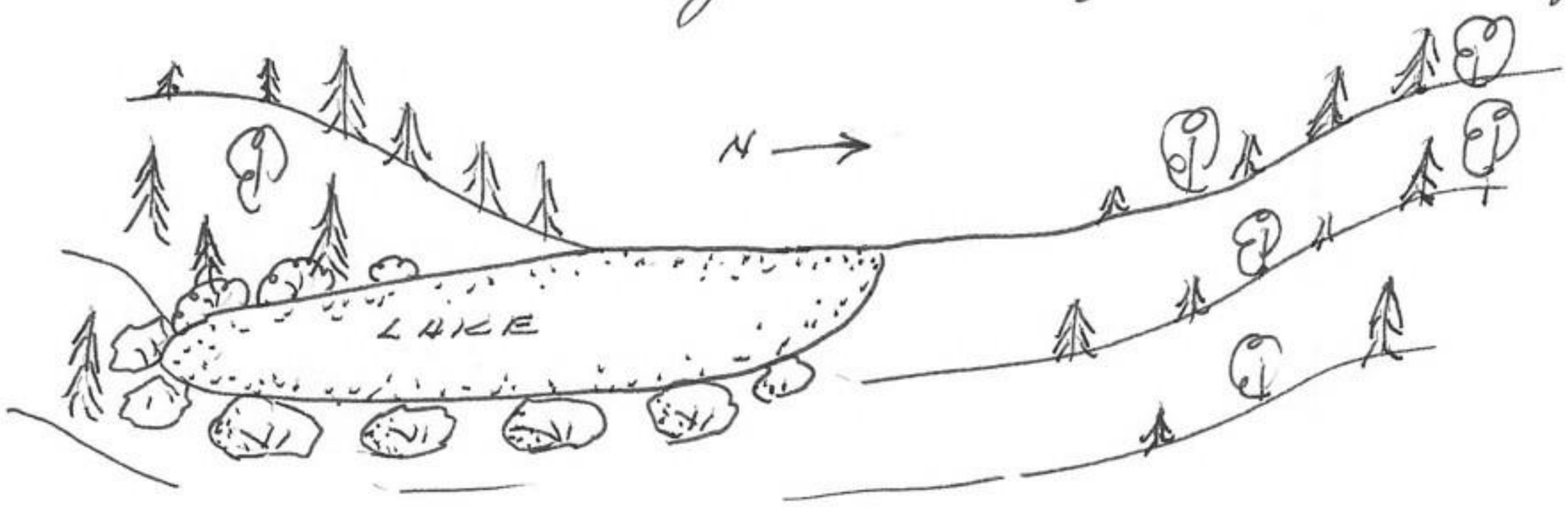
30	microtus richardsoni macropus	13-7-4-48	
38	" montanus nanus	13a-7-4-48	
45	" richardsoni macropus	14-7-4-48	
47	" " "	15-7-4-48	
48	" montanus nanus	16-7-4-48	
54	" " "	17-7-4-48	
56	" " "	18-7-4-48	
60	" " "	19-7-4-48	
72	" " "	20-7-4-48	
78	" " "	21-7-4-48	
83	" " "	22-7-4-48	
84	microtus longicaudus	23-7-4-48	
96	" montanus nanus	24-7-4-48	
99	" " "	25-7-4-48	
108	" " "	26-7-4-48	
117	" " "	27-7-4-48	
130	zapus princeps	28-7-4-48	
131	" "	29-7-4-48	
133	Sorex vagrans	30-7-4-48	
138	" "	31-7-4-48	
140	microtus montanus nanus	32-7-4-48	
141	" " "	33-7-4-48	
151	" "	34-7-4-48	
163	" " "	35-7-4-48	
164	" " "	36-7-4-48	
176	" " "	37-7-24-48	
175	" " "	38-7-4-48	
187	" " "	39-7-4-48	
192	" " "	40 34-7-4-48	
193	" " "	46-7-4-48	
198	" " "	42-7-4-48	
200	" " "	43-7-4-48	

The entire population of this feeld was one species microtus montanus nanus except in the case of Sorex and microtus richardsoni both of which were captured at the extreme end of the bog where dwarf willows approached the edge of the moraine and led down the drainage slope to the creek below. Microtus longicaudus was found at this point. Returned to camp. This evening set 153 traps in research area A-7-4-48 at 9½ mi. S & ½ mi. W Rawlins, 8600 ft., Uinta Co., Wyoming. This area consists of a narrow intermontane valley with a small boggy lake occupying the greater percentage of the floor level. The lake proper is shallow and apprax 300' x 150'. The slope adjacent the lake are Pinus murrayana and aspen with Juniperus scbericus constituting 40 per cent of the understory cover.



The slopes are dry and vegetation (herbaceous) scarce. The N side of the lake is without willows while the SW and E side bordering shores are lined with willows. The east end

end of the lake grades into dwarf willows which in turn changes to high willow beyond on the dry soils. The water supports a complete coverage of grasses to where it grades abruptly into the willow banks or damp areas of the N side. The willow patches (dwarf) support grasses and are continuous. The dwarf willows are approx 3 feet high and all have a common heighth.

The following sets were made. Traps 1-54 around edge of lake in an area supporting grasses with roots in supersaturated soils. Grass is dominant. Observed only 2 runways in this series. Second set 55-83 among dwarf willows at east end of lake. Considerable grass and plants on soils which were damp to wet. The third set 83-143 in an area 40 feet from the lake and beyond the limit of grasses that are influenced by the lake. all traps of this set in dry soils principally under Juniperus sibirica. Aspen & conifers overhead The intention of this set was to determine latitude of mouse movement from the usual wet & damp grasses of the lake to the dry grassless covering of the forest floor. The fourth set consists of 9 traps (144-153) in one square yard among intervening area between the tall willows some 150 feet from influence of lake. Grass luxuriant except in center of area where slight depression excluded usual growth. The objective was to find the number and kinds of mammals within a limited area. In general the entire research area is populated with ants and their nests and wondered what the influence would be. Their nests are from 1/2 foot to 2 feet high and are approx 40' apart. Birds observed in this area are:

area I view of area on previous page

Scalia curvicauda, Hylocichla guttata, Sphrapicus varius nuchalis, Dendrocopis villosus, Turdus migratorius, Spinus pinus, Melospiza fasciata heliodata, Troglodytes aedon parkmanii, Parus atricapillus, Parus gambeli, Bonasa umbellus, Melospiza lincolnii, Junco caniceps,

Coniferous forests. The darker area to the left is standing water with sedges encroaching the center of meadow. Artemisia adjacent to the meadow and occupying drier areas (see notes of date describing Research area A-7-3-48). Collected the following grasses of a transect across grass area. no. 35-7-5-48. is a grass where microtus montanus was most commonly found. It begins where grazing grasses and plant vegetation of the drier slopes end and continues lakeward for appros. 4 feet in width to soils that are damp. Grass no 36-7-5-48 Continue lakeward and is Ligher in size. Because of supersaturated soils, microtus montanus do not use this area of grasses. Grass no 37-7-5-48 dominant grass in standing water and naturally is not used by microtus. Grass no. 38-7-5-48 dominant grass in upper reaches of meadow where Microtus montanus is in greatest numbers. where in pure stands remained too thin and for best microtus community but when mixed with nos. 34-7-5-48 and 35-7-4-48 was ideal combination for microtus. This admixture of grass, plus other plants formed a subclimax. Microtus used runways where grasses were not too matted and where bare surfaces or water channel had kept vegetation from forming mat surface. Photo 39-7-5-48 of dominant grasses representing 35-7-5-48, 37-7-5-48 to right & 36-7-5-48 in back-ground. Clipped grasses of 37-7-5-48 on ground where most microtus were taken. Returned to Camp at 9 mi. S and in the evening returned again to 10 mi. S + 1 mi. W Robertson and set 30 live traps as sun left area but light continued on east hills beyond. After setting traps observed 2 ♂ Odocoileus hemionus enter research area A-7-3-48 in meadow area and start to feed on plants between the Artemisia and wet meadow grasses & sedges. This area was also used by cattle. They remained for 20 minutes and then reacted to a passing C 57 flying overhead by first running in one direction and then in another direction but still remaining in the area, finally gaining the cleared moraine bordering the meadow where they ran thru a group of cattle feeding there, and thence to willow protection in the main creek to the east. During this interim of time and at a point where the sun rays had left all mountain slopes, recorded the following active birds: Sphyrapicus varius nuchalis, Dendracopos villosus, Spinus pinus pinus, Wilsonia pusilla pileata, Troglodytes aedon

Selasperus platycercus, Dendroica auduboni, Nuttallornis borealis, Carpodacus cassinii, Passerella grammaca, Lopia curvirostris, Buteo jamaicensis borealis, Accipiter gentelus. Returned to camp at 9 mi. S Robertson and finished preparation of mammals.

9 mi. S Robertson, 8400 ft, Uinta Co., Wyoming.

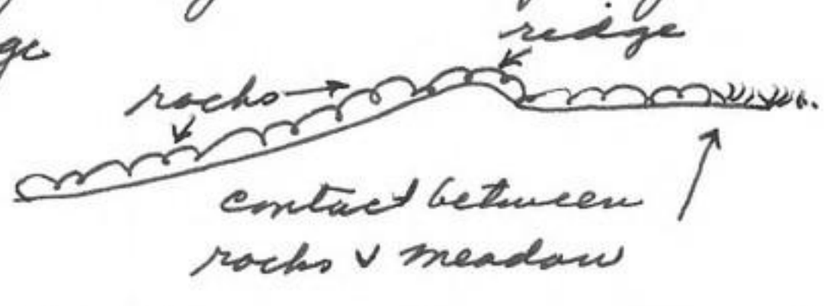
July 5, 1948

Inspected trapline of research area A-7-4-48 of last evenings setting:

1. spring; 2-4 uneffected; 5 spring; 6-9 uneffected; 10-11 spring; 12-14 uneffected; 15 spring; 16 Peromyscus maniculatus 1-7-5-48; 17-18 uneffected; 19 Bufo 2-7-5-48; 20-25 uneffected; 26 microtus longicaudus 3-7-5-48; 27 uneffected; 28 Zapus princeps 4-7-5-48; 29-82 uneffected; 33 spring; 34 microtus longicaudus 5-7-5-48; 35-36 uneffected; 37 Eutamias umbrinus 6-7-5-48 from mud flat of receding edge of lake; 38 spring; 39-40 uneffected; 41 Zapus princeps (tail only); 42 spring; 43 Eutamias umbrinus 7-7-5-48 on mud of receding lake shore; 44-53 uneffected; 55-58 uneffected; 59 spring; 60-65 uneffected; 66-67 spring; 68 Melospiza lincolni 8-7-5-48; 69-70 uneffected; 71 Microtus longicaudus 9-7-5-48; 72-73 spring; 74 uneffected; 75 spring; 76 Melospiza lincolni 10-7-5-48; 77 Zapus princeps 11-7-5-48; 78 uneffected; 79 microtus montanus 12-7-5-48; 80 microtus montanus 13-7-5-48; 81-83 uneffected; 84 spring; 85-89 uneffected; 90 spring; 91-94 uneffected; 95 spring; 96-110 uneffected; 111 spring; 112-113 uneffected; 114 spring; 115-117 uneffected; 118 spring; 119 spring; 120-120 uneffected; 121 spring; 122 uneffected; 123 Peromyscus maniculatus 14-7-5-48; 124 Eutamias umbrinus 15-7-5-48; 123-125 uneffected; 126 Peromyscus maniculatus 16-7-5-48; 127-137 uneffected; 138 spring; 139 uneffected; 140 spring; 141 uneffected; 142 Peromyscus maniculatus 17-7-5-48; 134 uneffected. The above series from 83-143 eaten by ants to some degree; 144 uneffected; 145 uneffected; 146 Zapus princeps 18-7-5-48; 147 uneffected; 148 microtus montanus 19-7-5-48 taken 2 feet from 18-7-5-48; 149-153 uneffected. In summary: microtus montanus and M. longicaudus will enter drier areas that have overhead protection of willows & grasses but will not enter coniferous or aspen forests even where they are adjacent to lake grasses. Returned to camp and then to Gilbert meadows, Summit Co., Utah, 9641 feet some 7 miles up canyon from camp. Enroute passed thru extensive logging operations about 1/2 way. Considerable tree

material was left standing for seed but did not actually look like good practice! On this trip noticed the grade was very gradual. Apparently at one time it was under glacial action or resulted from outwash or upleft. At these meadows met Mr Taylor Jackson, a sheep herder. (address Evanston, Wyo, % John Elroy). He presented me with several fossils which he had discovered 20 mi. E Mt. Pleasant, Uinta Co., Wyoming. They were associated with tree specimens. He is a friend of Willard Seward of Provo. These fossils are crinoids and a section of a turtle carapace. This broad open valley (Gelbert Meadows) is surrounded by Coniferous forests which range beyond to the base of the Uintas to the south. The conspicuous peak to the east and south is Gelbert Peak. The valley is crowded with short grasses and tall grasses at edge of creek or wet areas. Around the edge of this meadow and on drier soils approaching the conifers, the ground is flowering plants. A slow creek meanders thru the valley. Mr. Jackson reports he saw a Alces americana near the point where the rock flow touches the divide leading into the valley or at a point where road enters valley at 16 mi. S and 2 mi W Robertson. Also elk and deer are common. Pika in rocks at edge of meadow. One of his dogs fought a Martes in the rock flow at the N and W end of meadow. The dog finally won but took a terrific beating. It buried it among the rocks. Black bears are rare. Grizzly bears practically extinct. Citellus armatus common with holes everywhere. Marmota in rock slide or flow at divide at north end of the valley. Lika also in these rock flows. Anthus spinoletta numerous and most conspicuous but thru Center of Open valley. Considerable parental display by adult birds. The young ones are just able to fly. Salmo in creek. Took photo 24-7-5-48 and 23-7-5-48 as a panoramic view of Gelbert meadows. The Uintas stand majestically in the background. Extensive conifer stands lead out beyond the meadows. Flowering plants around edge of this feed. Pipit common throughout this meadow. It would be interesting to ascertain why these meadows do not have a few islands of Conifers invading from the edge. Small trees invade the meadows on the west side. Photo 25-7-5-48 a dead tree along the outermost limit of the tree growth. This tree is mature but probably died because of some factor inhibiting normal growth and development. This valley

may represent the glacial plateform of the Pleistocene. Photo 26-7-5-48 was taken from steep west side hill at point where the water leaves the broad meadows. This hill may be the lateral moraine of a former glacier. It is peculiar in that deposition is on one side and erosion on the steep slope on the right sede of photo. The moraine is of uniform composition and passes a relatively sharp angle at the point of angle between the horizontal surface and the dipping ongle to the west. The accumulation could not have been formed from the west because of the factor of consistent angle. It is noteworthy that lichens are more heavily populating a zone from the angle down the slope to the base. Exposure and snow drifts may have something to do with the distribution of rock covering. Photo 30-7-5-48 is a close up of these igneous or basaltic rocks and indicates the distribution of these lichens. It was among these rocks that Ochtona princeps and marmota were observed. The martes was also noted here. Photo 31-7-5-48 a dam of Castor canadensis, intercepting the water as it leaves the meadow beyond. Willows and aspen form their chief supply of food in this area. Several houses were along this creek. At this dam found a sorex vagrans on the upper edge of dam as if washed against the dam by winds. No active beavers at this time of day. Photo 32-7-5-48 at south end of Gilbert meadows where creek leaves meadow The sharp angle of the upper edge of the rock feed is traceable the full length of the exposured. The entire creek used by Castor canadensis and outside of one or two small dams in the area of the foreground in photo, the main series of dams are among conifers beyond the rock feild. The ridge presents an elevation at edge of rock feed. At the contact between the rocks and meadow soils there are unusually high concentrations of Citellus armatus and Marmota.



Departed Gilbert meadows & returned to 10 mi. S and 1 mi. W Robertson, (8700 ft.) Uinta Co., Wyoming to research area A-7-3-48 where dominant grasses were collected. Photo 34-7-5-48 of research area A-7-3-48 at above locality. This meadow is relatively extensive for this area and apparently has always been a permanent one. It is fed by a spring at the right hand side of the picture where an Artemisia opening enters the

parkmani, Zonotrichia leucophrys; Porus atricapillus, Bonasa umbellus, Melospiza lincolni, Junco hyemalis, Hylocichla guttata, Selasphorus platycercus, Myadestes townsendi, Carpodacus cassini, Poaecetes gramineus, Sialia currucoides, Lopia curvirostra, Buteo jamaicensis, Chordeiles (sp?).

One hour after sun had left the meadow examined traps and found 5 microtus montanus and 1 Sorex vagrans. As I approached one set of holes, two microtus montanus ran into one of the two holes. While standing 2 feet away, another ran into the same hole and 2 feet away from the above hole, another Microtus montanus left. The second mouse chosing the first one came to entrance of hole and with head protruding remained for 30 seconds, then moved out of hole so that its entire body was beyond hole for 10 seconds and then out 4 inches away from hole where it stopped to investigate me. It then ran down runway ~~into~~ a trap set across the trail and then backed up an inch or two and then after 8 seconds entered the trap without fear and when the led of the line trap fell it did not even jump. Three microtus montanus were taken in one line trap set by these holes. A fourth one was seen but not captured. Their movement along trail unbelievably fast: They move moderately fast when in normal feeding movement. Left the trap line with the hermit thrush singing continuously. On the artemisia bench 2 blocks SW of 9 mi. W Robertson, Uinta Co., Wyoming collected a Phaloenoptelus nuttalli 40-7-5-48. This bird flew from road and returned to same general area several times. The following Lepus americana were collected by party at one mile NE of camp among willow choked valley. They were feeding between willows and aspen at the contact between willows of valley and aspen of hill slope. One of these rabbits ran under a cachevert when approached. Their numbers are: 41-7-5-48, 42-7-5-48, 43-7-5-48, 44-7-5-48; 45-7-5-48; 46-7-5-48; 47-7-5-48; 48-7-5-48; 49-7-5-48. No. 50-7-5-48 a Castor canadensis (spleen and lung tissue) from 9 mi. S Robertson, Uinta Co., Wyoming. One Erethizon epixanthum 51-7-5-48 from camp taken for histological tissue. Planned to move camp tomorrow.

9 mi. S Robertson, Uinta Co., Wyoming.
July 6, 1948

This A.M at 9:00 A.M departed for Encompment, Wyoming.

At approx. 5 mi. S Robertson, Uinta Co., Wyoming photographed, 1-7-6-48, the characteristic topography of vegetational cover in this lower reaches of the Uintas. From this elevation of 7,700 ft., one looks north from this rocky benchland, across an erosional canyon and out onto the desert beyond. Artemisia is dominant and covers all surface except steep erosional banks. This rocky ridge of river worn boulders has a gentle grade from the desert to the base of the peaks of the Uintas and nodoubt represents an erosional peneplain of the Pleistocene. A female Centrocercus urophasianus and her 1/4 grown young was at this point. Continued down slope to Lyman, Wyo and at this point at Lyman started a census of dead Lepus & Sylvilagus (principally) patterned on the road of Federal highway 30 from Lyman to Rawlins, Wyoming. These kills represented forms from fresh to 3 days old. Those completely unidentified and old were not counted. Citellus, Cynomys and Eutamias also recorded. Sum of forms per mile were recorded.

Lyman Wyoming starting at mileage 665: (only productive measured miles are recorded). (Lepus & Sylvilagus combined)

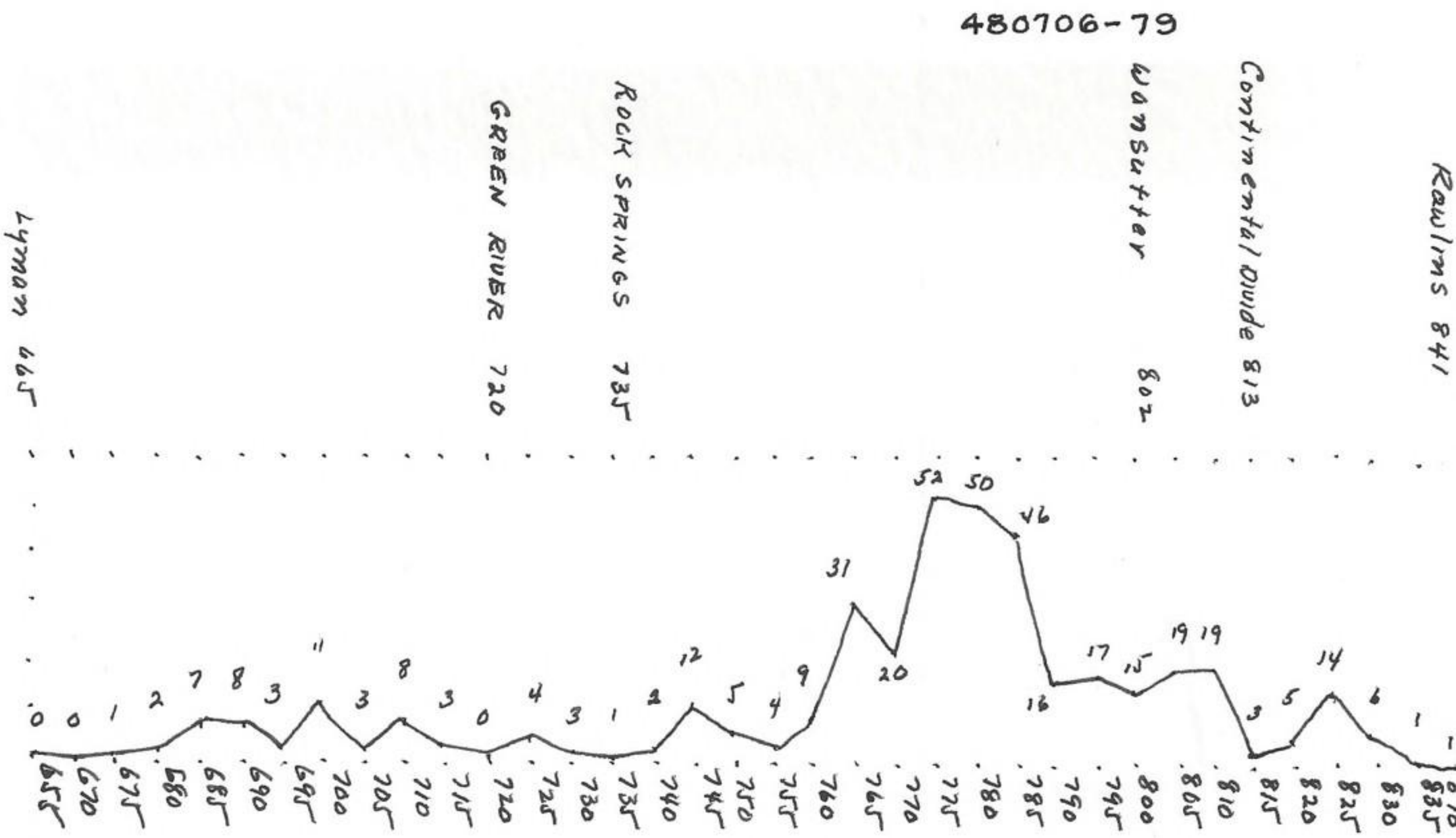
675	1 citellus, 1 rabbit		702	1 rabbit	
676	1 rabbit		703	1 citellus	1 "
677	1 citellus		707	1 "	
678	3 citellus, 1 rabbit		708	1 "	1 Eutamias
679	1 "		709	1 "	
680	1 "		710	2 "	5 "
681	3 " , 1 "		711	2 "	
682	1 "	2 "	712	1 "	
683	1 "	3 "	714	1 "	
685	1 "	1 "	715		1 Cynomys
687	1 "	1 "	719	Green River, Wyoming	
688	1 "	3 "	723	1 rabbit	
689		4 "	724	3 "	
692	2 "	3 " Eutamias	726	1 "	
693	2 "		727	1 "	
696	1 "	3 "	728	1 citellus	
697	1 "	3 "	730	1 "	
698		1 "	732	1 "	
699	1 "	1 "	735	Rock Springs, Wyoming	
700	1 "	3 "	737	1 rabbit	
701		1 "	740	1 rabbit	

480706-78

743	1	Citellus	6 rabbits	789			6 rabbits
744			3 "	790			2 "
745	2	"	1 "	791			1 "
746	2	"	1 "	792			5 "
747			3 "	793			4 "
748	1	"	1 "	794			1 "
753			1 "	795			6 "
754			1 "	796			1 "
755			2 "	797			6 "
756			2 "	798			6 "
758			1 "	806			2 "
759	1	"	1 "	801			1 "
760			5 "	Wamsutter	802		2 "
761			9 "	803			2 "
762			8 "	804			7 "
763			8 "	805			7 "
764			3 " 1 Cynomys	806			2 "
765			3 "	807			7 "
766			4 "	808			3 "
767			2 "	809			3 "
768			5 "	810			4 "
769			8 "	811			1 "
770			1 "	812	Continental divide		
771			1 "	814			1 "
772			3 "	815			1 "
773			9 "	816			2 "
774			22 " 1 Cynomys	817			2 "
775			18 "	820			1 "
776			12 "	821			2 "
777			14 "	822			4 "
778			10 "	823			3 "
779			5 "	824			2 "
780			9 "	825			3 "
781			10 " 1 Cynomys	826			2 "
782			14 "	827			2 "
783			14 "	828			1 "
784			2 "	830			1 "
785			6 "	833			1 "
786			5 "	836			1 "
787			2 "	840			1 "
788			1 "	841	Carolina Wyoming		

65

480706-79



It was noted that the greatest per cent frequency was in areas which were extensive and of uniform topography (flat) and floral composition. Wherever the landscape became dissected and vegetation became diverse, the populations of rabbits decreased in numbers. For all tense and purposes the country was uniform and the highs and lows in population may be an expression of actual and intrinsic high in the population cycle on a sectional basis. Further investigation is desirable and information could be attained by individuals who frequently cross the state of Wyoming on highway 30. Continued east to Rawlins, thence to Walcott, thence to Saratoga, thence to CCC camp on Brush Creek in the Medicine Bow National Forest. This station is designated as 8 mi. N & 16 mi. E Encampment, 8400 ft., Carbon Co., Wyoming. This area can be compared with our former station at the N base of the Uintas in that it is not too far removed from the Transition or Chaparral assocation and represents the lower level of the lower montane. A mixture of Populus tremuloides and conifers constitute the upper story while the typical montane shrubs and herbs made up the understory. This evening established research area A-7-6-48 at this station. It consisted of a montane spring among aspen with a luxuriant growth of bog plants and willows, the type of vegetation likely preferred by Zapus, Sorex and Microtus longicaudus. This spring

and bog terminated in a series of beaver ponds some 100 feet beyond. The beavers were not active in the upper limits of thisspring. Set 111 traps at 10 foot intervals in vegetation along the spring course in upper limits of the bog. Camp 300 feet away. Set 112 to 130 along creek. This camp was at one time a CCC camp and during the war a prison camp for German captives. I am not sure how molested this area might have been at that time. On return to camp saw one Odocoileus hemionus feeding approx 150 feet from camp. Their tracks are not too uncommon at places along the trapline. Canis latrans called several times after late twilight.

8 mi. N & 16 mi. E Encampment, 8400 ft., Carbon Co., Wyoming.

July 7, 1948

Inspected research area A-7-6-48 as follows:
1 sprung, 2 uneffected, 3 Sorex vagrans 1-7-7-48, 4 Sorex vagrans 2-7-7-48; 5-6 uneffected; 7 Bufo 3-7-7-48; 8 uneffected; 9 sprung, 10-11 uneffected; 12-13 sprung; 15-20 uneffected; 21 Bufo 4-7-7-48, 22 uneffected; 23 Zapus princeps 5-7-7-48, 24 uneffected; 25 sprung, 26-27 uneffected, 28 sprung; 29 sprung; 30 sprung; 31-41 sprung; 44 Sorex palustris navigator 6-7-7-48; 45 uneffected; 46 sprung; 47-51 uneffected; 52 Melospiza lincolni 7-7-7-48; 53 sprung; 54-57 uneffected; 58 sprung; 59-61 uneffected; 62 Microtus montanus 8-7-7-48; 63-66 uneffected; 67 Microtus longicaudus 9-7-7-48; 68 sprung; 69 sprung; 70-79 uneffected; 80 sprung; 81-84 uneffected; 85 Microtus longicaudus 10-7-7-48; 86-94 uneffected; 95 sprung; 96 uneffected; 97 sprung; 98-99 uneffected; 100 Microtus longicaudus 11-7-7-48; 101-111 uneffected, end of line. 112 Microtus longicaudus 12-7-7-48; 113-116 uneffected; 117 Microtus longicaudus 13-7-7-48; 118 Microtus longicaudus 14-7-7-48; 119-123 uneffected; 124 Microtus montanus 15-7-7-48; 125 sprung; 126 Microtus montanus 16-7-7-48; 127-130 uneffected. Returned to camp. This evening drove down Canyon to Platte River and set traps where highway 30 crosses the river at 9 mi. N and 3 mi. E Encampment. This area is transitional and consists of river bottom pastureland with Cottonwood as dominant trees. Artemisia on hillslope. Research area A-7-7-48 along side of highway between shoulder of road and fence 40' away. This right-of-way had never been grazed and only by an occasional horse or cow. On other side of fence of similar plants but with physical trampling which excluded microtines. One dominant grass 17-7-7-48 composed

480707-81

14-7-8-44

this community 17-7-7-48. Considerable microtus activity but no established runways. Soils dry and bare between grass stalks. Research area B-7-7-48 in abandoned river channel filled with cattails and mixed grasses & sedges with cottonwoods toward river and Artemisia toward valley side. The area had recently been drained or dried by normal means except several ponds surrounded by cattails. An entrenched canal drained the entire area. Traps 31-80 placed 10 feet apart. The following birds and mammals present.

Ducks sp?
Xanthocephalus xanthocephalus
Agelaius phoeniceus
Charadrius vociferous vociferous
marsh hawk wren

Citellus richardsonii in artemisia beyond meadow.

Returned to camp.

8 mi. N and 16 mi. E Encampment, 8400 ft., Carbon Co., Wyoming.
July 8, 1948.

This morning shortly after sun-up drove down to suspect trapping area at 9 mi. N & 3 mi. E Encampment, 6500 ft.; Research area A-7-7-48 as follows:
1 sprung, 2 microtus montanus 1-7-8-48; 3 microtus montanus 2-7-8-48; 4-13 uneffected; 14 microtus montanus 3-7-8-48; 15 uneffected; 16 microtus montanus 4-7-8-48; 17 M. montanus 5-7-8-48; 18 M montanus 6-7-8-48; 19-24 uneffected; 25 sprung; 26-28 uneffected; 29 microtus montanus 7-7-8-48; 30 uneffected:

From research area B-7-7-48:
31 sprung; 32-37 uneffected; 38 sprung; 39-40 uneffected; 41 Peromyscus maniculatus 8-7-8-48; 42 uneffected; 43 Peromyscus maniculatus 9-7-8-48; 44-51 uneffected; 52 Peromyscus maniculatus 10-7-8-48; 53 Peromyscus maniculatus 11-7-8-48; 54-57 uneffected; 58 sprung; 59-60 uneffected; 61 sprung; 62-68 uneffected; 69 microtus montanus 12-7-8-48 could be intergrade with microtus ochrogaster; 70-72 uneffected; 73 sprung; 74-77 uneffected; 78 sprung; 79-80 uneffected. On return to camp collected a Citellus richardsonii 13-7-8-48 in road on benchland some 2 mi. E of trapping area. Photo 14-7-8-48 of meadows just beyond point where creek and canyon leaves the mountains at 12½ mi. E and 12¼ mi. S Saratoga, Carbon Co., Wyoming, and flows thru the benchland. This area represents an old lake bottom

created at a time when the outlet was a pond to the north. The willows occupy most of the valley floor where Castor canadensis has set up a complete coverage of the area. The impounded water in the foreground is part of a beaver dam. Cottonwoods and aspen are the dominant trees and represents, in the case of aspens, a tongue of the montane forests above. The aspen continue down the stream for another mile where they are replaced by transitional forms. at the mouth of this canyon is a converging point of aspen & fir with transition proper. The lower and upper montane coniferous forests extend beyond to the aspens of the Snowy Range. Returned to camp. During the day observed a Sphropicus varius nuchalis feeding at a yellow pine tree. It returned to the same series of tree throughout the day and would alight upon the base of one tree and work up 8 feet and then sail down to the base of another one and after ascending a few feet would continue by flying to the base of another tree. These same trees were visited repeatedly on each trip. Numerous insects were taken from these trees. This evening established research area A-7-8-48 in some area as yesterday but at a point beyond. Area a highway right-of-way and vegetation as above but with greater admixture of sedges & grasses. Here, also, the adjacent pasturelands were overgrazed and trampled and may have been of some influence in the results obtained. 250 traps set at 10 feet intervals. Returned to camp.

<u>8 mi. N and 16 mi. E Encampment, 8400 ft., Carbon Co., Wyoming.</u> July 9, 1948. This morning returned to 9 mi. N & 3 mi. E Encampment to check research area A-7-8-48 as follows: 1 sprung; 2 sprung; 3 microtus montanus 1-7-9-48; 4-7 uneffected; 9 sprung; 10-11 uneffected; 12 sprung; 13 uneffected; 14 microtus montanus 2-7-9-48; 15 sprung; 16 microtus montanus 3-7-9-48; 17-28 uneffected; 29 sprung; 43 microtus montanus 4-7-9-48; 44-46 uneffected; 47 Peromyscus maniculatus 5-7-9-48; 48-59 uneffected; 60 microtus montanus 6-7-9-48; 61-73 uneffected; 74 microtus montanus 7-7-9-48; 75-80 uneffected; 81 sprung; 82-86 uneffected; 87 microtus montanus 8-7-9-48; 88-95 uneffected; 96 Peromyscus maniculatus 9-7-9-48; 97-99 uneffected; 100 microtus montanus 10-7-9-48; 101-104 uneffected; 105 Peromyscus maniculatus 11-7-9-48; 106 Peromyscus

maniculatus 12-7-9-48; 107-108 uneffected; 109 Peromyscus maniculatus 13-7-9-48; 110-111 uneffected; 112 Microtus montanus 14-7-9-48; 113-117 uneffected; 118 Melospiza lincolnii 15a-7-9-48; 119-134 uneffected; 135 Zapus princeps 15-7-9-48; 136-139 uneffected; 140 sprung; 148 Microtus montanus 16-7-9-48; 149-150 uneffected; 151 Microtus montanus 17-7-9-48; 152 sprung; 158-156 uneffected; 157 sprung; 158 sprung; 159-160 uneffected; 161 Zapus princeps 18-7-9-48; 162 Peromyscus maniculatus 19-7-9-48; 163-172 uneffected; 173 sprung; 174 Microtus montanus 20-7-9-48; 175-180 uneffected; 181 Microtus montanus 21-7-9-48; 182 uneffected; 183 Microtus montanus 22-7-9-48; 174-104 uneffected; 205 Microtus montanus 23-7-9-48; 206 Microtus montanus 24-7-9-48; 207-208 uneffected; 209 Microtus montanus 25-7-9-48; 210-211 uneffected; 212 sprung; 213 Microtus montanus 26-7-9-48; 214-215 uneffected; 216 Microtus montanus 27-7-9-48; 217 uneffected; 218 Microtus montanus 28-7-9-48; 219 uneffected; 220 Microtus montanus 29-7-9-48; 221-223 uneffected; 224 Microtus montanus 30-7-9-48; 225-230 uneffected; 231 Microtus montanus 31-7-9-48; 232 uneffected; 233 Microtus montanus 32-7-9-48; 234 uneffected; 235 Microtus montanus 33-7-9-48; 236-237 uneffected; 238 Microtus montanus 34-7-9-48; 239-241 uneffected; 242 Microtus montanus 35-7-9-48; 243-250 uneffected and end of line.

The following Citellus richardsonii were collected at 11 mi. N and 3 mi. E Encampment, Carbon Co., Wyoming: 36-7-9-48; 37-7-9-48; 38-7-9-48; 39-7-9-48; 40-7-9-48; 41-7-9-48; 42-7-9-48; 43-7-9-48; 44-7-9-48; 45-7-9-48. Returned to base camp on Brush Creek. This evening did not set traps as I plan on hunting Ochotona on the rock slides of The Snowy Range and also to visit Dr. Reed Faetin at the Univ. of Wyoming summer camp.

8 mi. N and 16 mi. E Encampment, Carbon Co., Wyoming

July 10, 1948

This A.M Continued E on Highway 130 to a point on road above Silver Lake where first pika set was made. This range consists of a linear series of mountain peaks of granite and schists, carved into corques and rounded topped mountains. It is, at this point approaching timberline and is characterized by extensive rock slides from disintegrating cliffs. The trees are Englemann Spruce,

Limber Pine, Lodgepole pine, Douglas fir and alpine fir. The lakes are numerous and are created by glacial action. Numerous & extensive meadows have resulted from extinct lakes and are on old glacial crossions platform. The highest peak is approx. 12,005 feet with adjoining peaks not much lower in elevation. Four traps set at promntory above Silver Lake at approx 10,000ft. The second set of 4 traps 1/4 mi. N and E of Silver Lake. The third set of 2 traps 1/2 mi. NNE Silver Lake and the last set at 1 mi. S Lake Marie consisting of 4 traps. These sets were all within 2 blocks or less of the highway. A wire trap 6"x4"x10" was used and lettuce, carrots, prunes, grass, colored paper & tinfoil used to attract the pika. All traps placed in immediate area of old pika haystacks. A pika was first located and then a trap placed at sight with small rocks and grasses on top to keep out sun & simulate rock crevices. after making these sets continued E to Univ. Wyoming Summer Camp where I located Faetin fishing on creek below their camp. Reed is head of the Department and is now running a transect from grassland to alpine above timberland on the Snowy Range. To his knowledge, Microtus ochrogaster is not in Laramie Plains. He reported catching a trout here which had eaten a Sorex vagrans and was in the stomach of the fish. He also reports progress on a beaver problem involving the measurements of 94 animals. Leaving Dr. Reed Faetin returned to 1 mi. S Lake Marie, 9600ft, Carbon Co., Wyoming and established research area A-7-10-48. 131 traps were set in an alpine feeld of grasses and alpine vegetation at an elevation slightly below timberline. Rock slides toward slope and coniferous forests down slope. Traps 1-87 in grasses & meadow surrounding the head of a spring. Traps 88 to 131 around peripheral edge of partially grass filled lake in the center of the feeld. From this general area collected one Ochotona princeps 46-7-9-48. Scalia cinereoides and Pinicola enucleator in area. Returned to base camp at Brush Creek.

8 mi. N and 16 mi. E Encampment, Carbon Co., Wyoming

July 11, 1948

Departed this A.M for trapline A-7-10-48 and pika sets.

8h-11-2-91

4807 11-86

Enroute at 3 mi up road on 130 highway from Brush Creek Camp collected a marmota. The museum snap traps set yesterday produced:
1 uneffected; 2 sprung; 3 uneffected; 4 sprung; 5 microtus montanus 1-7-11-48; 6 microtus montanus eaten all but head; 7-8 uneffected; 9 microtus montanus 2-7-11-48; 10 microtus montanus 3-7-11-48; 11 uneffected; 12 Microtus montanus eaten to chest; 13 microtus montanus 4a-7-11-48; 14 Sorex vagrans 4-7-11-48; 15-17 uneffected; 18 microtus montanus 5-7-11-48; 19 uneffected; 20 sprung; 21-25 uneffected; 26 sprung; 27 sprung; 28 microtus montanus 6-7-11-48; 29 sprung; 30 sprung; 31 uneffected; 32-33 sprung; 34 uneffected; 35 sprung; 36-37 uneffected; 38 sprung; 39 feathers; 40 Eutamias minimus umbrinus 7-7-11-48; 41-47 uneffected; 48 sprung; 49-64 uneffected; 65 sprung; 66-81 uneffected; 82 microtus montanus 8-7-11-48; 83 sprung; 84-85 uneffected; 86 Microtus montanus 9-7-11-48; 87 sprung; 88-94 uneffected; 95 Pinicola enucleator 10-7-11-48; 96 sprung; 97-98 uneffected; 99 microtus montanus; 11-7-11-48; 100-101 uneffected; 102 sprung; 103 Microtus montanus 12-7-11-48; 104-105 uneffected; 106 sprung; 107-125 uneffected, 126 microtus montanus 13-2-11-48; 127 sprung; 128 uneffected; 129 sprung, 130-131 uneffected. end of trap line.
Photo 15-7-11-48 of Research are A-7-10-48 of alpine meadow and lake. The spring where most of the mammals were captured is at the extreme left hand side of picture on the slope 20 feet above the horizontal level of the meadow. Except for the peripheral edge of meadow and lake community, the soils are under standing water but supporting grasses and sedges. Conifer trees sparse as area is approaching true alpine. Flowers are in full bloom making the landscape a rather colorful picture. In the distance the Snowy Range extends above the glacial plateform. Photo 16-7-11-48 at Lake Marie, 10 440 ft elevation, Carbon Co., Wyoming showing perceptious glacial headerosion and the alpine lake at base. The talus slopes, particularly at the point where it enters the lake, is the favorite spot for Ochotona princeps. The krumholtz on the north side of this lake is frequented by Zonotrichia. The most distant peak to the right is Medicine Bow Peak and is 10,040 ft high. In the foreground the protruding rocks were used by Castor canadensis during feeding periods where they would pull the willows branchs onto the rocks for feeding.

Such a position offers a ready exit in case of danger.
Beavers were most generally observed after the sun had left the lake and toward twilight but it was not too uncommon to see them out during the middle of the day, particularly if not molested by fishermen. The clear waters supplied trout in good numbers as well as an introduced albino trout. The water enters lake from 1/4 way across shoreline from left and leaves in diametrically apposed position. A chain of lakes to the north feeds Lake Marie. Also permanent snow banks around its borders add to the water resource. Photo 17-7-11-48 as above but at a moment when threatening cloud mass passed over the range, a common occurrence at this altitude. Photo 18-7-11-48 also at Lake Marie showing the perceptous head wall of former glacial action. Storm direction from left to right is clearly indicated in the picture. Of the several lakes in this area would consider Lake marie the most unusual, in that it lies at the base of cirque walls. The other lakes are further removed from the rocky background. The snow field apparently remain throughout the summer and this the name "Snowy Range". The most interesting condition is the ever changing mood of light and shadow, of warmth and cold that traverses this alpine landscape of Lake Marie. From Lake marie continued south and inspected the pika line. At the conspicuous talus apprx 1/5 mi. N Silver Lake recorded a section of the rock slide occupied by pika (photo 19-7-11-48). This snow slide is 30' in diameter and is a remnant of a former cornice accumulation and will gradually disappear before the end of summer. No large mammal tracks across its surface. Photo 20-7-11-48 of pika set apprx 1 mi. N Silver Lake on west side of ridge. This benchland continues around ridge on both sides and offers an excellent retreat for Odocoileus hemionus as several deer were observed on this particular bench. Above this bench was a continuous rocky ridge from disintegrated cliffs and below the bench only frequent rock slopes. The Odocoileus in photo was first observed laying down at the base of the Conifers and at some 200 feet and by stalking to within 50 feet was able to photograph this male deer just as it started away from its resting grounds. It was not until I stepped from behind a conifer that my presence was realized. An Indian with a bow & arrow could

480711-89

22(1)-7-11-48

have killed this animal by stalking. apparently the deer was confident in having a noisy rock slide behind him and an open bench in front of him for checking of predators. The buck immediately left its resting spot and departed to the right and up over the rocky ridge. Misplaced rocks were resounding as the deer made its way across the rock slide. While resting on the ground the deer had head up and facing the direction from which the photo was taken. no attempt had been made to excavate a depression in the ground but the deer had merely laid down upon the original surface of the dry mosses, bark of spruce and some green dwarf plants. Apprxt 1 1/2 feet from the outer edge of the spruce branches. 150° beyond this point a ♀ mule deer left its resting place but refused to leave the general area. After making 3 criss-crosses in front of me, she stood still for a few moments and then approached me and at 50 feet left to the north and dropped down into another level. From this point Continued west and north across ridge at broad pass, thence south on east side of ridge to car at Silver Lake. During this trip observed 5♂ and 2♀ Odocoileus hemionus, 7 marmota, 12 Sciuridae corrucoides, numerous juncos (conceps), 12 Ochotona princeps and other birds: Found one nest of Junco conceps at base of spruce on west slope at 10,000 ft. It held 4 eggs. Re-set all live pika traps this evening with dandelions and clover. Some traps had been sprung but could not determine if by pika or other kinds of animals. Will make a modified trap to substitute these traps. At a small lake apprxt 1/4 mi. n w Silver Lake took series of pictures to show sub-alpine lakes. Beavers had, at one time used these lakes and while recent dams & cut timber were lacking, their bank houses were used at one time. One large buck was feeding in this meadow when approached and ran the full length of the opening instead of ducking into the timber which he paralleled the entire way. These photos are: 21-7-11-48; 22(1)-7-11-48; 23-7-11-48; 24-7-11-48; 25-7-11-48. From research Area A-7-10-48 collected the following grasses from 1 mi. S Lake Marie 9600 ft, Carbon Co., Wyoming in equal dominance.

27(1)-7-11-48 27(2)-7-11-48

The following grasses from above were subdominant:

28(1)-7-11-48; 28(2)-7-11-48; 28(3)-7-11-48; 28(4)-7-11-48; 28(5)-7-11-48; 28(6)-7-11-48; 28(7)-7-11-48; 28(8)-7-11-48; 28(9)-7-11-48.

480711-91

9-7-12-48

Enroute to base comp set traps in research area A-7-11-48 at 1 mi. NNW Silver Lake at 9880 ft., Carbon Co., Wyoming. This area is an open field with several springs and rank vegetation. Surrounded by large spruce trees. meadow supersaturated to contact will kill where it becomes dry. Traps 34-111 here. The second research area B-7-11-48 at 1 mi. SW Silver Lake, 9620 ft., Carbon Co., Wyoming and represents a linear series of traps 1-53 among solid stands of spruce and one series down the center of the meadow some 30 feet from the spruce-meadow contact. Photo 2-7-11-48 of research area B-7-11-48. The objective of this line was to determine the lateral movement of microtus into conifer forests. Returned to comp on Brush Creek. at twilight observed one Bubo virginianus flying across research area B-7-11-48 and down the main canyon.

8 mi. N and 16 mi. E Encampment, Carbon Co., Wyoming

July 12, 1948

This A.M departed for research area B-7-11-48 at 1 mi. NW Silver Lake, Carbon Co., Wyoming. Enroute observed 5 marmata and 9 Eutamias. at B-7-11-48 inspected first series of traps 1-33 in coniferous forest:
1-12 uneffected; 13 Sorex vagrans 11-7-12-48; 14-33 uneffected. At parallel series 30' away in meadow collected the following: 34-37 uneffected; 38 spring; 39 uneffected; 40 spring; 41-53 uneffected. This catch of only one Sorex in 53 traps was not anticipated as the meadow, at least, showed considerable sign of microtus activity. In research area A-7-11-48 collected the following. This area had more Mertensia and a ranker growth than above:
54-57 uneffected; 58 Hylocichla guttata; 59 uneffected; 60 Hylocichla guttata 4-7-12-48, the above two thrushes were 1/2 grown. adult birds near and calling; 61-79 uneffected; 80 Dendroica auduboni 5-7-12-48; 81-88 uneffected; 89 Microtus longicaudus 6-7-12-48, traps among rank growth of flowers at edge of several springs from hillside; 90 uneffected; 91 Phenacomys gopperi 7-7-12-48; 92 spring; 93-108 uneffected; 109 Sorex vagrans 8-7-12-48; 110-111 uneffected. Continued to Lake Marie to photograph this area in morning lights. Photo 9-7-12-48 across mirror Lake showing Snowy Range in background. Several keystone faults in range, one mass of dark granite off right center of picture. Considerable more

talus from this dark granite than elsewhere. It is not uncommon to see a Castor canadensis swimming in this lake. The most conspicuous bird around the edge of this lake is the white-crowned sparrow and occasionally the Lincoln sparrow. The above shot at 1/2 mi. NE Lake Marie at 10520 ft in Albany Co. Returned to Brush Creek. This afternoon drove to Centennial and established two research areas, one A-7-13-48 at the mouth of the canyon at 1/2 mi. W Centennial and B-7-13-48 at 1/2 mi. E Centennial in Albany Co. The elevation of these two areas is approx 8120 ft, however, the one E of Centennial is slightly lower and in open valley. The objective of these sets was to determine if Microtus ochrogaster was in valley and if so how close it approached Microtus montanus in mouth of Canyon. Research area A-7-13-48 in aspen, willow association with rank grasses interspersed throughout. Other rank vegetation added to the understory vegetation. Research area 13-7-13-48 was open grassland in spring area. No shrubs or trees present. Such a general area represents the most upper limit of the Laramie Plains and shows influence of grasslands. If microtus ochrogaster is in the valley, it should certainly be here. Last trap set after dark and thence back to base camp in Brush Camp. Only two Odocoileus hemionus observed in road. no other mammals observed in headlights.

8 mi. E and 16 mi. S Encampment, Carbon Co., Wyoming

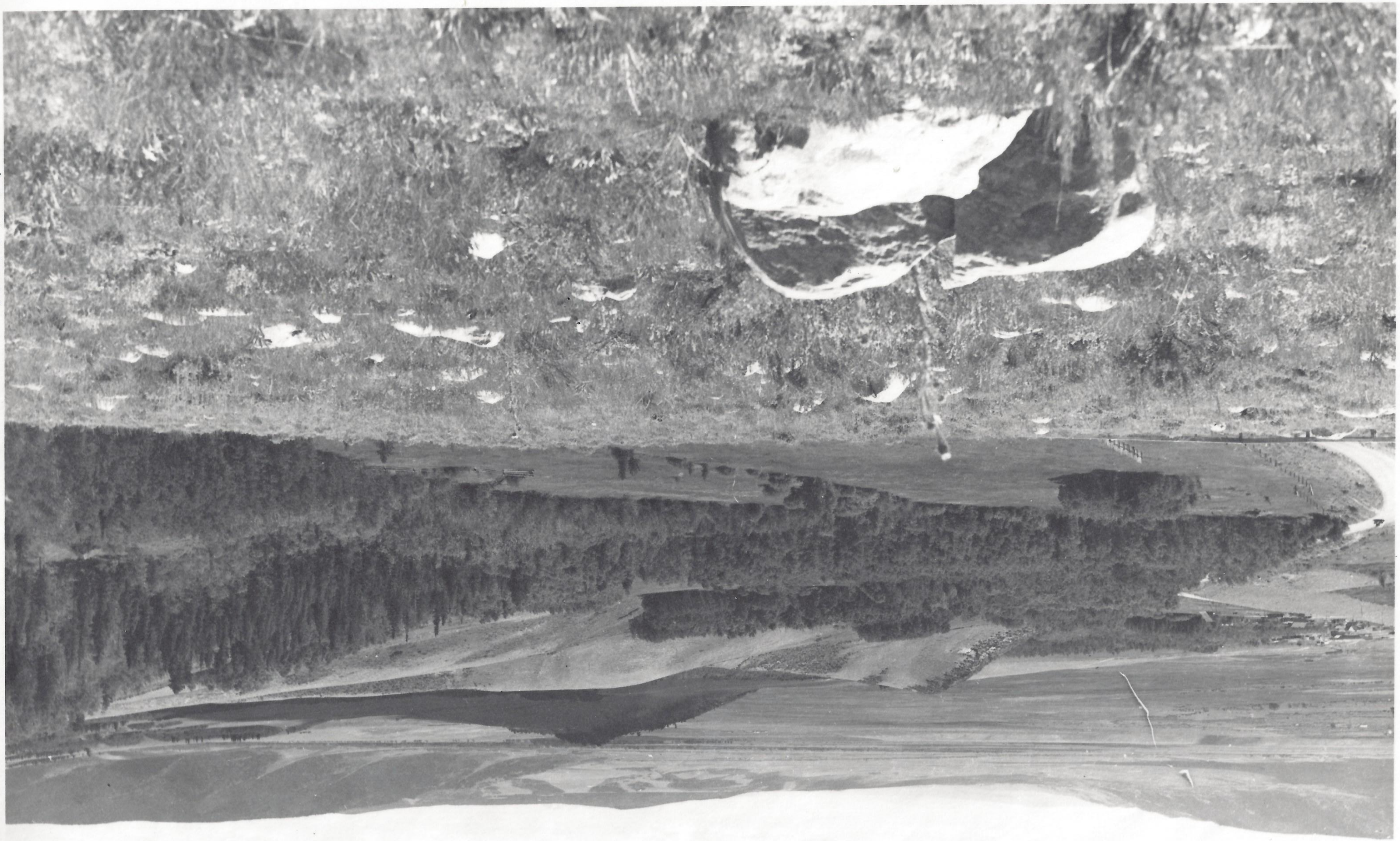
July 14, 1948

Left before sunup and drove across Snowy Range to Centennial Wyoming and inspected research area A-7-13-48 of last night set. Considerable dew on grasses:

1-3 uneffected; 4 sprung; 5-14 uneffected; 15 Zapus princeps 1-7-14-48, 16 Zapus princeps 2-7-14-48; 17 Sorex vagrans 3-7-14-48; 18 uneffected; 19 Zapus princeps 4-7-14-48; 20-21 uneffected; 22 sprung; 23 sprung; 24-25 uneffected; 26 sprung; 27 Sorex palustris navigator 5-7-14-48; 28-30 uneffected; 31 sprung; 32 uneffected; 33 sprung; 34 uneffected; 35 sprung; 36 sprung; 37-42 uneffected; 43 Zapus princeps 6-7-14-48; 44 uneffected; 45 sprung; 46 sprung; 47 uneffected; 48 sprung; 49 sprung; 50-52 uneffected; 53 sprung; 54 uneffected; 55 sprung; 56-57 uneffected; 58 sprung; 59 sprung; 60 uneffected; 61 sprung; 62-65 uneffected, 66 sprung; 67-72 sprung; 73 uneffected; 74 Sorex vagrans 7-7-14-48; 75 sprung; 76-78 uneffected; 79 sprung; 80 sprung; 81 uneffected; 82 sprung; 83 Zapus princeps 8-7-14-48; 84 Zapus princeps 9-7-14-48 in supersaturated soils among grasses

182-7-14-48

480714-94



480714-95

21-7-14-48

5 feet high as understory to aspen trees; 85-87 uneffected; 88 sprung; 89 from this trap to 167 on sidehill of artemisia, short grasses & flowering plants (damp meadow in floor of canyon); 89 uneffected; 90-93 uneffected; 94 sprung; 95 uneffected; 96-97 sprung; 98 Peromyscus maniculatus 10-7-14-48; 99 Eutamias minimus 11-7-14-48; 100 Peromyscus maniculatus 12-7-14-48; 101 uneffected; 102 sprung; 103 uneffected; 104 sprung; 105-110 uneffected; 111-112 sprung; 113 uneffected; 114 sprung; 115-118 uneffected; 119 Citellus richardsonii 13-7-14-48 Straight by head; 120-121 uneffected; 122 sprung; 123 uneffected; 124-125 sprung; 126-129 uneffected; 130 melospiza lincolnii 14-7-14-48; 131-132 uneffected; 133 sprung; 134-138 sprung; 139 uneffected; 140-143 sprung; 144 Zapus princeps 15-7-14-48; 145 sprung; 146-149 uneffleted; 150 sprung; 151-159 uneffected; 160-165 sprung; 166 Zapus princeps 16-7-14-48; 167 sprung & end of line. The results of the above are interesting in that there was such a great percentage of sprung traps. Deer tracks in area. From general appearance would appear like good Zapus community but these animals were not caught in suffecient numbers to account for the many sprung traps although they are notorious for setting off traps. Inspected research area B-7-13-48 in open valley; 168 Microtus montanus 17-7-14-48; 169-197 uneffected; 198 sprung; 199-225 uneffected; 226 Peromyscus maniculatus 18-7-14-48; 227 uneffected; 228 end. Many grasshoppers in area. In leaving area took photo 18a-7-14-48 showing Centennial and two trapping areas, the one at mouth of canyon and the second one to left of Centennial just off picture. Photo from 8500 ft. Rocky mountains of Colorado in distance. At 6/10 mi down canyon from Barber Lake on Lebby Creek at 8500 ft collected a Citellus lateralis 19-7-14-48. This area is essentially Pinus murrayana and Populus tremuloides with willow lined creek in canyon floor proper. At Lake Marie, photographed three angles at Snowy Range with Lake Marie in foreground. Photo 20-7-14-48 of precipitous head cirque. no 21-7-14-48 as above but from picnic grounds on the south side of lake. The immediate foreground a veritable Redgeway Color book with individual pages thrown upon the ground. The dwarf willows at edge of lake were favorite feeding area of Castor canadensis where several trails invaded the meadow from the lake. It was

supplied with water from spring some 150 feet inland. Photo 22-7-14-48 in same area with rocks in foreground where beaver fed in evening upon willows. Elevation at this point approx. 10,500 ft. Returned to Brush Creek Camp and by 11:30 A.M had organized for departure to Hayden Range to the west. The itinerary will include Riverside, Encampment, thence west on forest service road to point 8 mi N and 19½ mi. E Savery, Carbon Co., Wyoming at Lost Creek Camp Grounds at 8800 ft. At 5 mi N on highway 230 from Riverside observed a Aquila chrysaetos canadensis along the east side of road at a point where it passes near the rocky outcroppings. At the moment I saw them they were in the air above the ledges. The lower bird was an immature and carrying a Citellus richardsonii. The adult was 20' above it and watched its every movement. The young called continuously. They soared and circled several minutes and then alighted on one of the rocky outcroppings. The young continued to play with the Citellus. The adult, 10 feet away watched it. After 5 minutes they both left and continued on to the south, the young still carrying the Citellus. This behavior is in contrast to the retiring nature of eagles during nesting time - their main concern at that time is to get out of the country without being seen. From the topography of the area would judge that the birds had used a nest in the immediate area. Continued south thru Riverside and Encompment, thence west to divide of Hayden Range. At 8250 ft and approx 5 mi. west of Savery, observed a Lepus townsendi cross the road and take its position by a culvert. When car was stopped, it remained until 10 feet at which time it left, ran 30 feet and stopped again. Continued west to divide where I noticed considerable lumbering operation. At this point there is considerable open areas. A rock slide on north ridge should produce Ochotona. There is something about Hayden Range that is different from other ranges of equivelant height (our elevation) and plant matrix. It may have suffered overgrazing or excessive timber cutting or fire or possibly all three. Continued down west drainage and camped at Lost Creek Camp Grounds at 8 mi N & 19½ mi E Saberey, 8800 ft., Carbon Co., Wyoming. Set series of traps near camp. Research area A-7-14-48 among heavy grasses and vegetation bordering creek, open but bordered by willow, aspen and spruce. This community should be favorable for Zapus

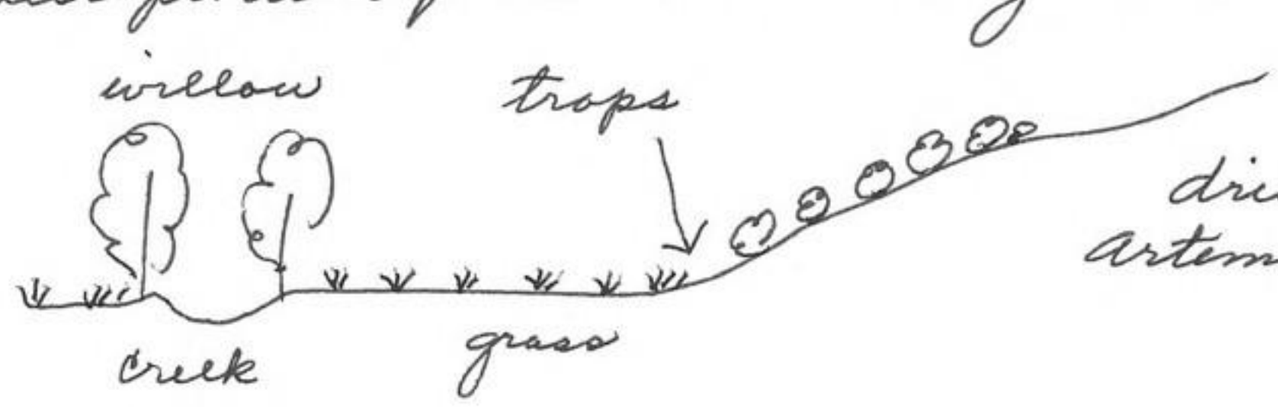
and microtus longicaudus. area of lower montane with aspen and fir dominant. Traps 1-44 placed 10 feet apart. Research area B-7-14-48 in open field on approx 7° slope and supplied by springs and willows dominant. Grasses & sedges average 1½ feet high. This area should support microtus montanus. Traps 45 to 112 among conifertrees and aspen adjacent to meadow above. Few isolated logs. Research area C-7-14-48 at camp along typical montane creek dominated by spruce, aspen, willow and high grasses & other shade loving plants. Creek averages 5 feet across. Traps 113-195 here. All traps of all research areas within 300 feet of camp.

8 mi. N and 19½ mi. E Savery, 8800 ft., Carbon Co., Wyoming
July 15, 1948

Inspected trap line this A.M as follows; Research area A-7-14-48: 1-9 uneffected, 10 sprung; 11 Zapus princeps 1-7-15-48 among heavy growth of Mertensia; 12-19 uneffected; 20 Zapus princeps 2-7-15-48 along saturated mertensia (dew); 21 uneffected; 22 microtus longicaudus 3-7-15-48; 23-24 uneffected; 25 Zapus princeps 4-7-15-48; 26 Zapus princeps 5-7-15-48; 27-34 uneffected; 35 Zapus princeps 6-7-15-48; 36 Zapus princeps 7-7-15-48; 37 uneffected; 38 Zapus princeps 8-7-15-48; 39-41 uneffected; 42 Zapus princeps 9-7-15-48; 43 microtus longicaudus 10-7-15-48; 44 Zapus princeps 11-7-15-48 end of line. Contrary to general belief, Zapus do not accidently set off traps. Two mammals were frequently captured in some area. Results of research area B-7-15-48 as faclows. 45 uneffected; 46 microtus montanus 12-7-15-48 in runway; 47 microtus montanus 13-7-15-48 in runway; 48 sprung; 49 microtus montanus 14-7-15-48; 50 uneffected; 51 sprung; 52-54 uneffected; 55 microtus montanus 15-7-15-48 in runway; 56 uneffected; 57 sprung; 58 Peromyscus maniculatus 16-7-15-48 from runway. ~~At this point~~ 59-60 uneffected; 61 microtus montanus 17-7-15-48 from runway; 62-63 uneffected; 64 sprung; 65 uneffected; 66 sprung; 67-72 uneffected; 73 microtus montanus 18-7-15-48 from runway; 74-82 uneffected; 83 microtus montanus 19-7-15-48 in runway; 84 uneffected; 85 microtus montanus 20-7-15-48; 86-87 uneffected; 88 microtus montanus 21-7-15-48; at edge of log and represents one out of three traps set together. In this case only one animal visited the area. I have found that log sets in grassy meadow would not yield expected results. 89-104 uneffected; 105 at this trap observed a microtus montanus run 15 feet up a water runway among grasses to a fallen log in a wet situation. The log supported a nest of this microtus. This occurred at 1 hour after sunrise and represents a situation where microtus montanus

used a corridor of standing water as a travelling lane rather than use trails in protected grasses; 106-109 uneffected; 110 Microtus montanus 22-7-15-48; 111 uneffected; 112 sprung;

From research area C-7-15-48; 113-118 uneffected; 119 Sorex cinereus 23-7-15-48; 120-121 uneffected; 122 Peromyscus maniculatus 24-7-15-48; 123 uneffected; 124 Sorex vagrans 25-7-15-48; 125 uneffected; 126 Peromyscus maniculatus 26-7-15-48; 127-128 uneffected; 129 Clethrionomys gapperi 27-7-15-48; 130-132 uneffected; 133 sprung; 134-140 uneffected; 141 Peromyscus maniculatus 28-7-15-48; 142 Microtus longicaudus 29-7-15-48 from last night catch. none this morning in same trap so indicates not used by other mammals; 143 uneffected; 144 microtus longicaudus 30-7-15-48; 142 Sorex palustris navegator 31-7-15-48; 143 uneffected; 144-145 uneffected; 146 Peromyscus maniculatus 32-7-15-48; 147-151 uneffected; 152 Peromyscus maniculatus 33-7-15-48; 153-157 uneffected; 158 sprung; 159-160 uneffected; 161 sprung; 162-168 uneffected; 169 Peromyscus maniculatus 34-7-15-48; 170 sprung; 171-172 uneffected; 173 Sorex vagrans 35-7-15-48; 174-177 uneffected; 178 Peromyscus maniculatus 36-7-15-48; 179-181 uneffected; 182 Peromyscus maniculatus 37-7-15-48; 183 uneffected; 184 Melospiza lincolnii 38-7-15-48; 185 Peromyscus maniculatus 39-7-15-48; 186-187 uneffected; 188 Microtus longicaudus 40-7-15-48; 189 Sorex vagrans 41-7-15-48; 190 - uneffected; 191 Peromyscus maniculatus 42-7-15-48; 192-194 uneffected; 195 Clethrionomys gapperi 43-7-15-48 end of trap line. Returned to camp. In evening set in same area as yesterday. First set in research area A-7-14-48 but instead of center of feeld set along edge of grass between grasses & hillside bordering. In no cas was a trap placed in a runway and in general in a less protected place than the oregnal set.



This area should produce any mammal that normally range among drier hillside community and by chance wander into the wet, rank vegetation of the valley or creek floor. Traps 1-35. The second series of traps 36-140 placed in research area B-7-14-48 and while it included separate area of the same grass meadow did not duplicate areas of yesterdays setting.

Traps from 107 to 140 placed in supersaturated area of rank plant communities at head of springs around willow stands. In addition to the two above sets established research area A-7-15-48 100 feet from camp in open rocky field surrounded by aspen. This field was a typical montane dry field and characterized by complete utilization of area by thirteen of last winters operation. Winter corks completely covering this rocky soil. Was desirous of finding out what mammals would be using the abandoned subterranean chambers or any mammal that might be ranging over such a dry unmorting section of the field. Traps placed thus:

Such an arrangement would certainly record the chance wandering of any mouse thru this area. Baited with usual oatmeal. Returned to camp and at 9:00 P.M inspected research area A-7-15-48 without results. Returned to camp.

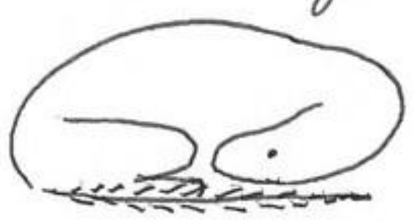
8 mi. N and 19½ mi. E Savery, 8800 ft., Carbon Co., Wyoming

July 16, 1948

From research area A-7-14-48:

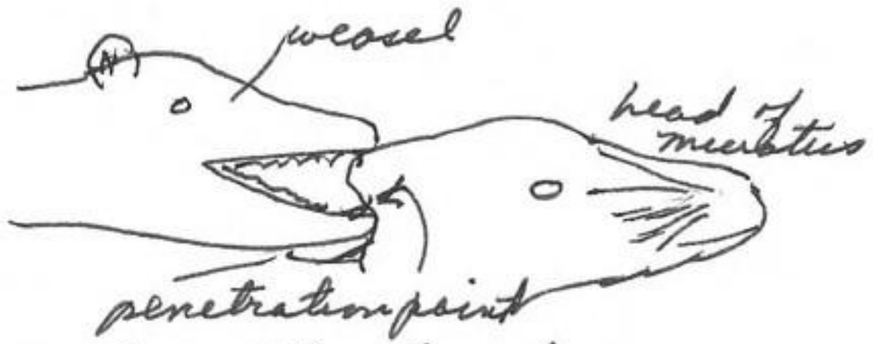
1 microtus montanius 1-7-16-48; 2 uneffected; 3-4 sprung; 5 uneffected; 6 Zapus princeps 2-7-16-48; 7-13 uneffected; 14 sprung; 15-17 uneffected; 18 Peromyscus maneulatus 3-7-16-48; 19-27 uneffected; 28 microtus montanus 4-7-16-48; 29-32 uneffected; 33 sprung; 34 uneffected; 35 sprung; 36 uneffected; 37 sprung; 38 microtus montanus 5-7-16-48; 39-46 uneffected; 47 Eutamias minimus 6-7-16-48; 48-51 uneffected; 52 microtus montanus 7-7-16-48; 53 uneffected; 54 sprung; 55 microtus montanus 8-7-16-48; 56-57 uneffected; 58 microtus montanus 9-7-16-48; 59 microtus montanus 10-7-16-48; 60-64 uneffected; 65 microtus montanus 11-7-16-48; 66-68 uneffected; 69 microtus montanus 12-7-16-48; 70-75 uneffected 76 microtus montanus 13-7-16-48; 77 Sorex vagrans 14-7-16-48; 78 uneffected; 79 sprung; 80-92 uneffected; 93 sprung; 94-95 uneffected; 96 mustela erminea 15-7-16-48 from edge of a prone Picea in engelmannii in center of territory of microtus montanus. The root system still re—

remained in upturned position so assume that it grew in the meadow at one time. The trap was near base of tree and free area beneath the overhead protection of log. While such places in meadows have not proven good microtus niches, the grassy areas up to the very edge of the log were supporting good signs. Two other traps on top of log (log partly decayed) were uneffected. This log is 80' from a trap that caught a ♀ weasel yesterday, suggesting that ♂ + ♀ travel together or both are in territory near their nest. These two Mustela were definitely associated with microtus montanus of the open grass-sedge meadows. This meadow was on a slope and differed in that respect to meadows in flat areas and supporting more water. Outside this area the ground surface was dry (see notes of Chas Rm). 97-103 uneffected; 104 sprung; 105-111 uneffected, 112 Microtus montanus 16-7-16-48; 113 sprung; 114-131 uneffected; 132 sprung; 134-137 uneffected; 138 Microtus montanus 18-7-16-48; 139 uneffected; 140 Sorex vagrans 17-7-16-48. Returned to camp and put the Mustela ermnea in a cage for observation. This weasel was caught by neck in a museum special trap and was nearly dead when found. It was taken from damp ground under log and returned to base camp where it was slowly revived by warming between hands and blowing warm moist air into the cup-formed hands. This period of warming took approx 1 hour after which time it was able to negotiate but not in usual gait.



Now spends most of its time sleeping with nose in area of tarsals with head on tail. Only a slight zone of white exposed on side of body. Respiration 1 per second. In this curled position it remained quiet but readjusted its position approx every 15 seconds by forcing its head into the flank area. Occasionally the curled position is tightened so that the nose reaches the base of the tail where it is inserted along side of tail at that point of contact with the body. Feces somewhat segmented  and punched off and is expelled by backing up to a slanting object with anus and hind quarters 3 inches higher than head. One dead Microtus montanus was placed in cage and taken at the door of the cage with a snake-like thrust of the body. at first it looked like a good Mustelid reaction (gluck) but what followed contrasted by its slow and deliberate manipulation of the mouse for consumption. at first

the action suggested an act of copulation in which the ermine grasped the microtus with front and rear feet. The readjustment of hind & front feet always indicated a better grasp for the position assumed. a bear hug would be descriptive. The top of the head of the microtus and particularly the ears were continually being gently chewed (more like caressing) and finally the lower jaw of the Mustela penetrated the skull in the ~~supraorbital~~ occipital region. Continued gnawing enlarged the hole but with lower jaw still doing all the work. The lower jaw finally reached its maximum penetration and the brain material is contacted for the final killing of the microtus. The brain is then consumed and then the flesh is eaten around the side of the head and neck and then the shoulders, and through this region into liver, heart and lung cavities and thence into stomach and intestines. Only parts of stomach & intestines were consumed.



A live specimen of microtus montanus was placed in cage to see how the weasel would react. at first it struck at the mouse like a snake followed by rushing the mouse. The microtus stood up and fought the weasel with its front feet and head, or if actually contacted would roll and tumble in clinched position as a rolling blurr. Frequently the weasel would approach the microtus side-ways with the rear end of the weasel leading as if to protect itself or confuse the microtus and then turn around and make contact. The weasel would attempt to approach to the rear of microtus but the mouse would always turn so that it faced the weasel. The main objective of the weasel was to get on the back of the microtus but would not try to reach this position without using its teeth. When in position, however, would start gnawing on the back of the skull of the microtus. The clasping effect is pronounced and am wondering if the large feet are not adapted for the hugging action. Once it gets the animal in the "bear hug", the weasel has won the battle. In this case, however, the microtus showed no unusual effect, except fear, from the 20 minutes of activity. At the end of that time they were living in peaceful harmony. The weasel would climb over the resting microtus and take the following position

with head tucked under the body of the microtus in a 90° apis contact. I am of the opinion that mustela erminea would find it extremely difficult to capture and kill a live adult microtus montanus and

even more so with microtus pennsylvanicus, microtus longicaudus, microtus richardsoni or microtus ochrogaster. Their food must consist of young microtus or weak ones. Even a Peromyscus could stand up under this manner of attack. It would, however, be interesting to know if their kill are made in subterranean chambers where the weasel could approach and strike its prey at the end of a corridor. This mammal was kept alive and after a week or so taken to the University of Kansas for further observation and study.

8 mi. N and 19 1/2 mi. E Savery, 8800 ft., Carbon Co., Wyoming

July 17, 1948

Inspected research area B-7-14-48 as follows: Six microtus montanus survived the temperature of last night a 2 microtus montanus (nos 2-7-17-48 & 3-7-17-48) and one Sorex vagrans 4-7-17-48 died during night. Nos 6-7-17-48 and 7-7-17-48 from live specimens too weak for shipment. This morning journeyed to Savory, Wyo to check mail before departure for Riverside this afternoon. With mileage at 417.0 at base station started west toward Savory (recorded some observations) 417.0 base camp; 419.0 road crosses thru rock slide among aspen and Ochotona observed; 424.2 Eutamias minimus 8400 ft.; 424.3 Citellus lateralis 8400 ft.; 427.4 Eutamias minimus 8,280 ft; 434.0 Eutamias minimus 7,280 ft.; 441.1 Hawks of red-tail size (5) 7820 ft; 440.0 Savery. In approx 22 miles observed the above which is a rather scant number for this area. Other smaller birds include Pica hudsonica in good numbers and also Colaptes collaris. On return trip took photo 5-7-17-48 of montane community south of the rock flow area and at 8640 feet. Marmots calling continuously from side hill below this point. Odocoileus track in area. Returned to base camp and prepared to depart for Riverside, Wyoming. Will leave Cochrum and his party this P.M. James Lindquist will accompany me and after investigating Laramie Plains will drive to Loveland, Colorado for beginning work with microtus ochrogaster. Departed this station just in time

to arrive Riverside for evening trap set. Enroute at 1/2 mi above base camp observed a Citellus richardsonii which is a rather high record for this mammal. Camped this evening at 1 mi. N Riverside, Wyoming and set traps 1/4 mi. N Riverside in a typical permanent cattail meadow. Grasses dense and unfavorable as far as sign was concern. Set 85 traps and returned to base camp at 1 mi. N. Riverside.

1 mi. N Riverside, Carbon Co., Wyoming. 7,380 ft.

July 18, 1948

Inspected trap line 1/4 mi. N Riverside, Carbon Co., Wyoming 7 380 ft and only caught 2 mammals. Only trap with animals recorded: 2 Microtus montanus 1-7-17-48; 2-7-17-48 a microtus montanus from trap 68. I was surprised to find so few mammals here. Returned to base camp and packed for journey to Laramie, Wyoming. Jim caught an Onychomys in his trap line among artemisia on higher ground adjacent to meadow. Started here, thence to Brush Creek, Lake Marie and Laramie, camping at 5 mi. N Laramie, 7200 ft., Albany Co., Wyoming. In feeds adjacent Laramie River on Laramie Plains set out research area A-7-18-48 in a mixed grass, weeds community. Numerous runways present. Research area B-7-18-48 in cultivated or pastured meadow of foxtail grasses. The grass was dominant and only grass in an old ox-bow of the Laramie River. The ground was bare between grass stems but considerable activity and grass clippings. Both of these areas have been influenced by the river. Beyond the river influence, the valley is grass and no doubt is related to the American Grassland Biome to the east. Runways in these grasses but I did not trap there. One noticeable feature of this plains is the climatic effect of wind which blows continually and to the human species, at least, is disagreeable, especially when Temp. is cold. I have noticed here and from the Snowy Range that storms from the Rocky Mountains to the south in Colorado develop and then pass northward where they gradually disappear or turn to the east about 10 mi. N of Laramie where they meet the climate of the Grasslands on the high Plains east of Pole Mt. On three occasions have watch a hail storm pass east over the Pole Mt. Range between Laramie & 10 miles N. These storms come from the south. If this is the actual situation, one may infer that these storms have influenced the Laramie

Plains by increased moisture and lower temperatures. whatever the factors are, they have contributed to the grassland formation in the Laramie Plains. These Plains show, however, the effect of increased altitude over the grasslands to the east. If Microtus ochrogaster is not here it is probably because of higher altitude and cooler temperatures. While hunting for rabbits this afternoon observed one Antilocapra americana. The rabbits are uncommon in grasses but are in areas supporting low shrubs; an added overhead protection. The following animals shat near camp;

Sylvilagus 1-7-18-48; 2-7-18-48; 3-7-18-48; 4-7-18-48;
Lepus townsendi 5-7-18-48; 6-7-18-48.

This evening reexamined trap line with following results; (recorded only traps with mammals); From research area A-7-18-48; 2 microtus montanus 7-7-18-48; 8 microtus montanus 8-7-18-48; 16 microtus montanus 9-7-18-48; 17 microtus montanus 10-7-18-48; 48 microtus montanus 11-7-18-48; 50 microtus montanus 12-7-18-48.

From research area B-7-18-48; 83 microtus montanus 13-7-18-48; 102 Citellus tridecemlineatus 14-7-18-48; Returned to camp.

5 mi. N Laramie, 7200 ft., Albany Co., Wyoming.

July 19, 1948

This A.M inspected research area A-7-18-48;
1-4 uneffected; 5 microtus montanus 1-7-19-48; 6-9 uneffected; 10 sprung; 11 Peromyscus maniculatus 2-7-19-48; 12-13 uneffected; 14 sprung; 15 sprung; 16 microtus montanus 3-7-19-48; 17-19 uneffected; 20 sprung; 21 Thomomys 4-7-19-48 in runway in area used by gophers; 22-29 uneffected; 30 microtus montanus 5-7-19-48; 31 microtus montanus 6-7-19-48; 32-37 uneffected; 38 sprung; 39-41 uneffected; 42 microtus montanus 7-7-19-48; 43-49 uneffected; 50 microtus montanus 8-7-19-48; 51 uneffected; 52 microtus montanus 9-7-19-48; 53 sprung; 54-59 uneffected; 60 microtus montanus 10-7-19-48; 61 uneffected; 62 sprung; 63 uneffected; 64 microtus montanus 11-7-19-48; 65 uneffected; 66 sprung; 67 uneffected; 68 sprung; 69-70 uneffected; 71 sprung; 72 uneffected; 73 sprung; 74 microtus montanus 12-7-19-48; 75-78 uneffected; 79 sprung; 80-81 uneffected; 82 sprung - end of line.

Results of research area B-7-19-48; 83 start; 84 microtus montanus 13-7-19-48; 85 uneffected; 86 sprung; 87-90 uneffected; 91 sprung; 92-95 uneffected; 96 Rana 15-7-19-48; 97 uneffected; 98 Peromyscus maniculatus 16-7-19-48; 99 Citellus t. tridecemlineatus 17-7-19-48; 100-101 uneffected; 102 Peromyscus maniculatus 18-7-19-48; 103-106

unaffected; 123 sprung; 124-125 unaffected; 126 sprung; 127 sprung; 129 unaffected and end of line. 2 communities of Cynomys near. During entire day observed only 3 Citellus tridecemlineatus.

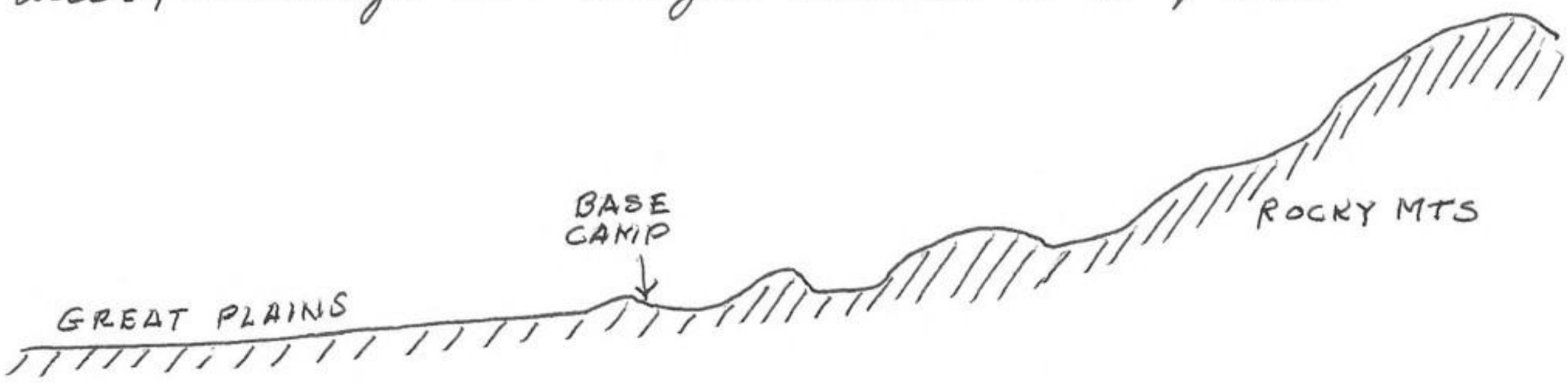
This evening set traps at 7 7/10 mi. SSW Laramie, 7200 ft., Albany Co., Wyoming in a meadow bordering a large lake. Property owned by H. G. Parkinson. These lakes are in a flat section of the valley and cultivation surrounds the lakes. 90 traps placed 10 feet apart. Soils alkaline and encrusted. The wet meadows more favorable for microtus but still this area is harsh. Birds observed in immediate area; Recurvirostra americana, Charadrius v. vociferous; Steganopus tricolor; Chledonias nigra surinamensis; Xanthocephalus xanthocephalus; Molothrus ater; Totanus flavipes; Picea hudsonicus; Anas p platyrhynchos; Anas strepera; Fulica americana; Otocoris alpestris; Circus cyaneus, Capella gallinago delicata, Corvus p. platyrhynchos. Observed the Fulica americana ~~chased~~ chase a xanthocephalus on the beach of the lake: Also the molothrus was observed to control the beach in the presense of Totanus flavipes. The mosquitos were unbearable without nets. Returned to base camp.

5 mi. N Laramie, 7200 ft., Albany Co., Wyoming

July 20, 1948

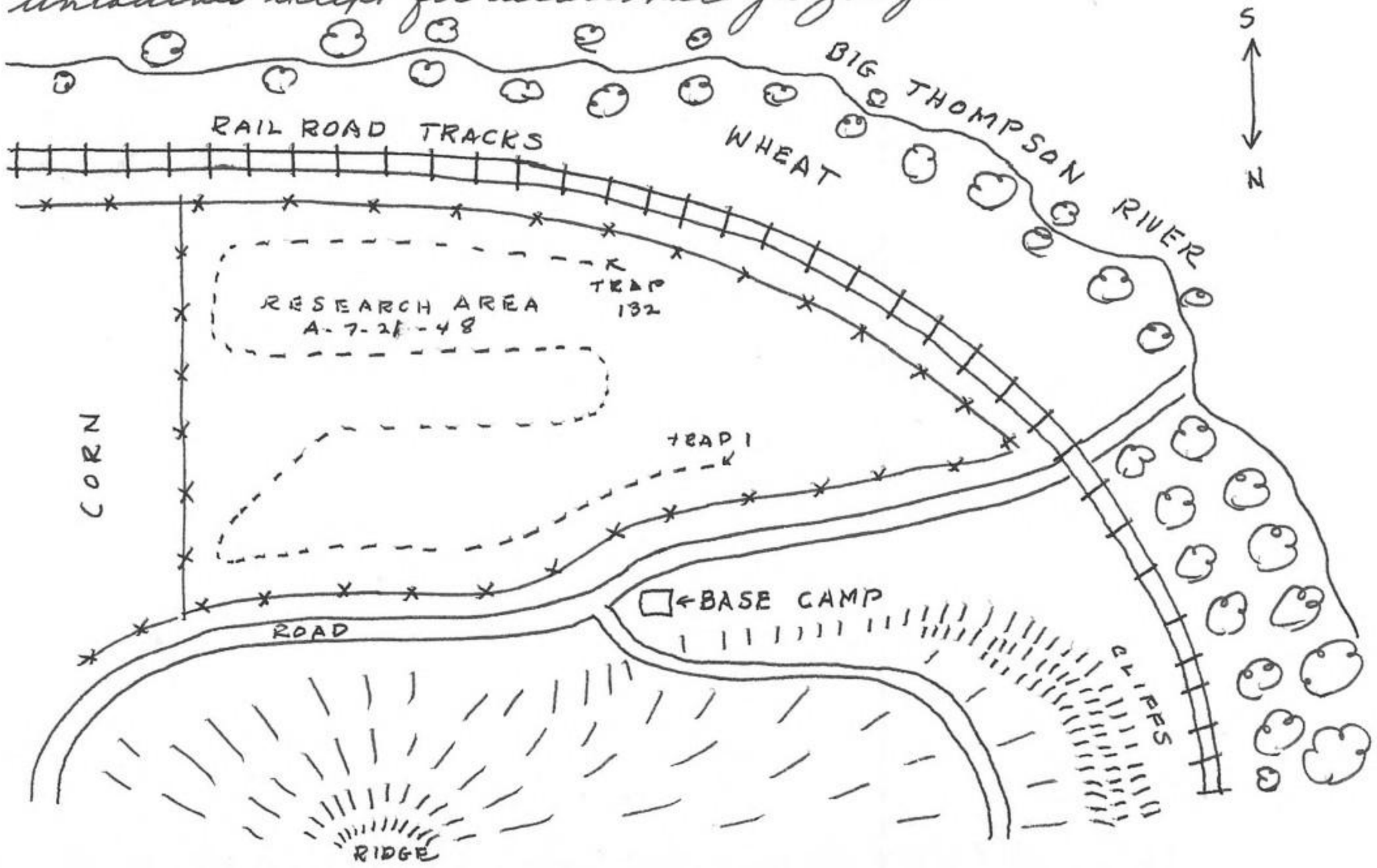
From base camp drove to 7 7/10 mi. SSW Laramie and inspected trapline; 1-7 unaffected; 8 sprung; 9-14 unaffected; 15 Reomyscus maniculatus; 16-26 unaffected; 27 sprung; 28 unaffected; 29 Peromyscus maniculatus 2-7-20-48; 30-32 unaffected; 33 xanthocephalus Xanthocephalus 3-7-20-48; 34-41 unaffected; 42 sprung; 43-60 unaffected; 61 microtus montanus 4-7-20-48; 62-68 unaffected; 69 microtus montanus 5-7-20-48; 70-71 unaffected; 72 microtus montanus 6-7-20-48; 73-83 unaffected; 84 sprung; 85-87 unaffected; 88 Microtus montanus 7-7-20-48; Collect dominant grass 9-7-20-48 Beyond lakes are dry slopes of grease wood & beyond a colony of Cynomys in grass area. Returned to base camp and left for Loveland, Colorado. Had often wondered why Michatus ochrogaster has not crossed the divide SE of Laramie, as from this side it appears to be a continuous divide only little change of vegetation. The eastern slope of divide is rough & continuous Transition; Altitude

may be the factor or competition will micratus montanus.
It is interesting to see how the Transition invades the
higher region along the last slope of the ranges bordering
the Great Plains. Continued south to Loveland, at
Risso Canyon the country is just breaking off from the flat
plains and is not as highly cultivated as to the south.
At Loveland established camp at 3½ mi. w Loveland,
5030 ft., Larimer Co., Colorado. This area is approx.
1 block S of the City water reservoir (cement tank) or one
block south of the southern terminal of conspicuous
perpendicular windows forming rock outcroppings. This
base camp at the contact between the flat extension of
the Great Plains from the east and the mountains to the
west, although in a canyon bottom so to speak.



The area is the contact between grasslands and transition zones
The grasslands invades the foothills on lower slopes and
in canyon bottoms at higher elevations is replaced by
chapparal and ponderosa pine. Even here, the grass dominates
in favorable slopes and exposures. The grassland climate
is still present. The flat prairie to the east, ends abruptly
in a series of low ridges, each ridge higher as one passes
to the west and finally ends in the general mountain mass
of the Rocky Mountains. The valleys between the north-South
ridges support grasslands. The ridges support transition zone.
The contact zone is approx. 3 miles wide, however, in other
areas the grasslands rise abruptly from flat country to
steep slopes of the mountain. The front range or barrier
is a fault or upturned edge of crustal flexures. Such
a situation permits micratus ochrogaster to inhabit its
grassland community surrounded by montane & transition.
It will probably be possible to trace microtus ochrogaster
up one of these canyons to a point where it will contact
microtus ~~ochrog~~ montanus. Most of this transect, however,

is under cultivation and human habitation. The entire canyon to Estes Park is populated with summer homes and the prairie land is almost completely under cultivation. This condition, however, is not as critical as if the area were under grazing because cattle will almost destroy the grasses, at least to completely as to eliminate overhead protection of microtus ochrogaster. As it is there are abandoned homes and field which are allowed to grow to the wild conditions. It is in these areas that the small mammal populations are perpetuated. This condition is in contrast to wyoming where in most places the country is completely grazed and where one might look for days before finding grasses sufficiently high to support microtus ochrogaster. Overgrazing is indeed disgusting. The plan at Loveland is first to test the contact between the Great Plains and the Rocky mountains at the point where plains meet mountains and then work progressively west up canyon valley floors until microtus ochrogaster disappears and microtus montanus takes over. The first set this ~~evening was~~ was July 21, 1948 in research area A-7-2½-48 at base camp. The field was, in an old river valley of the Big Thompson and was periodically inundated in the lower part of the feeld nearer the river. It comprised approx 1 acre and had been under cultivation approx. 10 years ago but now was an abandoned feeld untouched except for occasional grazing.



It is bordered by a corn field on east, railroad tracks and wheat field to S and W and a shrub covered ridge to the north consisting of artemisia, Chrysothamnus and other shrubs and grasses. This slope, however, is mainly a dry rock slope. The research area is appux 300 feet from Big Thompson River and approx 2 blocks west of the first small barrier ridge that breaks the continuity of the flat plaine to the east. The tree grasslands is relict on slopes and situations where the plow cannot touch. The feeld proper consists of weeds and grasses upon a soil that is dry and baked. The lower edge of field was inundated 1 month ago. The upper NE corner is slightly higher and supports more weeds and grasses that permit a matted vegetation of old and new vegetation. This corner is where most of the runways were located. The runways in S part of feeld are absent or poorly developed. Cuttings and droppings, however, are more numerous here than in the NE corner where runways are well developed. In general, this feeld appeared too dry for Microtus ochrogaster and if it were in Kansas would probably not be used by ochrogaster. At 3:00 PM set 132 traps in this feeld at 10 foot intervals with each trap in a runway or place of activity (cuttings etc). At the completion of this set at 4:20 P.M. I walked over the line and did not find any captured mammal. However, I found that practically all sets had grasshoppers on the treddle of the trap and in some cases the bait was gone and the trap was sprung. As I moved along the line, approx. 30 grasshoppers would leave the ground or vegetation and alight ahead of me. The clover, wherever found in this field was completely denuded of leaves and bare stems remaining. This was particularly true in a large area NW of base camp along road. Here the grasshoppers would be found crushed in the road with dozens of other grasshoppers investigating the dead ones and eating those not too severely crushed into the dirt of the road. These grasshoppers will no doubt effect trapping results, especially in the daytime. Grasshopper on trigger of trap would invariably set trap off when jumping into the air on my approach. I wonder if the mammal population is utilizing these grasshoppers as food. In contrast to a large grasshopper population, I found only a rare mosquito, an insect that is more commonly associated with Microtus ochrogaster community. At mountain meadows at Laramie Plains, Centennial, Saratoga, Savery and Marie Lake the mosquitos were

always in high population numbers. Examined the trapline at 5:00 P.M with western skies dark with threatening clouds; collected the following mammals. Positive trap records only, as grasshoppers had sprung or eaten nearly all the oatmeal placed in the traps: 76 Microtus ochrogaster 1-7-21-48 no runway; 87 Microtus ochrogaster 2-7-21-48 no runway; 100 Microtus ochrogaster in runway; 122 Microtus ochrogaster 4-7-21-48 no runway; 128 Microtus ochrogaster 5-7-21-48 in runway; 130 Mus musculus 6-7-21-48 in runway. (runways refer to those made and maintained by Microtus ochrogaster). at 6:30 P.M took one Microtus ochrogaster which had just been caught from trap 103, 6a-7-21-48;

At 7:30 P.M made complete inspection of line as follows (grasshoppers less in evidence, Chordeiles flying in air): 1 Mus musculus 7-7-21-48 not in runway; 2 Mus musculus 8-7-21-48 not in runway; 18 Microtus ochrogaster 9-7-21-48 not in runway; 32 Microtus ochrogaster 10-7-21-48 in runway; 36 Microtus ochrogaster 11-7-21-48; 49 Microtus ochrogaster 13-7-21-48 in runway; 87 Mus musculus 14-7-21-48 in runway; 87 Mus musculus 15-7-21-48 in runway; 98 Mus musculus in runway; 99 Microtus ochrogaster 17-7-21-48 in runway; 122 Microtus ochrogaster 18-7-21-48 in runway; 128 Mus musculus 9-7-21-48 not in runway. Completed at late twilight and used flashlight at end of line at 8:15 P.M.

3½ mi. W Loveland, 5030, Larimer Co., Colorado

July 22, 1948

This area is exactly ½ mi. N and 4 mi. W Loveland P.O., but 3½ mi. west is still in general area. I will not make correction but leave as originally designated. This morning inspected research area 4-7-21-48 as follows (only positive catches listed); 6 Peromyscus maniculatus 1-7-22-48; 7 Peromyscus maniculatus 2-7-22-48; 20 Peromyscus maniculatus 3-7-22-48; 24 Peromyscus maniculatus 4-7-22-48; 30 Reithrodontomys 5-7-22-48; 31 Microtus ochrogaster 6-7-22-48; 36 Microtus ochrogaster 7-7-22-48; 39 Microtus ochrogaster 8-7-22-48; 40 Microtus ochrogaster 9-7-22-48; 41 Microtus ochrogaster 10-7-22-48; 49 Microtus ochrogaster 11-7-22-48; 52 Microtus ochrogaster from hole 2-7-22-48; 58 Reithrodontomys 13-7-22-48; 61 Microtus ochrogaster 14-7-22-48; 64 Mus musculus 15-7-22-48; 72 Peromyscus maniculatus 16-7-22-48; 87 Mus musculus 17-7-22-48; 89 Microtus ochrogaster 18-7-22-48; 100 Microtus ochrogaster 19-7-22-48; 102 Peromyscus maniculatus 20-7-22-48; 103 Mus musculus 21-7-22-48;

117 microtus ochrogaster 22-7-22-48; 129 mus musculus 23-7-22-48;
131 mus musculus 24-7-22-48;. Started above line at 6:45 A.M
Grasshoppers again around all traps. Ants common and always
there are carabid beetles and porcillio. no mosquitos or slugs.
Returned to camp and at 1:30 P.M made another inspection of trap
line to indicate effectiveness of grasshoppers in removing bait
and springing traps. Mammals in traps probably captured
shortly after morning inspection. Results as follows:

1. sprung
2. bait gone
3 sprung, bait gone
5 " " "
6 " " "
7 " " "
8 bait gone
9 " "
10 sprung, bait gone
11 " " "
12 " " "
13 " " "
14 " " "
15 " " "
16 " " "
17 " " "
18 " " "
19 " " "
20 " " "
21 " " "
22 " " "
23 " " "
24 " " "
25 " " "
26 " " "
27 " " "
28 " " "
29 " " "
30 " " "
31 " " "
32 " " "
33 " " "
34 " " "
35 sprung, bait gone
36 " " "
37 " " "
38 " " "
39 " " "
40 " " "
41 " " "
42 " " "
43 " " "
44 " " "
45 " " "
46 " " "
47 microtus ochrogaster 25-7-22-48 This
mouse was decomposed (juicy) from
excessive direct heat of sun.
48 sprung, bait gone
49 " " "
50 microtus ochrogaster 26-7-22-48
deteriorated from heat of sun.
51 sprung, bait gone
52 " " "
53 " " "
54 " " "
55 " " "
56 " " "
57 " " "
58 " " "
59 " " "
60 " " "
61 " " "
62 " " "
63 " " "
64 mus musculus 27-7-22-48 ripe

65 sprung, bait gone
66 " " "
67 " " "
68 " " "
69 " " "
70 " " "
71 " " "
72 " " "
73 " " "
74-106 bait gone, sprung
107 microtus ochrogaster 28-7-22-48 deteriorated
108-127 sprung, bait gone
128 microtus ochrogaster 29-7-22-48 not deteriorated
129 sprung, bait gone
130 " " "
131 " " "
132 " " " end of line.

From the above 100% visitation by grasshopper will all bait gone and traps sprung except those holding 4 microtus ochrogaster and 1 mus musculus. The wire part of the traps were hot to touch and all mammals except 29-7-22-48 were juicy, and bloated from the sun. The field was even hot to walk ~~thrue~~ through. Grasshoppers appear 30 in air at one time as one walks along. It would indicate that one microtus ochrogaster was active during the middle of the hot day and perhaps others but as nearly all traps were sprung the opportunity was not there for other mice to be caught. Day clear and sky cloudless. Inspected trap line again at 5:30 P.M to see if microtus ochrogaster was active during the hottest part of day. Again, all bait gone ✓ traps sprung (all traps rebaited after checking trap line). no mammals active or at least if they were the traps were not effective in catching them. In the evening checked again and without results although all trap with bait gone & sprung. At 9:30 P.M made another inspection and found 80% traps sprung and nearly all bait gone. The grasshoppers at this time of night are mainly in upper foliage of weeds and vegetation. Porcilles and Lasiuds at traps. Trap 89- and 128 held mus musculus. Left these two annuals in the feed. Also this evening established Research area A-7-22-48 at 7 mi. W and 2½ mi. S Loveland, 5370 ft., Larimer Co., Colorado. This trapping area is 340 feet higher and is influenced by Transition. Sidehills are covered with solid stands of buck brush in proper exposures, bottomlands under cultivation. Considerable slope or grade of canyon floor which is restricted and closed-in. Cottonwoods along creek and oats in fields. This area is at Convergence of Dry Creek and Saddle Notch Gulch. Traps set in grasses on sidehill between oats & brush patches. Examined on runway which was typical of microtus ochrogaster. 25 traps set. Returned to camp. Enroute observed on mephetus. Bats

flying in creek bottoms. At camp made final inspection of traps in research area A-7-21-48

3½ mi. W Loveland, Larimer Co., Colorado, 5030 ft., Larimer Co., Colorado.

July 23, 1948

Examined traps in research area A-7-21-48 at base camp this A.M, indicating exact setting of individual traps. Pulled all traps and reset in another area: 1 among cuttings, no runway; 2 among cuttings, no runways; 3-11 among cuttings; 12 mus among cuttings musculus 1-7-23-48; 13 in runway among matted grasses; 14-25 on dry, hard soils, cuttings in evidence; 26 high weeds, considerable bare areas between individual stocks; 27-28 weeds; 29 mus musculus, grass matted; 30 runway, mixed grasses, dry; 31 micratus ochrogaster in runway 2-7-23-48; 32-42 in runways; 43 open on bare soils; 44-49 in runways, mixed grasses & dry; 50 Microtus ochrogaster 3-7-23-48 in runway; 51 open; 52 in runway at edge of hole; 53 Reithrodontomys 4-7-23-48 in runway; 54 not in runway but in general area of above; 55 in runway; 56 in runway at edge of hole; 57-59 runways; 60 runway at edge of hole; 61 runway; 62 mus musculus 5-7-23-48 as above but not in runway; 63 on cuttings at base of weeds and grasses; 64 at nest of Peromyscus or micratus, placed in cup; 65-68 on cuttings at base of grasses; 69 mus musculus 6-7-23-48 high green grasses with ~~alphalfa~~ alfalfa 4 feet high. A nest of Calamospiza melanocarpa 3 feet high in green alfalfa stems. This bird always left at about 3 feet away. Nest with 4 eggs; 70-71 in same patch of high alfalfa as above; 72 Peromyscus maniculatus 7-7-23-48 by nest; 73-87 green alfalfa 4 feet high; 89 microtus ochrogaster 8-7-23-48 General weed and grasses 1 to 2 feet high; 90-99 ibid; 100 runway and like vegetation above; 101-108 misc grasses & weeds, no runways but grass clippings; 109 micratus ochrogaster 10-7-23-48; 110-116 misc grasses & weeds, no runways but cuttings; 117 mus musculus 11-7-23-48 ibid; 118-123 grasses, weeds, grass cuttings; 124 Reithrodontomys 12-7-23-48 ibid; 125 ibid; 126 micratus ochrogaster 13-7-23-48 in runways under vegetation as above; 127 mus musculatus 14-7-23-48; in general grasses, weeds & grass clippings; 128 runway and like above; 129 ibid; 130 microtus ochrogaster 15-7-23-48 vegetation as above and in runway; 131 general grasses & weeds with signs of cuttings; 132 microtus ochrogaster 16-7-23-48; in runway as above - end of trapline.

Inspected research area A-7-22-48 at 7 mi. W and 2½ mi. S Loveland as follows: 1-10 uneffected; 11 sprung; 12-16 uneffected.

15 Peromyscus maniculatus 20-7-23-48; 16-18 uneffected; 19 Peromyscus maniculatus 21-7-23-48; 20 Peromyscus maniculatus 22-7-23-48; 21-25 uneffected. Returned to camp. Was informed today that research area A-7-21-48 belongs to mr L E Stewart, Kim Kirby, Wyoming. Collected the dominant grasses of research area A-7-21-48 at 3½ mi. W Loveland. The dominant grass 18-7-23-48 occupies the greater area of the field and in someplaces is the only kind. In other areas is mixed with other grasses and weeds. Cuttings and droppings throughout this grass indicates principal food source. Grass 19-7-23-48 in conjunction with above and in the drier areas formed a matted condition. Most of the runways in this matted grass.

This evening set 150 traps on sidehill approx 150 feet NW of base station at 3½ mi. W Loveland, Larimer Co., Colorado. This area is immediately adjacent to the main field and covered with grasses and shrubs. The objective was to determine the extent of lateral movement of Microtus ochrogaster from valley to sidehills. These traps were recollected at 8:30 P.M. because of need elsewhere. In these traps Caught: Microtus ochro 1, 23-7-23-48; Microtus ochrogaster 24-7-23-48; also one Neotoma cinereseus, and 3 Peromyscus plus 1 Micro mus musculus. The traps that caught the microtus ochro were in trails among artemisia and so dry as to be dusty. The conspicuous birds in area of 3½ mi. W Loveland are: Calamospiza melanocarpa; Ardea herodias; Circus hyaneus; Picea hudsonicus; Dendroica aestiva, Phasianus colchis torquatus, Nycticorax nycticorax, Charadrius vociferus vociferous, Colaptes cafer; Turdus migratorius, Zenaidura marginella, Chordeiles, Tales s. sparverius, Pipilo maculatus, Icteria virens longicaudus, Salpinctes o. obsoletus, Tyrannus tyrannus, Dumetella carolensis, Vireo gilvus swainsoni, Parus atricapillus, Spinus tristis, Carpodacus mexicanus, Sturnella neglecta, The snakes are unconmon in area.

3½ mi. W Loveland, 5030 ft. Larimer Co., Colorado

July 24, 1948

Departed for Denver to visit Colorado Museum Natural History. We were to meet Cochrum and his party but as they did not show by 6:00 P.M. Considered that their plans had changed, so returned to Loveland. Jim Lonnquest visited sister in Denver. At 3½ mi. W Loveland set 111 traps in old research area A-7-21-48

and being after dark placed traps at 10 foot intervals beet without regard to runways or electric settings, generally on top of grasses. Traps in same field but not in exact setting of previous line.

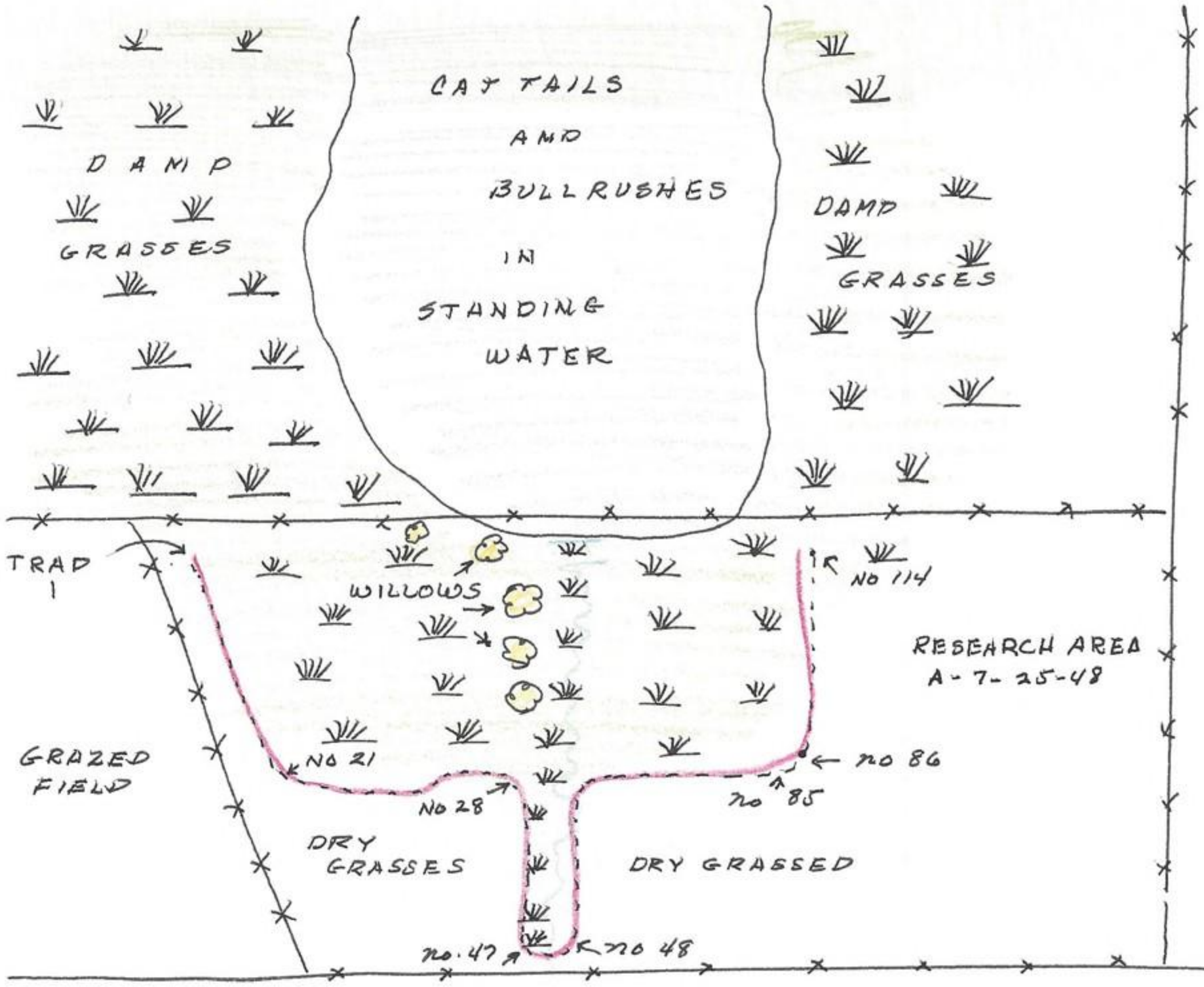
3 1/2 mi. W Loveland, 5030 ft., Larimer Co., Colorado

July 25, 1948

Inspected trapline set last night after dark in old research area A-7-21-48. Indicated positive conditions only;
3 Microtus ochrogaster 1-7-25-48; 11 Microtus ochrogaster 2-7-25-48;
22 Thomomys 3-7-25-48; 31 Microtus ochrogaster 4-7-25-48;
34 Reithrodontomys 5-7-25-48; 91 Microtus ochrogaster 6-7-25-48;
98 Microtus ochrogaster 7-7-25-48; 110 Reithrodontomys 8-7-25-48;
111 Reithrodontomys 9-7-25-48.

This afternoon set traps at 6 mi. W and 1/2 mi S Loveland, 5200 ft., Larimer Co., Colorado. This area is one of the longitudinal or parallel valleys that have resulted from deferential erosion of folded strata and faulting along the front range. This is the second valley west of the Great Plains to the east and is connected by the Big Thompson valley. It is influenced by transition. Photo 10-7-25-48 of this research area A-7-25-48 which shows the topography of area. The stratigraphy is east dipping strata with deferential erosion creating abrupt west exposures and long gradual east exposure following the dip of the structure. The vegetation has reacted to this difference of exposure. The valley floor at this point is at grade and thus presents a marsh condition, elsewhere the grade is sufficient to prevent marsh formation. Such conditions (marshes) are uncommon in these canyons and provide fewer communities for Microtus ochrogaster or Microtus montanus that prefer damp grass meadows for best community development. The grass & sedges surrounding the black mass of bull rushes and cattails are mowed but seldomed grazed. The north end of this meadow is relatively undisturbed grasses. A few willow clumps are scattered throughout valley. The photo faces north with Big Thompson River traverses picture from left to right three both ridges and forms the lowest point of drainage in the valley. One valley is to the left between this valley & main mountain mass. One valley between here & plains to east. Set 114 traps at 10 foot intervals in grass bordering the cattails & bulrushes.

480725-116



Traps were set (114) in the following situations. 1-28 in dry grasses but adjoining wet grasses & sedges; nos. 28-47 in outlet drainage channel of rank vegetation and damp soils bordered by dry banks and grasses; nos 48-85 in more or less dry grasses; nos 86-114 in damp grasses along irregation control ditch on side of ditch toward lower levels. Traps in runways are: 10-15; 22-25; 86-114. This property belongs to H.C. Berkhard. Returned to base camp at 3½ mi. W Loveland.

3½ mi. W Loveland, 5030 ft.; Larimer Co., Colorado.

July 26, 1948

Inspected research area A-7-25-48 at 6 mi. W and ½ mi. S Loveland, 5000 ft.; Larimer Co., Colorado as follows (positive records only); 11 microtus ochrogaster 1-7-26-48; 12 microtus ochrogaster 2-7-26-48; 22 microtus ochrogaster 3-7-26-48; 33 microtus pennsylvanicus 4-7-26-48; 34 microtus ochrogaster 5-7-26-48; 35 microtus ochrogaster 6-7-26-48; 37 microtus ochrogaster 7-7-26-48; 47 Perognathus 8-7-26-48

54 Reithrodontomys 9-7-26-48; 56 micratus ochrogaster 10-7-26-48; 61 micratus ochrogaster 11-7-26-48; 63 Reithrodontomys 12-7-26-48; 64 micratus ochrogaster 13-7-26-48; 71 Reithrodontomys 14-7-26-48; 74 micratus pennsylvanicus 15-7-26-48; 85 micratus ochrogaster 16-7-26-48; 91 micratus ochrogaster 17-7-26-48; 98 micratus ochrogaster 18-7-26-48; 106 micratus ochrogaster 19-7-26-48; 108 micratus ochrogaster 20-7-26-48; 109 micratus ochrogaster 21-7-26-48. micratus pennsylvanicus inhabits the dense vegetation of cattails & bullrushes while micratus ochrogaster is found in drier adjoining grasses.

Collected the following grasses in equal proportion in area occupied by micratus ochrogaster.

13(1)-7-26-48 _____

13(2)-7-26-48 _____

13(4)-7-26-48 _____

Grasses used by micratus pennsylvanicus

14(1)-7-26-48 _____ matted to erect and subdominant.

14(2)-7-26-48 _____ subdominant.

14(3)-7-26-48 _____ dominant in equal degree with the following:

14(4)-7-26-48 _____ equal dominant

14(5)-7-26-48 _____ equal dominant.

Completed trapline at 10:30 A.M and returned to Camp. At 7:00 P.M inspected trapline in research area A-7-25-48 as follows:

Trap 44 micratus ochrogaster 23-7-26-48; 108 micratus pennsylvanicus. Grasshoppers had eaten most of the oatmeal and had sprung many traps but was not the concentration of grasshopper as at 3½ mi W Loveland. Reset all traps and returned to camp. Enroute at 6 mi. W and ¼ mi. S Loveland a mephitis mephitis ran across road. At camp compared micratus ochrogaster and found that those caught in day are lighter than those caught at night. This may be a factor of color change in animals that forage more in sunlight in the cooler periods of spring or autumn.

3½ mi. W Loveland, 5030 ft., Larimer Co., Colorado

July 27, 1948

Left camp and inspected trapline at research area A-7-25-48. Recorded only positive catches and pulled all traps: 12 micratus ochrogaster 1-7-27-48; 13 micratus ochrogaster 2-7-27-48; 23 micratus ochrogaster 3-7-27-48; 32 Reithrodontomys 4-7-27-48; 44 micratus

ochrogaster 5-7-27-48; 58 Reithrodontomys 6-7-27-48; 59 Reithrodontomys 7-7-27-48; 72 micratus ochrogaster 8-7-27-48; 85 micratus ochrogaster 9-7-27-48; 101 micratus ochrogaster 10-7-27-48; 109 micratus pennsylvanicus 11-7-27-48; 113 micratus ochrogaster 12-7-27-48. Trap no. 109 has caught both a micratus micratus and micratus pennsylvanicus. The rank vegetation of marsh is only 5 feet from shorter grasses along the man made diversion Canal. This ~~fore~~ evening set three lines of traps; ~~at~~ one in research area A-7-27-48 at 3½ mi. W Loveland, 5030 ft, Larmer Co where 20 traps placed 3 feet apart on side side of valley just 20" from Camp. The slope was 50° angle and consisted of Chrysothamnus, cacti, short grass and dead dry weeds. Soils absolutely dry and powdery. This situation was ferie like a desert and most formidable for micratus but trails cause me to check. Discovered in this line of traps an old grave with head stone marker of common rock. The grave supported old stones on top and had no resemblance to a planned burial. Several holes penetrated the ground below the stones and tracks (small) led beneath the grave. The second set of 50 traps in old research area A-7-21-48 but in slightly different part of field than other traps of several days ago. The third set of 60 traps in old research area A-7-25-48 but adjoining to the S. This last set was made after dark without selectivity. Returned to base camp at 3½ mi. W Loveland.

<u>3½ mi. W Loveland, 5030 ft., Larimer Co., Colorado.</u>

July 28, 1948

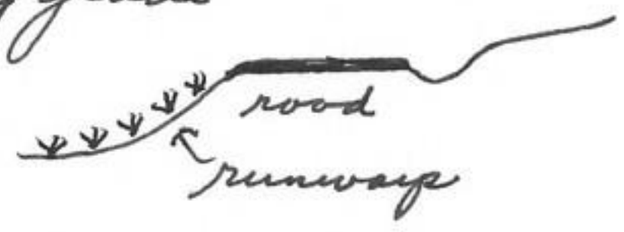
This A.M examined traps in research area A-7-27-48 and was surprised to find two micratus ochrogaster nos 1-7-28-48 and 2-7-28-48. Also one Peromyscus maniculatus and one immature neotoma. I never would have dreamed that micratus ochrogaster would inhabit such ferie communities. More favorable communities were within 50 feet of this area but the micratus were defenitely using their established trails. I am of the opinion that microtus ochrogaster inhabits more ferie conditions in its western distribution (extreme western) than in the range of micratus ochrogaster of eastern Kansas etc.

From research area A-7-20-48 caught 2 immature microtus ochrogaster and six Peromyscus maniculatus which I destroyed. From 6 mi. W and ½ mi S Loveland caught three micratus in grasses between wet and barren dry soils. These three are:

meratus ochrogasters nos 5-7-28-48; 6-7-28-48; 7-7-28-48:

Returned to base camp and after breakfast journeyed up Big Thomas Canyon where 4 stations were selected to represent a traverse from the geographical range of meratus ochrogaster of the great plains up to contact with meratus montanus in the bottom of canyons from the Rocky Mountains. Big Thompson Canyon particularly in lower limits, the highway preoccupies practically the entire valley bottom except the creek. Beyond the lower limits, summer home take up most of the canyon floor. The four research areas were placed according to a distant factor plus altitudinal factor and are as follows:

Research area A-7-28-48 at Cedar Grove, 5600 ft., Larimer Co., Colorado on 9 1/4 mi. W and 1/2 mi. N Loveland, Colorado. This area is in bottom of canyon with canyon slopes on either side. The hillslopes are covered with Ponderosa pine and in the openings a mountain mahogany (buckbrush) completely covering surface of sidehill like a carpet. Large cottonwoods and other reparian deciduous trees in canyon bottom. Grasses are represented and suggest relict populations. In fact, it may be that the only true great plains grasses will be found in these protected spots in the canyon. The trapping area is on benchland above river valley between the base of hills and erasional valley of the river. Photo 8-7-28-48 taken at Cedar Cove shows the trapping area in the immediate foreground. Vegetation at this point is Chrysothamnus, the dominant shrub; dry matted grasses, vines, mullen, Chokecherry and other shrubs. Runways confined to matted vegetation associated with and between the groups of shrubs. The runways were also on sleeper slopes of the highway grade



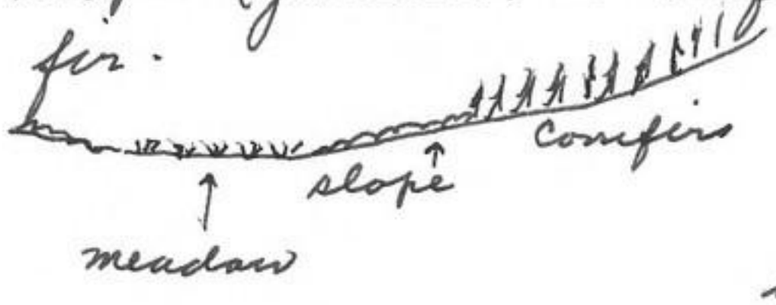
Considerable trash (organic) covered the ground such as dried limbs, stems etc; which were of normal accumulation from the native vegetation. In some of the dense accumulations of debris the runways were damp but otherwise were dry and dusty. The grasses at Cedar Cove are protected from grazing, otherwise they would be rats offer overhead protection. The residents claims that skunks are common here in Cedar Cove. 30 traps were set here. A Passerma amoena and Tiranga ludoviciana were in the area.

Research area B-7-28-48 at Riverside, 6020 ft., or 12 mi. W and 1 1/2 mi. N Loveland, Larimer Co., Colorado. This

area shows considerable human influence with homes and cultivated yards. Traps 31-47 in yards surrounded by highways or cabins but grasses not used for cultivation or grazing. Besides grasses there were gooseberry, cactus, mohogany and other shrubs. Green grasses supported runways which ran among rocks (1 foot or so in diameter) and low growing shrubs. Poison ivy dominant in localized areas. Ponderosa pine and mohogany on hillside. The conditions here are similar to the preceding research area at Cedar Cove except that canyon is narrower and vegetation more like the kind associated with protected and shadowed parts of the canyon.

Research area C-7-28-48 at 5 1/10 mi. up canyon from Forks at Drake or 16 mi. W Loveland, 6840 ft., Larimer Co., Colorado. This area is recorded in photo 9-7-28-48 showing restricted grass and sedge meadow between the river and the slope of the hill. This meadow no doubt is periodically inundated in high water. Ponderosa pine and mahogany in background on slopes of mountain. There is a considerable reduction in the amount of mohogany on the hillside and a corresponding sparsety of grasses. It differs (trapping area in meadow) from the last two research areas in that it includes a flat meadow of the more permanent montaine type with damp to saturated soils - a more permanent community for microtus montanus. Some spruce and fir in riparian community. Traps 48-94 here in meadow shown in photograph.

The 4th research area was at 2 mi. E of Estes Park or 19 1/2 mi. W and 2 1/2 mi. S Loveland, 7280 ft., Larimer Co., Colorado. This area is at lower end of Estes Park valley and is of montane meadows of grasses and dwarf willows plus a typical natural flower garden complex of shrubs, herbs, etc. Geranium, mallow, gooseberry and matted grasses are typical. This area is an open meadow with considerable slope (gradual) to coniferous forests edge of ponderosa pine, spruce & fir.



The Big Thompson Project is changing this entire valley and representative sections of the valley should be preserved. 20 years ago I visited this area and at that time there was a natural valley with undisturbed meadows and creek. Now the entire valley is populated and the project is to utilize most of the valley meadows. Progress is necessary but why not preserve some segment in its natural state! Returned to base camp at 3 1/2 mi. W Loveland.

480729-121

3½ mi. W Loveland, 5030 ft., Larimer Co., Colorado

July 29, 1948

Left camp and checked traps in Big Thompson Canyon. From research area A-7-28-48 at Cedar Cove or 9¼ mi W and ½ mi. N Loveland, 5600 ft., Larimer Co., Colorado collected the following: trap 1 microtus ochrogaster 1-7-29-48; 7 microtus ochrogaster 2-7-29-48; 10 Reithrodontomys 3-7-29-48; 12 Peromyscus maniculatus 4-7-29-48; 14 microtus ochrogaster 5-7-29-48; 15 microtus ochrogaster 6-7-29-48; 21 microtus ochrogaster 7-7-29-48; 30 end of line. Jim Lonnquest caught 3 microtus ochrogaster in same general area. From this area collected the following dominant grasses in equal dominance:

8(1)-7-29-48 _____.

8(2)-7-29-48 _____.

Continued up Big Thompson canyon to research area B-7-28-48 at 12 mi W and 1½ mi. N Loveland (Riverside), 6,020 ft., Larimer Co., Colorado and checked trapline: trap 36 microtus ochrogaster 9-7-29-48 only. The three dominant grasses are:

16(1)-7-29-48 _____.

10(2)-7-29-48 _____.

10(3)-7-29-48 _____.

At research area C-7-28-48 at 14 mi W Loveland, 6840 ft., Larimer Co., Colorado collected the following: 58 Reithrodontomys 11-7-29-48; 59 Microtus ~~ochrogaster~~ montanus 12-7-29-48; 65 microtus ~~ochrogaster~~ montanus 13-7-29-48; 68 microtus ~~ochrogaster~~ montanus 14-7-29-48. From this area collected the grass of equal dominance from the trapline:

15(1)-7-29-48 _____.

15(2)-7-29-48 _____.

15(3)-7-29-48 _____.

15(4)-7-29-48 _____.

15(5)-7-29-48 _____.

15(6)-7-29-48 _____.

Lonnquest caught 1 microtus longicaudus and 2 microtus pennsylvanicus in this same area.

Continued to Estes Park at 19½ mi. W and 2½ mi. S Loveland, 7280 ft., Larimer Co., Colorado and inspected trapline in research area D-7-28-48: trap 86 microtus montanus 16-7-29-48; 67 Zapus princeps 17-7-29-48; 70 microtus montanus 18-7-29-48; 82 Zapus princeps 19-7-29-48; 89 microtus longicaudus 20-7-29-48. From this trapping area collected the 4 dominant grasses:

22(1)-7-29-48 _____.

22(2)-7-29-48 _____.

22(3)-7-29-48 _____.

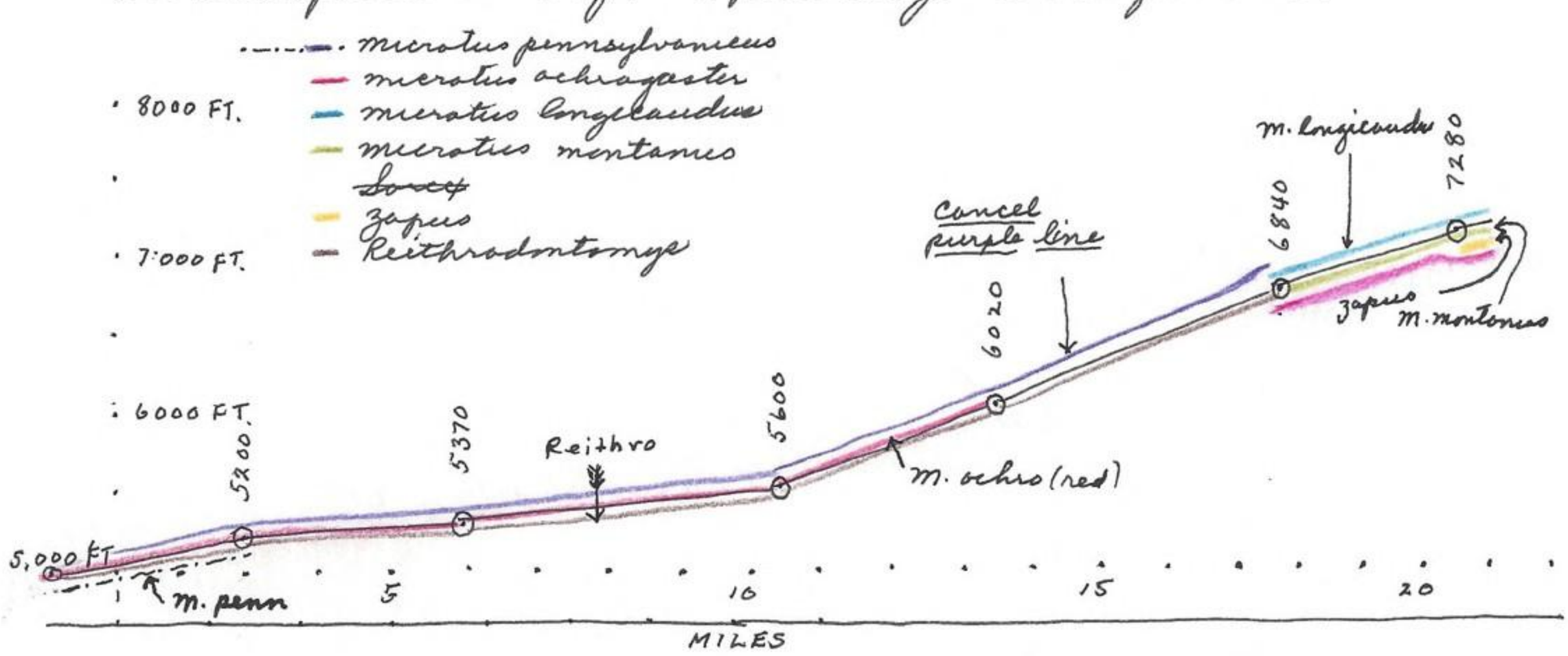
22(4)-7-29-48 _____.

Longuest collected 1 Zapus princeps and 4 microtus montanus in same field.

Left Estes Park and went thru Rocky Mountain National Park to 1/4 mi. N of moraine Park museum, where I picked up a road kill of Sciurus aberti 23-7-29-48 (black phase) among Pinus ponderosa and some fir. From here continued up Ridge Trail road to top of divide and thence return. At 12000 ft on Ridge Trail road recorded cirques to south across the canyon. Several lakes in steplike sequence, nestled in cirque recorded in photograph 24-7-29-48. Marmota, Anthus common at this point. This trail ridge road flattens out the topography. These same peaks, when viewed from the canyond floors, are high, bold and rugged features of the landscape. Wind strong across slopes and is probably responsible for round curved slopes at these high altitudes. The lake spotted cirque should be an interesting place to visit. Would make the following recommendations for park policies: Eliminate artificial feed of Clark Crows, Eutamias and Citellus at vantage points and require people to refrain from trespassing at points where a small peak challenges their climbing ambitions. On slopes, many trails are entrenched into sedehill which may in time start further erosion and permanent defacement of the high ridge slopes. It seems to me that the only way these National Parks can be presented to people is to go underground and bring them out at vantage points which do not show in the landscape. National Parks are becoming crowded that people are trampling out the vegetation and their very presence makes the park more like a city park than a natural animal & plant community. Left Park and returned to base camp at 3 1/2 mi. W Loveland and prepared to leave for Snowy Range tomorrow morning.

In summary of the trapping in Big Thompson Canyon would conclude that microtus ochrogaster approaches the geographical range of microtus montanus between research area B-7-28-48 and C-7-28-48 and if this area were systematically trapped would show the exact contact point. Microtus montanus must have a wet open meadow that is more or less continuous with the montane meadows of higher elevations and the vegetation

must be of the same general montane character, lush, low growing meadow grasses, sedges and plants. Microtus ochrogaster will inhabit such montane plant communities but is generally in areas where the montane meadows are not present. Microtus ochrogaster is associated with successional stages and in areas where conditions are more xeric than one would generally realize. The fact that ochrogaster is found so far into the Transition Life Zone is because of the presence of successional stages in the canyon floors where these stages are better able to develop because of the changing nature of the canyon valley floor. The successional stages where Microtus ochrogaster is found are created by man made interferences such as abandoned cultivated fields, sloping shoulders of road grades etc. Just from general observations it seems to be a form that is invading a new territory. One important factor is temperature and elevation which are important in differentiating the transition from the lower montane life zones. At the point where M. ochrogaster and M. montanus are expected to meet or converge, one has the definite reaction of changing from the warmer transition zone to the cooler montane. There is also a difference in plant complex at about the point of convergence of the two microtine forms. If montane communities extend down the canyon, M. montanus is surely to follow them. The meeting point of M. ochro and M. montanus will probably be the division line between Transition and Montane life Zones. The distribution of the several species in Big Thompson Canyon are as follows:



with additional trapping the ranges would undoubt be modified especially in the area between altitude 6020' and 6840'

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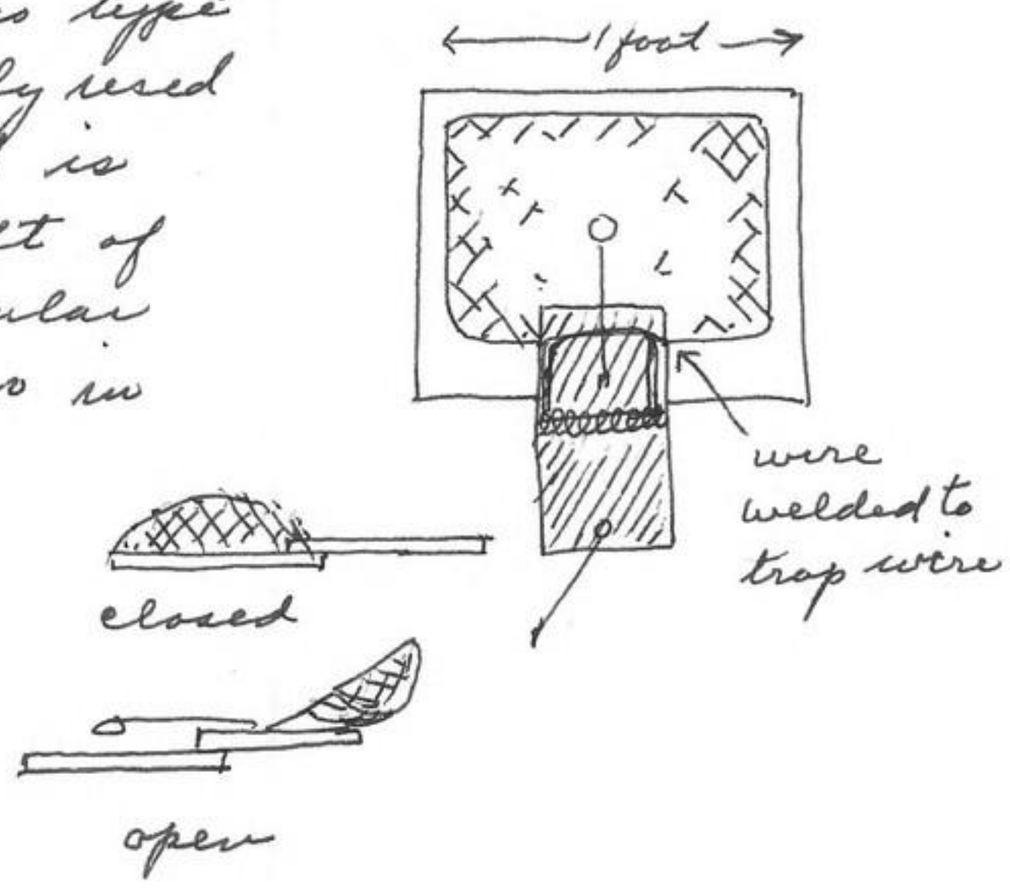
480729-124

At camp photographed, 25-7-29-48, the area of former research area A-7-27-48. This photo was from 20 feet of our base camp at 3½ mi. W Loveland. The traps of this research had been set across the slope at the base of the picture. Ridge in background is the one indicated on orientation map at the first recording of the description of this area. This ridge is about the same heights and extent of the first ridge to the east which borders the Great Plains. Departed from base camp for Snowy Range in Wyoming. Arrived Lake Marie, 10,440 ft, Carbon Co., Wyoming late in evening. This lake is one of several lakes in the Medicine Bow National Forest. This setting has previously been described in journal. Retired this evening and slept cold!

Lake Marie, 10440 ft., Carbon Co., Wyoming.

July 30, 1948

This A.M Completed 2 traps for capturing pika alive and placed them in position. This type of trap is one that I successfully used on Mt. Timpanogas for pika and is being employed here as a result of unsuccessful attempts with regular wire cages used several weeks ago in this same area. The trap is a regular rat trap with a piece of masonite bolted to the bottom and a wire loop extended from the regular wire of trap. A net of muslin cloth is attached to the extended wire frame. An extension of steel wire acts as the trigger. The principle is for pika to trip the trigger either by touching it by passing along its trail near it nest or at a time when the pika is investigating the food placed on the trap (lettuce, carrots, colored cloth, tinfoil). Actually regular grasses were as effective as bait. This evening mother, Dad, Mil & Curly arrived at Lake Marie. We all spent the night at Snowy Range Cabins.



Lake Marie, 10,440 ft., Carbon Co., Wyoming

July 31, 1948

After breakfast at the Snowy Range Tourist Cabins, journeyed

to Lake marie where the family remained until evening. En-route collected a marmat 1-7-31-48 on road at the University of Wyoming Summer Camp. At Lake Marie area placed several more live Ochotona traps. Caught one live Ochotona and one neotoma in live traps. Two other neotoma observed this morning in rock slides. In the afternoon Dad took several color photos and hiked in the general area of Lake marie. In the evening set 107 traps (10 feet apart) with Mil in dwarf willows at the SW end of Lake Marie. This area is alpine plant communities with grasses and sedges and alpine flowers. Soils saturated. This evening the family + I stayed at Plummers Tourist Cabins on Brush Creek to night.

Lake Marie, 10,440 ft., Carbon Co., Wyoming

Aug. 1, 1948

Mil and I ran traps in SW side Lake Marie as follows: Trap 6 Peromyscus maniculatus 1-8-1-48; 18 Zonatrichia 2-8-1-48; 20 Microtus longicaudus 3-8-1-48; 21 Microtus montanus 4-8-1-48; 23 Microtus montanus 5-8-1-48; 28 Zapus princeps 6-8-1-48; 30 Zapus princeps 7-8-1-48; 35 Zapus princeps 8-8-1-48; 38 Zapus princeps 9-8-1-48; 51 Microtus montanus 10-8-1-48; 53 Zapus princeps 11-8-1-48; 75 Melospiza lincolni 12-8-1-48; 88 Zapus princeps 13-8-1-48; 89 Melospiza lincolni 14-8-1-48; 96 Microtus montanus 15-8-1-48; 101 Peromyscus maniculatus 16-8-1-48; 106 Zapus princeps 17-8-1-48. The Ochotona captured alive yesterday was kept at Plummers Cabins and after trap line inspection was crated and shipped to Lawrence, Kansas from Rawlins, Wyoming as Jacko passed thru that city on their way to Utah. (via railway express. This A.M Prof. Mickey of the University of Wyoming visited camp. He reports taking one dusky shrew at apprax 10,400 feet and one Microtine on Libbys Flats east of Lake Marie. He has also been collecting fairy shrimps from the various lakes here.

This afternoon caught 3 pika and one neotoma in the live traps. These were brought to camp and after covering cages with cloth and cotton, placed them in the cab of the truck for the night. Temps low at this altitude. While watching these pika on rock slides, made the following notes:

Greatest activity (Ochotona) in morning or late afternoon. Only two haystacks in process of construction and these about 1 gallon in mass. In other areas used by pika the nests or haystacks were not being constructed although the animals were in general area of last years haystacks. In the instance of the pika building haystacks, the animals were very active in food gathering and travelled from the forage area to their haystacks. This is the best time of the year to capture Ochotona because they consistently travel regular trails, especially near the haystacks. The young, and especially in evening, are fearless and will approach one within 3 feet to collect grasses. In travelling to haystacks, they invariably pause at certain points and make a survey of area before running to haystack and after depositing green vegetation on nest, run to an observation point (generally the top of a rock) where they again stop and remain for several minutes before returning to the foraging areas. This behavior pattern varies but is consistent enough to produce a noticeable activity pattern. One pika travelled 200 feet to gather plants, however, other foraging areas were within 20 feet of the haystack. Set several traps on one haystack (around edge) and from these traps collected 3 pika, each one contributing to the haystack. Each animal had its own foraging area. When a trap went off and scared a pika, the animal would run up the rock slede for 250 feet or so but in a few minutes would return to haystack and continue to gather material. In travelling the rockslides the pika use regular courses and visit other haystack areas. If pika are not building haystacks, attempt to capture by placing trap in general area of activity is futile. It is extremely difficult to attract them by either food or attraction getting mechanisms. The best area for trapping and for haystack building are near base of rockslide where boulders are not too large or extensive. One area adjacent rock slede was used by pika for grazing and the grasses were grazed as like a lawn for a distance of 15 feet beyond the edge of the slide. Noted pika feeding in these areas (grazing for several minutes) in the evenings. Pika react to Marmot calls and other pika calls. In gathering food, they will forcefully gnaw and pull at base of grasses until a mouthful is acquired,

480801 - 127

1-8-3-48

and then return to rock slides. Left pika slides SW of Lake Marie and return to base camp just S of Lake. Took 7 microtus montanus from live traps set at camp. These will be kept overnite and shipped to Lawrence with the pika. snap traps

In one small area in grasses and sedges set 5 ~~traps~~ snap traps in runways at one hour before dark. One microtus montanus was trapped as it followed along the runway at my feet and as I stood there, another microtus montanus came out of a hole among roots of a spruce tree and started to work about the immediate area of the hole. When I saw the dead microtus just caught in the trap, it grabbed it by the back of the neck and ears and fought it like the whirlingest ball of cats. His movements were extremely fast. After 5 seconds of fighting it left and then return again and continued fighting the dead animal for another 8 seconds; after which it left and continued nervously along a runway, passing over 2 traps placed across this runway and on returning in runway was caught by one of the traps it had passed over unharmed. Their movements in runways are fast and nervous. They are frequently observed in the day and particularly so from late afternoon and dark and no doubt they are very active after that time.

Lake Marie, 10,440 ft., Carbon Co., Wyoming

Aug 2, 1948

Rainy and cold today. Took Pika and microtus montanus to Laramie for shipment. Was not able to do much this day.

Aug. 3, 1948

Continued pika trapping this morning. Left 10:00 A M and ascended top of peaks west of camp returning 1:00 P.M. Made approach from south and returned down chimney some distance north of Lake Marie. Recorded the following pictures 1-8-3-48 at SW corner of Lake Marie at base of talus. Pika common all along base of talus adjacent lake but where spruce trees borders slope the pika are weary. Photo 2-8-3-48 from ridge south of Lake showing Lake Marie below and long glacial lake to the north. Alpine flowers in foreground. Spruce indicate prevailing winds from west. This is also the direction of storms paths. Erosional gully in foreground from overgrazing of sheep and use of slope for concentrated trail

4-8-3-48

480801-129

84-E-8-9

480803-130

trowel by sheep. Photo 3-8-3-48 farther down ridge to south showing Lake Marie below. Base camp at left hand extension of road loop. Talus slopes well depicted in this photo. Photo 4-8-3-48 from top of peak above Lake Marie. The terrace in foreground is surrounded by precipitous rock cliffs. Talus slopes and glacial moraines below. The long kidney shaped lake lies north of Lake Marie and the water, after flowing underground reappears in foreground to right. Note the round glaciated mountain top in background, probably formed by wind action, glacial action or could be original surface before uplift. The peak in middle distance is highest peak on range (12,005 feet) named Medicine Bow Peak. Photo 5-8-3-48 as above but showing perpendicular strata. Photo 6-8-3-48 from high peak above Lake Marie. Ochotona, pipits and marmots frequently noted in these slides and on slides soils surrounding the lake below. One Aquila Chrysaetos Canadensis circling cliff area above talus slopes It finally left and soared upward over top of mountain. From this peak went west to a point overlooking North Platte River Country & Brush Creek in the distance. Returned to east edge of range. At time of glaciation, the mountain slope was perpendicular but after the glacier left the chimneys formed. The mountain ranges looks like an accumulation of boulders (from below at Lake Marie) but actually they are just a venier on top of solid rock. From top of peak, dropped down east face of range to lake below (kidney shaped lake). This slope is good area for Lemmastelii, pipits, marmots and pika, all calling. Continued to east side of lake via mass of moraine boulders at S end and from here took photo 7-8-3-48. white granite rocks on surface of andesite on right hand side of photo. This is the original surface during Pleistocene and is now overlain with lateral moraines. Lake above created from scouring action of ice as is the surface in photo. Photo 8-8-3-48 an up-side-down spruce with Snowy Range in background. On first benchland N of Lake Marie. Photo 9-8-3-48 on west shore Lake Marie showing talus slope entering lake. Beyond the large boulders in the foreground is where pika were live trapped - At base camp photo 10-8-3-48 of James Longnecker and trailer. This trailer I made from scratch and at an expense of $70.00. The talus in background favorite place for Pika, and Marmots. Mule

deer grozed on this slope, most frequently in the morning. The following birds were observed on trip to top of mountain: Nucifraga columbiana, Perisoreus canadensis, Anthus spinoletta, Leucosticte, Junco caniceps, Zonotrichia, Spinus pinus, Chordeiles, Myadestes solitarius, Cinclus mexicanus unicolor, Buteo (red tail?), Aquila chrysaetos canadensis, Falco sp. obsoletus; mammals observed: Odocoileus hemionus, Ochotona (ranging from top of peak to Lake Marie in about equal numbers.), Tamiasciurus hudsonicus, Eutamias consobrinus, Citellus lateralis, Canis latrans (tracks across snowbanks, small bats but uncommon. Chordeiles flying at approx. 11,000 ft and in evening. This evening a cloud bank blew in from the east and enveloped the upper limit of the mountain range. at this time I could hear the nighthawk above the layer of clouds or at least above 12000 ft.

In summary: The only time to capture (profitably) pika alive is during the autumn when they are actively compiling their winter supply (haystacks) when well developed runways lead to their plant accumulations. The best food to attract them to traps is fresh green grass. An open trap without superstructure is better than traps where the animal is expected to enter. Pika can be shipped to low altitudes (980 ft) or less with physiological effect. Will break camp tomorrow.

Lake Marie, 10450 ft., Carbon Co., Wyoming.
Aug 4, 1948

Depart for north Sybille Creek North of Laramie. From Laramie continued N along Highway 30 to no 26, thence toward Wheatland to 26 mi. N + 4 1/2 mi E Laramie, 6960 ft, on N Sybille Creek., Albany Co., Wyo. Enroute at 21 miles N of Laramie observed 28 antelope in one group. One ♂ in herd. This male had large horns black in color. They ran 300 feet before stopping to inspect us. The ♂ lagged and frequently stopped to look back at us.

The above base camp on North Sybille Creek is in between Canadian and Transition. Artemisia dominated slopes and an occasional tree. The canyon floor was lush grasses & sedges and secluded artemisia or other shrubs. Gooseberry, large Chrysothamnus and artemisia bordering grass meadows. No Cottonwoods or aspen in area. The rocky outcrops on S side of valley were reported

as heavily populated by rattlesnakes. This section of the canyon floor is near enough to the Laramie Plains as to exclude crosional gullies and as a result the drainge is small and water is distributed over a broad surface are of canyon floor. Beyond this area the canyon wrdens and enters an old Pleistocene lake bed. Lateral crosional fans have produced good meadows and all in all appears to be excellent for microtines. As we entered the meadows a ♂ & ♀ deer left and as they crowded under the fence, the ♂ caught himself on one of the wires. He soon released himself and after catching up with the ♀ they continued up the west slope.

Established three research areas in this meadow. no A-8-4-48 along roadgrade among excellent cover of Artemisia, matted grasses and high pampas grass (oats), all dry down to contact of grasses & sedges on damp soils. This area was chosen because it is submarginal and in seral stage similar to other areas (Loveland & Thompson Canyon) where Microtus ochrogaster was captured.

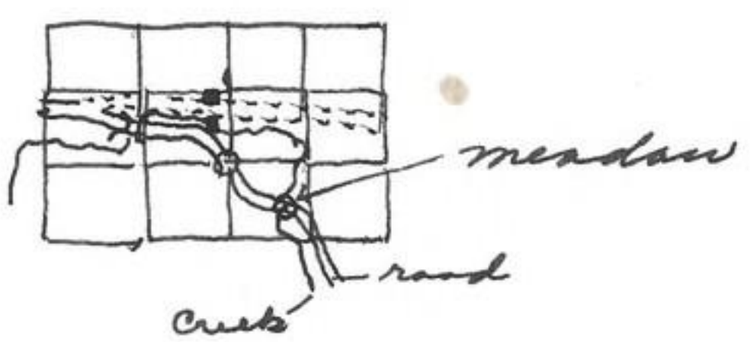
Research area B-8-4-48 in meadows of grasses & sedges on damp to supersaturated soils. Within this more or less uniform complex of meadow vegetation were differences in amount of standing water and damp soils which control the frequency of microtines. The traps were set at the contact between the wet sedges and the more typical grasses of the meadow which were about 1½ foot higher than the wet soils of the sedges.

Research area C-8-4-48 in grasses among gooseberry, stinging nettle and Artemisia at the border of the meadow. This contact was between damp grasses and of meadow and the dry hillsides of Artemisia. 127 traps were set in these three research areas before darkness closed in.

<u>2 6 mi. N and 4 1/2 mi. E. Laramie, 6960 ft., Albany Co., Wyoming</u>

Aug 5, 1948

This trapping area is at ~~Std~~ NE corner of sec. 19, T 20 N, R 72 W and places the area more accurately than above locality designation which was made without proper mapping facilities.



Inspected trap lines set last night as follows:

Research A-8-5-48: 1 sprung; 2 Peromyscus maniculatus 1-8-5-48; 3-4 uneffected; 5 sprung; 6 sprung; 7 Sorex Cinereus 2-8-5-48; 8-12 uneffected; 13 microtus montanus 3-8-5-48; 14 Sorex Cinereus 4-8-5-48; 15 sprung; 16 microtus montanus 5-8-5-48; 17 Peromyscus maniculatus 6-8-5-48; 18 sprung; 19 uneffected; 20 sprung, 21-23 uneffected, 24-25 sprung; 26-27 uneffected; 28 microtus montanus 7-8-5-48; 29-30 uneffected; 31 Peromyscus maniculatus 8-8-5-48; 32 sprung; 33 microtus montanus 9-8-5-48; 34 microtus montanus 10-8-5-48;

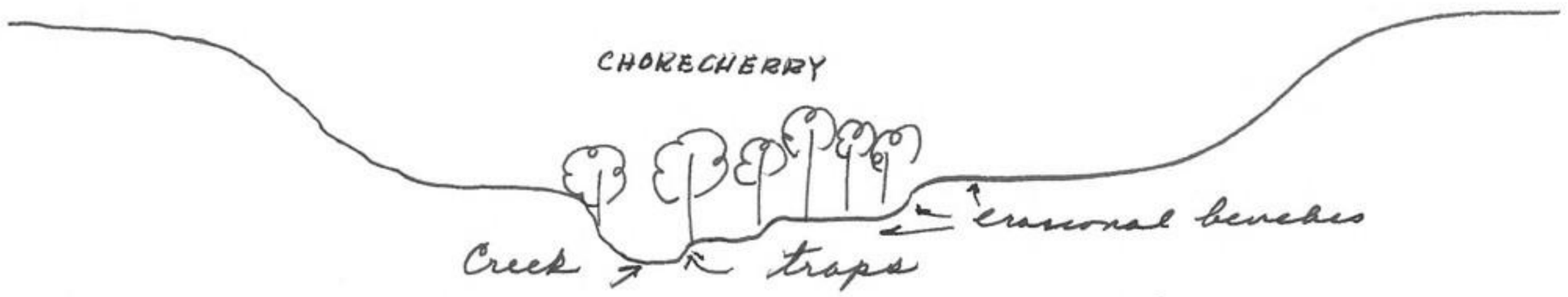
Research area B-8-5-48: 35-38 uneffected; 39 microtus montanus 11-8-5-48; 40 microtus montanus 12-8-5-48; 41 microtus montanus 13-8-5-48; 42 Peromyscus maniculatus; 43-45 uneffected; 46 sprung; 47 microtus montanus 15-8-5-48; 48 microtus montanus 16-8-5-48; 49 Sorex cinereus 17-8-5-48; 50 sprung; 51 uneffected; 52 microtus montanus 18-8-5-48, one sektant beetle had eaten thru the fur and skin of this mammal and had already eaten a small portion of the fleshy mantle of transverse muscles; 53 uneffected; 54 microtus montanus 19-8-5-48; 55 microtus montanus 20-8-5-48; 56-57 sprung; 58 Sorex cinereus 21-8-5-48; 59 sprung; 60 microtus montanus 22-8-5-48 large and eaten in posterior skull, brain, neck shoulders thru lungs and intestine; 61 sprung; 62 Mustela ermined 23-8-5-48 from runway; 63 sprung; 64-67 uneffected; 68 microtus montanus 24-8-5-48; 69 uneffected; 70 microtus montanus 25-8-5-48; 71-72 uneffected; 73 microtus montanus 26-8-5-48 skull and neck region eaten; 74 sprung; 75 uneffected; 76 microtus montanus 27-8-5-48; 77 Zapus princeps 28-8-5-48; 78 microtus montanus 29-8-5-48; 79 Peromyscus maniculatus 30-8-5-48 eaten thru skull, neck, lungs and stomach; 80 microtus montanus 31-8-5-48; 81 uneffected; 82 sprung; 83 sprung; 84-86 uneffected; 87 microtus montanus 32-8-5-48.

From research area C-8-4-48: 88 Peromyscus maniculatus 33-8-5-48; 89 Peromyscus maniculatus 34-8-5-48; 90 sprung; 91 uneffected; 92 Peromyscus maniculatus 35-8-5-48; 93 Peromyscus maniculatus 36-8-5-48; Peromyscus maniculatus 37-8-5-48; 95 Microtus montanus 38-8-5-48; 96 microtus montanus 39-8-5-48; 97 Peromyscus maniculatus 40-8-5-48; 98-103 uneffected; 104 sprung; 105 Peromyscus maniculatus 41-8-5-48; 106 sprung; 107-108 sprung; 109 Peromyscus maniculatus 42-8-5-48; 110 uneffected; 111 microtus montanus 43-8-5-48; 112 Peromyscus maniculatus 44-8-5-48; 113-114 uneffected; 115 microtus longicaudus 45-8-5-48; 116 sprung; 117 uneffected; 118 Peromyscus maniculatus 47-8-5-48; 121 Peromyscus 48-8-5-48; 122 uneffected; 123 Peromyscus maniculatus 49-8-5-48; 124-125 uneffected; 126 microtus montanus 50-8-5-48; 127 Peromyscus

maniculatus 51-8-5-48. End of Line.

From the three research areas collected the following plants;
52-8-5-48 _____ from saturated waters of research area B-8-4-48 where Zapus princeps were taken along borders of running water. 53-8-5-48 from research area B-8-48 where greatest number of microtus montanus were taken. Soils damp and covered with mosses. 54-8-5-48 _____ _____ from research area C-8-4-48 where greatest number of Peromyscus maniculatus were taken. The microtus longicaudus was from this area of overhead protection of shrubs. The largest microtus montanus were from contact between grasses 52-8-5-48 and 53-8-5-48. It was also the zone where mustela ermnea was captured. Contact zones are extensively used. One mustela frenata in cliffs to east and some 300 feet from meadows. Photo 55-8-5-48 of the three research areas. Research A-8-4-48 to right of road, B-8-4-48 diagonally across meadow between higher grasses to left & shorter grasses to right. C-8-4-48 on east side of meadow at contact of shrub and meadows. After concluding topline inspection departed for Casper, Wyoming via highway 26, 87 and 20/87 locating at Yesnic Picnic Grounds some 21/2 miles S and 1 1/2 mi W Casper. The general area is to be investigated to determine the contact of a Great Plains mammal (microtus ochrogaster) with an isolated mountain range. The plains (grasslands) to east and north are flat and more xeric than the grasslands around wheatland of the S E part of the state of Wyoming. From Casper & river valley of North Platte, the plains increased in grade to the south until it joins the base of Casper Mountains. The vegetation is grasslands to base of mountain where it is replaced, according to slope, with ponderosa pine. Tongues of riparian growth from vegetation higher on the mountains follow down the stream courses in the eroded valleys of the confluent fans from the base of the mountains. A few ponderosa pine enter the flat plains but generally along edaphic slopes. Aspen enter grasslands on slopes only at mouth of steep canyons. This evening set 50 traps in research area A-8-5-48 at 2 1/2 mi. S and 1 1/2 mi. W Casper, 5250 ft., Natrona Co., Wyoming. These 50 traps were placed in an erosional gully that had developed elevated benches which in turn had grown sufficient grasses to offer plant communities for small mammals. These erosional

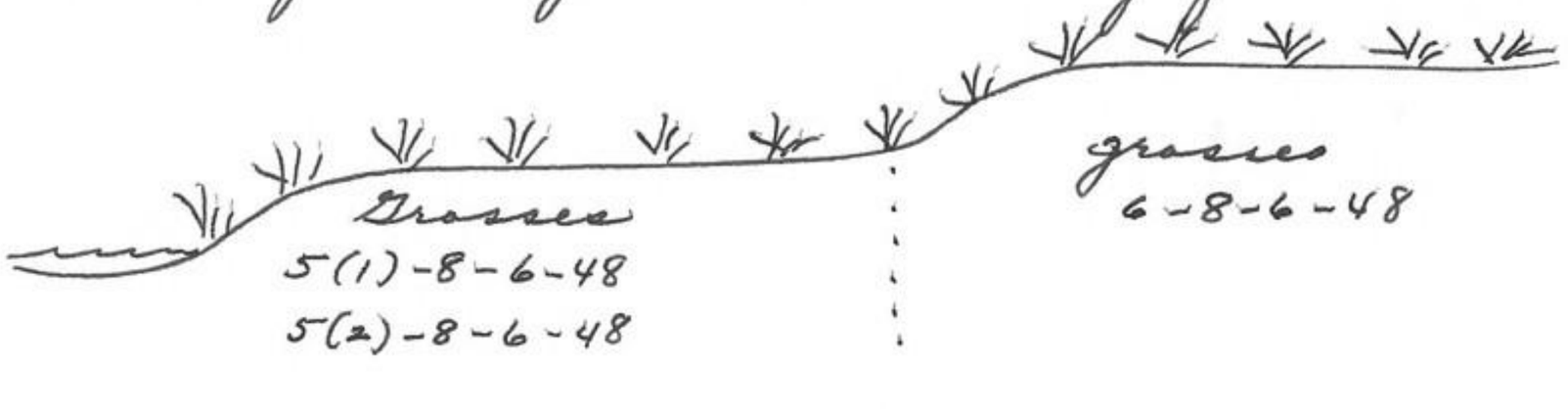
gullies are crowded with chokecherries and make it almost impossible to negotiate. The area chosen for trap line consisted of the lowest erosional bench some 1½ feet above the present



water level and at a height that occasionally received an inundation from the creek. The green matted grasses were differentiated in the contact between this bench level and the slope bordering the next higher level. Traps 1-12 in forest level and traps 13-50 on second level where more shrubs are found. Returned to camp.

4½ mi. S and 1½ mi. W Casper, 5250 ft; Natrona Co., Wyoming.
Aug 6, 1948

Results of trap line 4-8-5-48 as follows; 2 Microtus ochrogaster 1-8-6-48, 4 Microtus ochrogaster 2-8-6-48; 8 Microtus ochrogaster 3-8-6-48; 36 Peromyscus maniculatus 4-8-6-48. There were no spring traps except those that held mammals and these were from adjacent water along first erosional level.



Microtine runways through both areas. Further inspection did not reveil runways and Longnecut did not have success in same general area. Returned to base camp and in evening set 41 traps at 7 mi. S and 2 mi. W Casper in three series: Research area A-7-8-6-48 of 12 traps in an uncut segment of a grass field. Runways only in this 20×15 feet section. The remaining field kept cut too closely for runway development. Being isolated in the field, was not connected with gullies. This line is 300 feet from the actual hinge between the grasslands of the outwash plains and the ponderosa covered slopes of the mountain. The second research area B-8-6-48 in same general area but 300 ft

feet to west and slightly north (traps 13-41). This area is another isolated damp meadow on the sloping grassland plains and is marked by a 100'x50' growth of dense willows and a few aspen and shrubs. The outer limits of this willow patch was marked by damp sods and sedges. At the lower end of this area a linear growth of damp sedges and grasses extended 200 feet to the N & down slope which drained spring of main trapping area. Here again there is no contact with gullies. The third set C-8-6-48 in creek bottom in vegetation bordering creek. Stream deep set in gully & with little water. Aspen continuous with montane above. Shade condition not conducive to matted grasses for microtus. Collected a Petrophis near here. Returned to camp and collected one Lepus townsendi and one Sylvilagus.

4 1/2 mi. S and 1 1/2 mi. W Casper, 5250 ft., Natrona Co., Wyoming

Aug. 7, 1948

Inspected research area A-8-6-48 (positive record only): trap 7. microtus montanus 1-8-7-48; From research area B-8-6-48; 20 microtus montanus 2-8-7-48; 30 Reithrodontomys 3-8-7-48; 36 Peromyscus maniculatus 4-8-7-48; 41 end of line.

Longquist collected one microtus ochrogaster 300 feet south of here and about 30 feet higher in elevation. Photo. 4(1)-8-7-48 shows position of microtus ochrogaster and microtus montanus (research area A-8-7-48). The principle difference between the two areas is one of dampness and type of grass. For M. ochrogaster the soils were dry and grasses were dead and only retained in sufficient matted condition under the protection of the shrubs while montanus was in open meadow among sedges and grasses of damp soil. Runways developed in both communities. Photo 4(2)-4-7-48 of research area B-8-7-48 showing relative position of microtus montanus and M. ochrogaster. The upper location is Jims Catch and is separated by open grass meadows. The willows are the upper 1/2 of area. Note the contact between grasslands and ponderosa slopes of mountains. A few Populus tremuloides in favorable habitat for propogation and if dispersal is by roots I am wondering how they got there. Runways mainly in uncut grasses at edge of willow patches and mainly in damp situations.

From research area C-8-7-48 collected the following:

43 Zapus princeps 5-8-7-48; 44 Peromyscus maniculatus 6-8-7-48; 48 Zapus princeps 7-8-7-48; 50 Peromyscus maniculatus 8-8-7-48; 58 Sorex vagrans 9-8-7-48; Several traps were sprung. The shaded condition of the creek bottom  probably accounts for lack of runways. There is no reason why Microtus longicaudus should not be represented. At this point flushed 4 ~~Urophoscomys~~ Centrocercus urophasianus from brink of erosional gully 20 feet from water. Met Mr Johnson who is caretaker of property on which we were trapping. He informs me; One bobcat was killed at the home of Dr. Beech about 1 mile below our trapping area. One coyote was seen today 5 mi. S Casper on way to his Cabin. Takidea taxus on flats between here and Casper. One bear (black) noted approx. 6 mi. S Casper at home of Dr. Beech in 1946. Odocoileus hemionus common in hills and 60 observed at Dr Beeches residence last year in fall. No antelope in area. Few Ovcus canadensis in hills (Casper Mountains). Mt. Sheep in C.Y. Canyon 2 mi. W of Beeches home. Porcupine common in ponderosa pines. One weasel 3 days ago at Dr. Beeches residence. Few tree squirrels (Tamiasciurus). Birds in area are: Centrocercus urophasianus 3, Sandrogopus 3, Otocoris alpestris 200 in one flock, Calcoptes Cafer, Falco sparverius, Dumetella Carolinensis, Lanius, Pooecetes gramineus, Buteo jamaicensis, Accipter Cooperi. Returned to base camp. This evening returned to same general area as above and set several trap lines in places favorable for microtus ochrogaster. At 6 8/10 mi. S and 2 mi. W Casper 6100 ft set 5 traps in uncut grass feed in damp area of 10 x 8 feet. Runways present. This sit is research area A-8-7-48. At 6 9/10 mi. S and 2 mi W Casper, 6200 ft established research area B-8-7-48 (traps 6-48) in a gulch of Chokecherry, artemisia and grasses. No water but grass in good enough stand for Peromyscus. At 7 mi. S and 2 mi. W set traps 49-80 in same area as old research area B-8-6-48 but at lower end of damp area. Traps 49-62 associated with chokecherry, wild rose while traps 63-80 in grasses in open field below willow patch. Considerable runways in grass area and suggests M. ochrogaster area. Research area C-8-7-48 of traps 81-110 in immediate area where Longquest took the only M. ochrogaster taken here. Traps in runways and general sets. Returned to base camp at 4 1/2 mi. S & 1 1/2 mi. W Casper and set traps 111-135 (research area D-8-7-48) in gulch about

480807-139

14-8-8-48

480807-140

8h-8-8-51

3/10 miles west of camp. Shot one Lepus townsendi. This gulch is supported with grasses but periodic rain keeps soils hard & crusted. Artemisia on slopes in favorable places. Returned to base camp.

4 1/2 mi. S and 2 mi. W Casper, 5550 ft; Natrona Co., Wyoming

Aug. 8, 1948

Inspected research area A-8-7-48 as follows: Trap 3 Microtus montanus 1-8-8-48. From research area B-8-7-48; 28 Peromyscus maniculatus 2-8-8-48; 43 Peromyscus maniculatus 3-8-8-48. From research area B-8-6-48; 52 Peromyscus maniculatus 4-8-8-48; 54 Pero mania 5-8-8-48; 62 Pero mania 6-8-8-48; 70 microtus montanus 7-8-8-48; 76 Microtus longicaudus 8-8-8-48; From research area C-8-7-48 20 returns. The following grasses, however, from this research area:

11-8-8-48 _____.

12-8-8-48 _____.

These grasses were associated with small shrubs where runways were located.

This afternoon investigated higher elevations on Casper Mountain. Typical montane community near top of Mt. On return photographed the plains and mountain contact and change of grasslands to ponderosa pines w/photo 13-8-8-48. The flat country to the NW is typical of this section of Wyoming and extends to the Big Horn Range. Photo 14-8-8-48 to N with Pinus ponderosa in foreground as a frame of picture. The degree of slope and drainage seems to be the principle factor in the distribution of the ponderosa pine onto the plains. It invades the lowlands mainly in erosional areas where soils have been effected. Photo 15-8-8-48 gives areal aspect of area under consideration. Casper is in upper right of photo with North Platte River leading west. Fort Casper west of Casper. In lower right the ponderosa pine extends onto prairie along erosional slope that has not developed the grass vegetation. A chapparal community is placed between the prairie and the slope. Montane vegetation penetrates plains along edge of creeks but soon changes to other type of vegetation. Country to north is flat and suitable for Microtus ochrogaster but is quite dry & semi-desertlike with corresponding erosional features. The entire plains, especially along streams should support M. ochrogaster especially if there is overhead protection of tall grasses. Returned to camp

and from research area O-8-7-48 collected the following: trap 111 Perrmyscus maniculatus 9-8-8-48 and 135 Peromyscus Maniculatus 10-8-8-48.

This evening set 100 traps at 6 mi. S and 2 mi. W Casper 5900ft., Natrona Co., Wyoming in an abondoned field where artificial ponds (from springs) have created wet meadows beyond their drainage. While not being used is more or less a permanent community of grasses and sedges. Head of spring with willows, Chokecherry, artemisia and grasses. Cattle use area, especially among shrub growth where ground is trampled. Established research area A-8-8-48 along this damp stretch of sedges and grasses with 50 traps plaled 10 feet apart. 90% of traps in microtine runways. These runways in either wet or damp situations and only a few instances where they were outside of the damp situations.

Research area B-8-8-48 above spring among willows, Chokecherry. Spring immediately adjacent. Resting Cattle among shrubs have changed floor cover. At an abonloned home site on this property and 200' away from trapping area several marmots lived under building structures. Returned to base camp.

4 1/2 mi. S and 1 1/2 mi W Casper, Natrona Co., Wyoming

Aug. 9, 1964

Inspected trap lines at 6 mi. S and 2 mi W Casper, 5900 ft., Natrona Co., Wyoming. Research area A-8-8-48 as follows: 6 sprung; 10 microtus montanus 1-8-9-48; 14 sprung; 23 microtus montanus 2-8-9-48; 25 microtus ochrogaster 3-8-9-48; 28 sprung; 32 sprung; 42 microtus montanus 4-8-9-48. all other traps uneffected. James Lonnquist set series of traps parallel to the above set and collected a microtus montanus which was 8 feet from a microtus ochrogaster 3-8-9-48. Approx 18 feet away on my line was a microtus montanus and using the same set of runways. The relationship is as follows:

The following grasses were dominant where runways most common.

5(1)-8-9-48 _____.

5(2)-8-9-48 _____.

5(3)-8-9-48 _____.

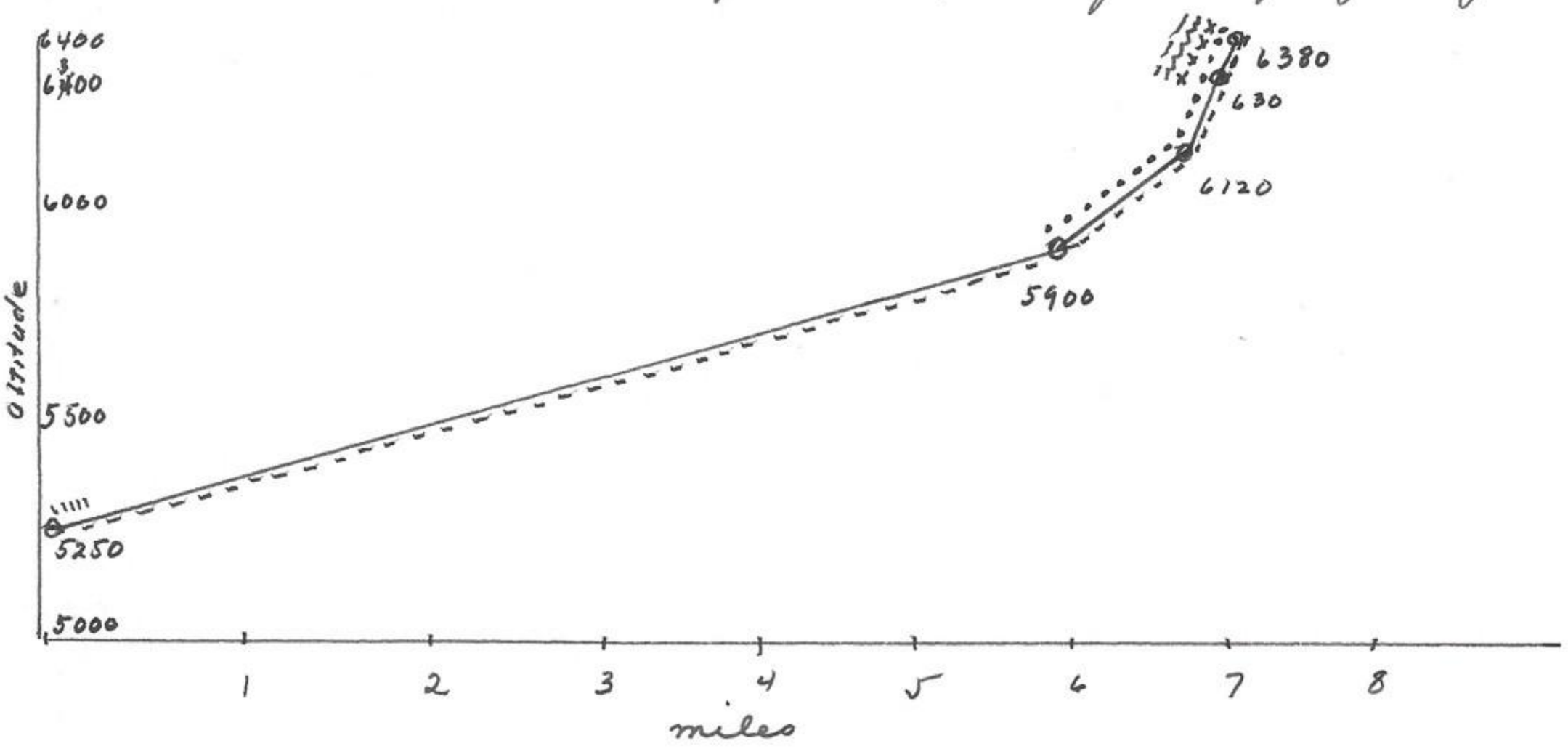
Grasses adjacent and on dry ground are:

6(1)-8-9-48 _____.

6(2)-8-9-48 _____.

The microtus ochrogaster was from runway bordering dry grasses. Photograph 7-8-9-48 of research area A-8-8-48 of damp meadows in foreground and spring in background. Diagram above in this photo. Grasses of dry area immediately right or left of damp grasses and sedges in swale.

Research area B-8-8-48 produced: 53 Eutamias minimus 10-8-9-48; 62 Peromyscus maniculatus 11-8-9-48; 65 Peromyscus maniculatus 12-8-9-48; Peromyscus maniculatus 13-8-9-48. The microtus montanus caught by Longhurst is given my number 14-8-9-48. B-8-8-48 an isolated damp meadow without connections with other damp meadows. Microtus montanus constructed to damp meadows while microtus ochrogaster is in drier situations. Their per cent frequency is less here than on the plains. Returned to camp and departed for Cody, Wyoming.



— = microtus ochrogaster

---- = Reithrodontomys

.... = microtus montanus

××× = " longicaudus

— — — = Zapus princeps

~~~ = Sorex

IIIII = Muratus pennsylvanicus
~~~

84-01-8-1

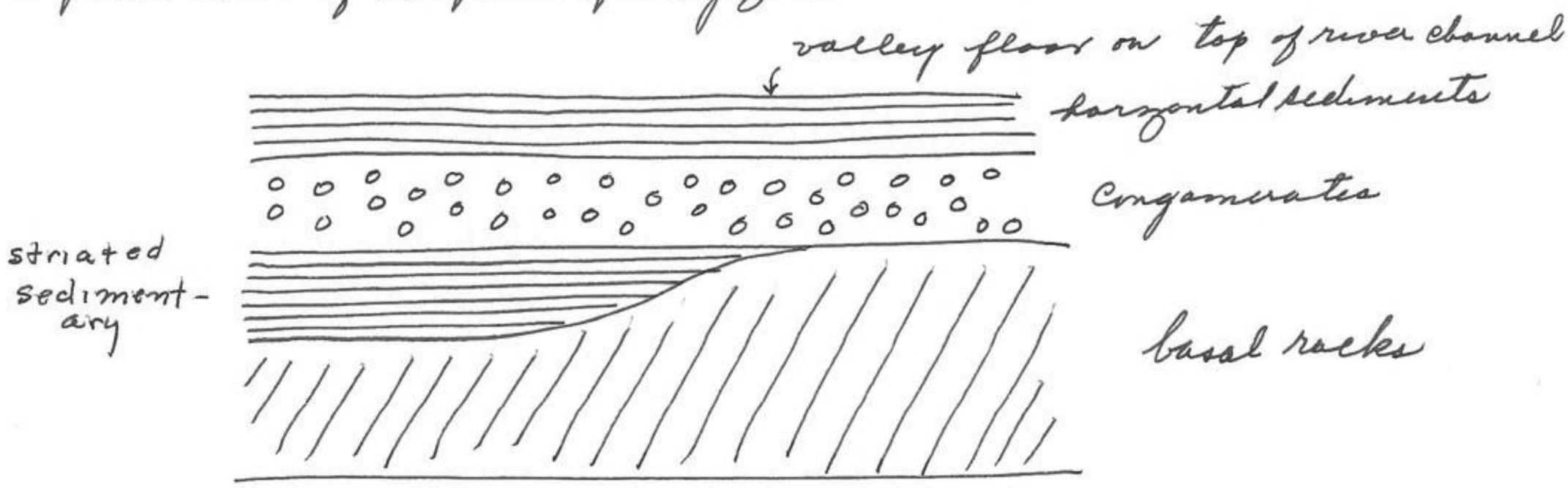
480809-144

Itinerary to Cody included highway 20 to Thermopolis, thence highway 120 to Cody. Between Casper and ~~Cody~~ Devils Kitchen observed 1 antelope and one prairie dog. At Devils Kitchen photographed 19-8-9-48 to west and south showing the erosional bands between this point and Wind River Range in the background. Such country is unsuitable to M. ochrogaster except perhaps along streams. This area is 6.000 and may be too high for M. ochrogaster. The Antelope here would suggest a grasslands area. Between Devils Kitchen and Kiland observed 2 antelope at 8 mi beyond Devils Kitchen 6100 ft and one dead one 2 miles beyond. From Highland to Shoshoni counted 31 antelope in groups of 1-2-3-6. and mainly along highway, increasing as we approached Shoshoni Photo 20-8-9-48 where Big Horn River bisects Owl Creek mountains. This east west range separates the two major geographical areas and it is thru this river cut canyon that land, valley forms could pass from one major valley to the other. The range is an anticline and the river is antecedent. The strata dip steeply to the S on the Shoshoni side of the range and to the N on the Thermopolis side of the range. Precambrian rocks in center of anticline. at 4 mi. E and S of Meeteetse, Wyoming observed a Tapaderas Tokes cross road at 1 hour before dark. Arrived Cody too late for setting traps.

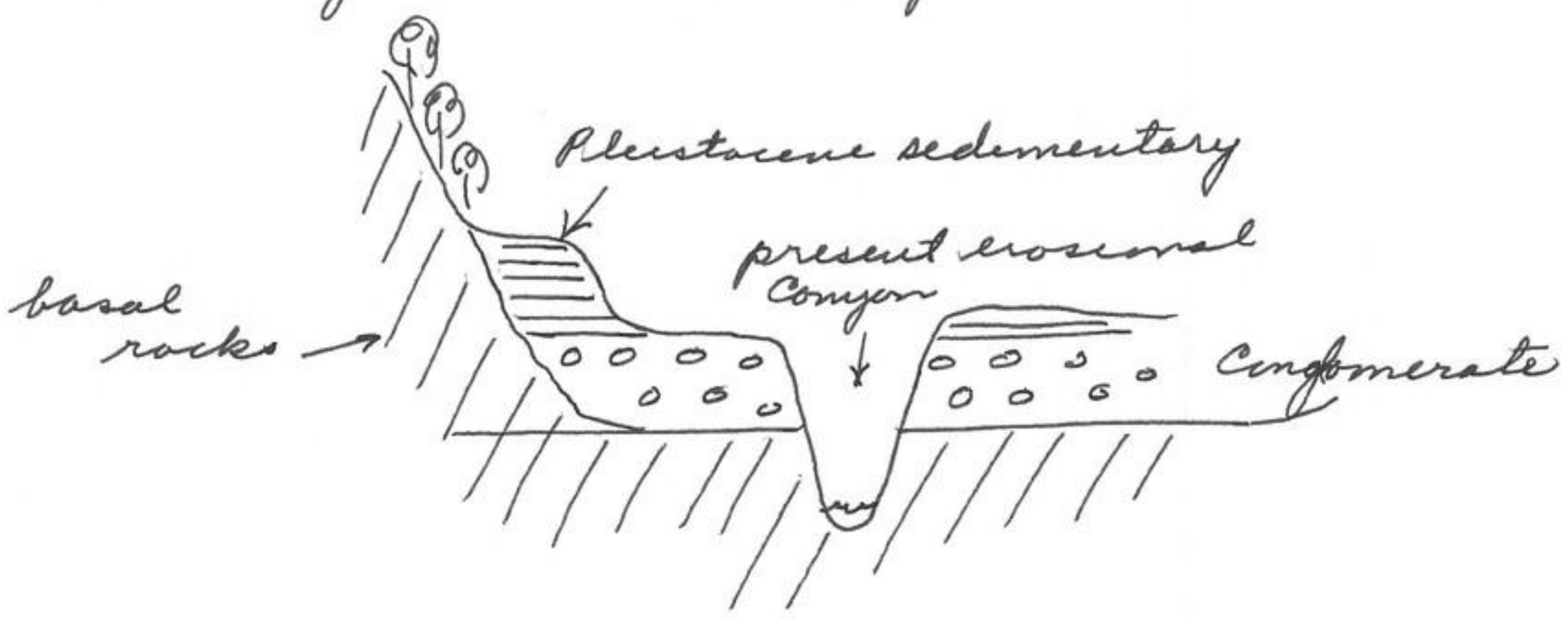
Cody, Park Co., Wyoming
Aug. 10, 1948

This morning established base camp at mouth of Shoshoni canyon. Photo 1-8-10-48 from ridge on S side of canyon shooting east at 6,000 ft. Trailer at base of mt below. Cody at upper right corner. The mouth of canyon did not prove satisfactory for Microtus communities and was not until I investigated area east of Cody that favorable communities were located. The river was deeply entrenched and did not form stable meadows. The erosional evidence of river indicated recent and accentuated development. One of the peculiarities of this river is an abrupt 90° angle turn to the south across the mouth of the canyon and thence another 90° turn to the east for a short distance and then north to a position where it continues east again. Sulphur mounds and springs cross the mouth of the canyon in a north-south line and represents a fault or pervious-impervious contact. The Pleistocene bench or delta formation - plus

post-Pleistocene erosion of river into basal strata is present on eroded sides of river channel. The following stratigraphic sequence is from a north-south wall of the eroded canyon at a point east of sulphur spring zone.

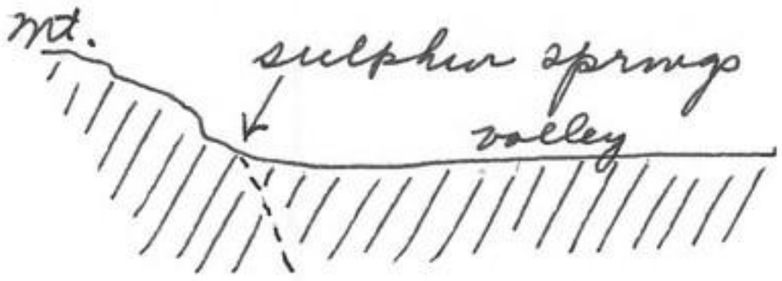


A second profile is on north side of canyon at a point where the main canyon enters the valley.



The conglomerate and sedimentary rocks carry up into the canyon for some distance and is remnant on some places on the sidehill. The lower striated sediments are probably second interglacial of cold-dry period while the conglomerate is 3 and 4 interglacials of hot-wet period. In the valley beyond the mouth of the canyon there is a periodicity or recession of erosional benches from the Miocene surface of the valley to the present level of the river. It appears as if there has been two great fluviatile & 4 glacial periods represented here. This area differs from the Wasatch in Utah in that the deep erosional canyons enter the valleys in basal strata which is a continuation of the mountains proper.

The sulphur springs and sulphur deposits may be interceptions of solutions by basal rocks as the



solutions move toward the valley or, more likely, the result of faulting.

This afternoon set 100 traps at 3 2/10 mi east and 6/10 mi S Cody, 5120 ft., Park Co., Wyoming. Photo 2-8-10-48 indicates the general area. The monocline on N side Shoshoni Canyon is shown in photograph. The source of water in these meadows is S & W of Shoshoni Canyon and continues for 10-15 miles. The meadows adjacent creek are dense cattails, bull rushes, sedges & grasses. Beyond are Chrysothamnus, artemisia, greasewood, Chetgrass etc. Upper left hand of photo shows grazing control of life form. Beyond these limits are cultivated fields. Meadows controlled by water courses. Traps 1-50 research area A-8-10-48 on dry soils among rabbit brush, artemisia, greasewood & Chet grass. No runways present. Traps 50-100 red. area B-8-10-48 in wet sedges & Grass Community where runways were numerous. after original setting returned to traps and found: trap 58 with a microtus pennsylvanicus 3-8-10-48; 82 microtus montanus 4-8-10-48. Returned to base camp at mouth of Shoshoni Canyon.

mouth Shoshoni Canyon, Park Co., Wyoming

aug 11, 1948

Last night rained slightly. Inspected research area A-8-10-48 at 3 2/10 mi. E and 6/10 mi. S Cody, 5120 ft., Park Co., Wyoming (positive record only). trap 2 Peromyscus maniculatus 1-8-11-48; 8 Reithrodontomys 2-8-11-48; 9 Reithrodontomys 3-8-11-48; 14 Melospiza melodia 4-8-11-48; 26 Peromyscus maniculatus 5-8-11-48; 53 microtus montanus 6-8-11-48; 54 microtus longicaudus 7-8-11-48; 58 microtus montanus 8-8-11-48; 68 microtus montanus 10-8-11-48; 72 microtus montanus 11-8-11-48; 74 microtus montanus 12-8-11-48; 76 microtus longicaudus 13-8-11-48; 82 microtus longicaudus 14-8-11-48; 88 microtus longicaudus 15-8-11-48; 92 microtus pennsylvanicus 16-8-11-48; 93 microtus pennsylvanicus 17-8-11-48; 96 microtus montanus 18-8-11-48; 97 microtus montanus 19-8-11-48; 99 microtus montanus 20-8-11-48. Reset traps in research area A-8-10-48 except in wet sedge-grasses in a parallel line 30 feet from yesterdays line. On return after set caught (1/2 hour ~~latest~~ before sundown). 21 microtus pennsylvanicus; 22 Microtus longicaudus; 23 Microtus montanus. This is a rather interesting situation where the only mammals captured were 3 different species in consecutive traps (each 20 feet from the other) in the linear line. Returned to base camp.

mouth Shoshoni Canyon, Park Co., Wyoming

Aug. 12, 1948

This A.M inspected traps in research area A-8-10-48 at 3 2/10 mi. E and 6/10 mi. S Cody, 5120 ft., Park Co., Wyoming: trap 2 Reithrodontomys 1-8-12-48; 4 Microtus montanus 2-8-12-48; 5 sprung; 7 sprung; 9 Microtus pennsylvanicus 3-8-12-48; 10 Microtus pennsylvanicus 4-8-12-48 from a trap in standing water in a runway in cattails; 12 sprung; 15 Peromyscus maniculatus 5-8-12-48; 17. Microtus pennsylvanicus 6-8-12-48; 19 Microtus pennsylvanicus 7-8-12-48; 20 sprung; 22 Microtus montanus 8-8-12-48; 26 Microtus pennsylvanicus 9-8-12-48; 27 sprung; 33 sprung; 34-35 sprung; 38 Microtus montanus 10-8-12-48; 40 Reithrodontomys 11-8-12-48; 41 Microtus pennsylvanicus 12-8-12-48; 42 Microtus montanus 13-8-12-48; 43 sprung; 44 Microtus montanus 14-8-12-48; 45 Microtus montanus 15-8-12-48; 46 sprung; 47 sprung; 48 Microtus montanus 16-8-12-48; 49 sprung; 51 Microtus pennsylvanicus 17-8-12-48; 53 sprung; 56 Microtus pennsylvanicus 18-8-12-48; 60 sprung; 62 sprung; 63 Microtus longicaudus 19-8-12-48; 64 Microtus montanus 20-8-12-48; 65 Microtus montanus 21-8-12-48; 66 Microtus montanus 22-8-12-48; 67 sprung; 68 sprung; 69 sprung; 73 sprung; 75 Reithrodontomys 23-8-12-48; 76 Microtus pennsylvanicus 24-8-12-48; 78 sprung; 79 Microtus 25-8-12-48; 81 sprung; 82 sprung; 84-85 sprung; 87 sprung; 88 Reithrodontomys 26-8-12-48; 89 sprung; 90 Microtus pennsylvanicus 27-8-12-48; 77 Reithrodontomys 29-8-12-48;

From the above collected the following glasses

40-8-12-48 _____ dominant + used by Microtus.

41 (1)-8-12-48 _____ " " " " Reithros.

41 (2)-8-12-48 _____ " " " " "

42 (1)-8-12-48 _____

42 (2)-8-12-48 _____

42 (3)-8-12-48 _____

The above three associated with dominant 40-8-12-48. as microtus community. In general M. pennsylvanicus and M. longicaudus inhabit wetter areas of cattails where cover is rank and high and under cover of grass lacking. M. montanus in matted grasses without high overhead protection. all three species from same runways, however. Returned to base camp at mouth of Shoshoni Canyon. at this point the Nucifraga columbiana feed on pinyon pine throughout the entire day. They feed in trees out as far as the grasslands (last trees before grasslands take over). The Cyanocephalus cyanocephalus

4808I2-149

2-8-13-48

are in continual coaction with the Clarke's Crow and will remain at about 2 feet distance until the crow extracts the seed from the pinyon cone at which moment it will fly at the Clark's crow and take the nut away from the crow. This act is much like the English Sparrow and the robin when the latter pulls a worm from the ground & the sparrow then contacts the robin or worm & pur pirates the food source.

This P.M set 100 traps 1 mi. N Cody in river bottoms at 4980 ft. Steep walls confine the river here. Cottonwoods, willows, grasses, artemisia, greasewood, rose dominate. This community an ephemeral one and controlled by water from river overflow. This set was to test river as contrasted to meadows beyond influence of river. This is research area 4-8-12-48. Castor canadensis had felled several cottonwood trees. Returned to base camp. Logically microtus ochrogaster should be here because the altitude is right and grasses & sedges compatible. The microtus montanus pressure may be too great. The area appears to be too low for M. montanus but they are the dominant animals. This problem of lack of M. ochrogaster & low distribution of a mountain form of M. montanus is most interesting.

<u>mouth Shoshoni</u> <u>Canyon, Park Co., Wyoming</u>
Aug 13, 1948

From research area 4-8-12-48 collected 5 Peromyscus maniculatus as was expected. It is doubtful if entrenched rivers are used as routes of migration for microtines, particularly where long stretches of river is without vegetation on either side. Returned to base camp and thence west to check head of Shoshoni river and Yellowstone National Park. Followed highway $\frac{14}{20}$ to Sylvan Pass, thence fishing bridge, thence Inspiration Point, thence return. The dike outcrop at upper limits of Shoshoni Canyon most outstanding geological feature. The extensive country east of Yellowstone Nat'l Park boundary is a good buffer area. While in Yellowstone took the following photographs: 1-8-13-48 From NE end Yellowstone Lake showing extent of alluvial fill since Pleistocene. Photo 2-8-13-48 from north end of Yellowstone Lake a few miles east of Fishing Bridge. Photo 3-8-13-48 Same area as above. Noted a mustela frenata here. Photo 4-8-13-48 between mud geysers and Canyon junction. A female Moose Alces americana and young are feeding at shoreline. The young, at one moment

acted as if it had been stung by a wasp and ran through the water shaking its head from side to side. Photo 5-8-13-48 of Lower falls of Yellowstone River. Photo 6-8-13-48 Yellowstone River just before it drops over upper edge of Lower Falls. Photo 7-8-13-48 Down canyon from Inspiration Point. Several osprey active here. Returned to mouth of Shoshone canyon at Cody and then departed for Buffalo, Wyoming. Camped north of Worland, Wyoming arriving 8:00 P.M.

Worland, Wyoming

Aug 14, 1948

Left Worland and continued to Buffalo. At 12 miles east of Worland on highway 16 observed one Cynomys along side of road. Stopped at Tensleep just long enough to determine suitability for microtus ochrogaster. Reparian vegetation about only suitable areas. This town has a very colorful setting among the flanking structures of the Mountain ranges. A overturn or step limb of an anticline is here. The lower limits of the canyon is deeply eroded in steeply dipping beds. The upper limits flatten and is influenced by former glaciation. The canyon floor at 6800 ft has successional benches with one part of canyon floor deeply intrenched thru resistant rock layers. Few marmots in a slide here. The upper platform of the Big Horn Range is uniformily developed both vegetationally and topographically. It needs a higher alpine topography in center of range to make it unique. Peaks are present farther to the north. The east side of the Big Horn Range is abrupt and drag blocks inevidence. The grasslands from the E end abruptly at the base of this range and only in exceptional cases break thru the basal barrier to the open meadows on favorable slopes of the lower range. As a result of this type of contact the river courses mountainward are deeply entrenched and without at-grade meadows until the upper plateforms of the montane zone is reached. Will determine the extent that Microtus ochrogaster enters these canyons (where most microtine activity is found, that is along river courses). Considerable grassland is on mountain slopes beyond canyons but they do not appear to support M. ochro. East of the range our plains and uplifted slopes, except along river courses, the plant community is too xeric and eroded for best community for M. ochrogaster. Continued on toward Buffalo.

Established base camp at 4½ mi. W and 1 mile S Buffalo, 5420 feet., Johnson Co., Wyoming.

This evening established research area A-8-14-48 of 100 traps at 1 mi. W and 8/10 mi. S Buffalo, 4800 ft., Johnson Co., Wyoming. This area is beyond influence of canyon and associated with lower valley of Clear Creek. It is marsh land of 4 acres or less and is fed by small springs at base of hillside. These springs are characterized by bottomless pits of mud. I accidently stepped onto one of these mud pits and could have lost my life if it had not been for a plank placed along its side. It would be interesting to excavate this mud pit for entrapped mammals and other vertebrates forms. Surrounding area of cattails and usual sedges and grasses. Beyond the confines of spring area below marsh the soils were dry and alkali. Artimisia between spring area and mountain. The background is one of bench-land with mountain range proper in the distance. Traps set every 10 feet in matted grasses. Soils damp to wet. This line of traps paralleled cattails. Returned to car and established base camp at 4½ mi. W & 1 mi. S Buffalo, along a clear creek and spring. Large igneous rocks line the creek bottom and they create a rather striking picture of white clear water, rapids and black background.

4½ mi. W and 1 mi. S Buffalo, 5420 ft., Johnson Co., Wyoming

Aug 15, 1948

From research area A-8-14-48 at 1 mi. W and 8/10 mi. S Buffalo, 4800 ft., Collected the following: trap 1 Reithrodontomys 1-8-15-48; 6 Reithrodontomys 2-8-15-48; 14 sprung; 25 Microtus pennsylvanicus 3-8-15-48; 26 sprung; 32 sprung; 35 Reithrodontomys 4-8-15-48; 37 Microtus pennsylvanicus 5-8-15-48; 43 Microtus pennsylvanicus 6-8-15-48; 50 sprung; 51 Microtus pennsylvanicus 7-8-15-48; 52 sprung; 53 Microtus pennsylvanicus; 54 Microtus pennsylvanicus 9-8-15-48; 55 Microtus pennsylvanicus 10-8-15-48; 56 Microtus pennsylvanicus 11-8-15-48; 64 sprung, trap placed in nest of Microtus?; 66 Microtus pennsylvanicus 12-8-15-48; 70 sprung; 81 sprung; 83 Microtus pennsylvanicus 13-8-15-48; 84 Microtus pennsylvanicus 14-8-15-48; 87 Microtus pennsylvanicus 15-8-15-48; 92 Sturnella 16-8-15-48. Returned to base Camp. This afternoon at 3:00 P.M. collected 4 Tamiasciurus from ponderosa pines on Canyon slope at 5½ mi. W and 1 mi. S Buffalo, 5600 ft. The first two were from same group of trees. The ♂ 17-8-15-48 was at nest and at that time the female called 100 feet beyond uphill.

24

this female 18-8-15-48 was collected. Two more were shot, nos 19-8-15-48 ♂ and 20-8-15-48 ♀ under similar association and both in ~~zheer~~ same general nesting area. My attention was attracted by continual warning chatter and when I arrived found a Bubo virginianus on limb 75 feet from squirrels at their nesting tree. They continued to call after owl had left, remaining in a conspicuous place at all times. The ♀ was shot while eating from a pine cone, the female continued to call even though I had fired the .410 shotgun. The Nucifraga columbiana, Cervus canadensis (dead one) and prairie chicken were in the pinderosa pines on the mountain slope. Cutaneia in creek valley proper. Returned to base camp and then went to 1 mi W and 8/10 mi. S Buffalo, 4800 ft and established research area A-8-15-48 in same general area as A-8-14-48 but in more dense vegetation bordering cattails and ~~around~~ in the vegetation around the springs. Set 124 traps.

41/2 mi. W and 1 mi. S Buffalo, 5420 ft., Johnson Co., Wyoming.
Aug 16, 1948

Shortly after daybreak checked research area A-8-15-48; trap 1 sprung; 6 microtes pennsylvanicus 1-8-16-48; 8 sprung; 11 sprung; 15 Microtes pennsylvanicus 2-8-16-48; 28 Sorex vagrans 3-8-16-48; 29 sprung; 30 sprung; 31 Reithrodontomys 4-8-16-48; 31 Reithrodontomys 4-8-16-48; 35 Microtes pennsylvanicus 5-8-16-48; 42 sprung; 45 microtes pennsylvanicus 6-8-16-48; 48 sprung; 55 Microtes pennsylvanicus 7-8-16-48; 57 sprung; 58 microtes penn 8-8-16-48; 59 Microtes penn 9-8-16-48; 64 microtes penn 10-8-16-48; 65 microtes penn 11-8-16-48; 66 microtes penn 12-8-16-48 67 sprung; 69 Microtes penn 13-8-16-48; 69 sprung; 70 Microtes penn. 14-8-16-48; 71-72 sprung; 77 Microtes penn 15-8-16-48; 78 microtes penn. 16-8-16-48; 82 sprung, 84 sprung; 90 sprung; 92 Microtes pennsylvanicus 17-8-16-48; 93 sprung; 94 Microtes pennsylvanicus 18-8-16-48; 95 Microtes pennsylvanicus 19-8-16-48; 111 sprung; 121 microtes pennsylvanicus 20-8-16-48. Returned to base camp.

In evening returned to research area A-8-15-48 ~~and~~ at 1 mi W and 8/10 mi. S, 4800 ft., Buffalo and set 41 traps in new research area A-8-16-48 in grassy gully leading NW from spring. A county road had been built across this gully and separated the gully from the marsh lands below. Traps 1-12 along the north side of the road fill and in meadow runways on approx 50° slope of road shoulders among grasses, rocks

weeds and general debris. This slope of the road grade produced a dry grass community adjacent to the wet grasslands of the creek bottom. Traps 13-41 in bottom of gully and bordering roadgrade. The swale grassy and only recently without running water. Runways in both grass and on roadgrade. Research area B-8-16-48 in marsh but different position than previous research area. Traps 42 to 90 and 10 feet apart. Returned to base camp.

4 1/2 mi. W and 1 mi. S Buffalo, 5420 ft., Johnson Co., Wyoming.
Aug 17, 1948

Inspected trapline at 1 mi. W and 5/10 mi. S Buffalo. From research A-8-16-48 as follows: trap 2 Peromyscus maniculatus 1-8-17-48; 5 Microtus pennsylvanicus 2-8-17-48; 6 sprung; 12 Microtus pennsylvanicus 3-8-17-48; 20 Microtus pennsylvanicus 4-8-17-48; 24 Microtus ochrogaster 5-8-17-48; 27 Microtus peansylvanicus 6-8-17-48; 28 sprung; 33 Zapus princeps 7-8-17-48; 41, end of trapline. From traps 33-41 in swale as follows: Microtus ochrogaster from high weed and grasses on road grade and using some runways as Microtus peansylvanicus. 8 black crickets eating bait on ochrogaster trapline. From cattail marsh of research area B-8-16-48 Collected the following: Trap 44 Microtus pennsylvanicus 8-8-16-48; 47 sprung; 58 Microtus pennsylvanicus 9-8-16-48; 63 Microtus pennsylvanicus 10-8-16-48; 69 sprung; 78 Microtus pennsylvanicus 11-8-16-48; 80 sprung; 82 Microtus pennsylvanicus 12-8-16-48; 90 sprung.

From this research area and as applies to all research areas in same marsh area collected the following grasses and sedges as dominants and used predominantly by Microtus pennsylvanicus, 13a 8-17-48 _____. The following as subdominants:

15(1)-8-17-48 _____.
15(2) 8-17-48 _____.
15(3) 8-17-48 _____.
15(4) 8-17-48 _____.
15(5) 8-17-48 _____.
15(6) 8-17-48 _____.
15(7) 8-17-48 _____.

From research area A-8-16-48 the dominant grasses were:

14(1) 8-17-48 _____
14(2) 8-17-48 _____
14(3)-8-17-48 _____

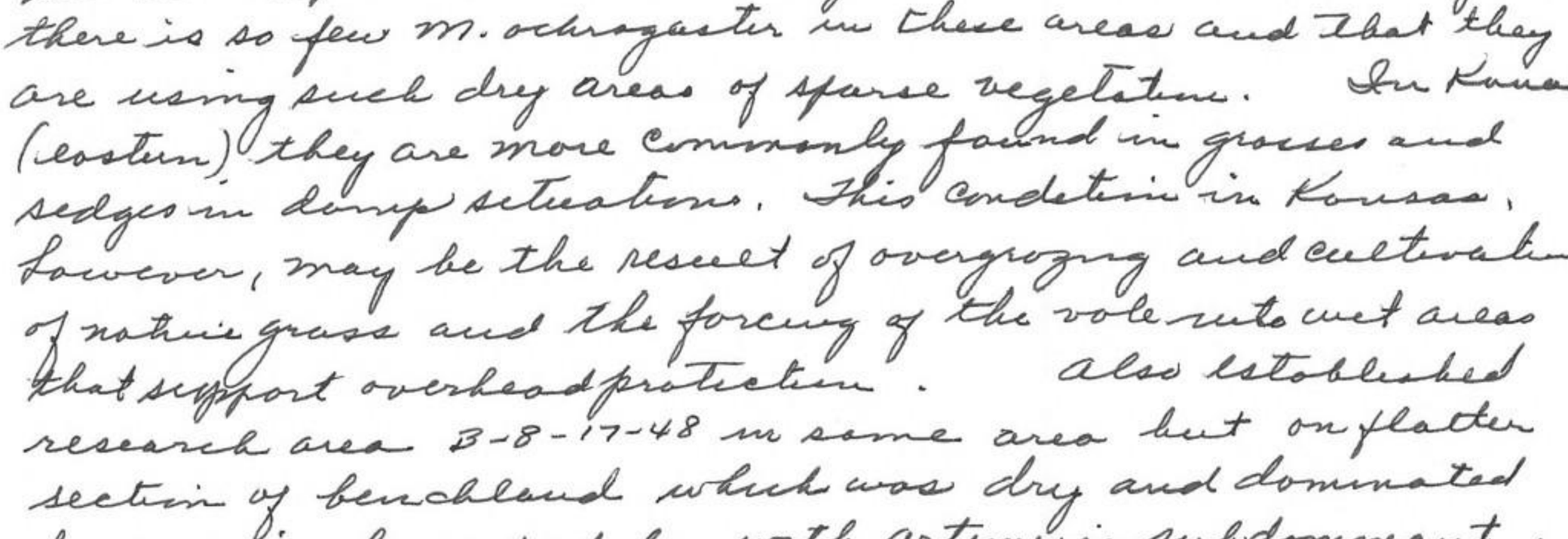
Microtus ochrogaster was associated with the above grasses

Grasses associated with microtus pennsylvanicus and immediately adjacent to microtus ochrogaster with some runways penetrating are:

16(1)-8-17-48 _____.

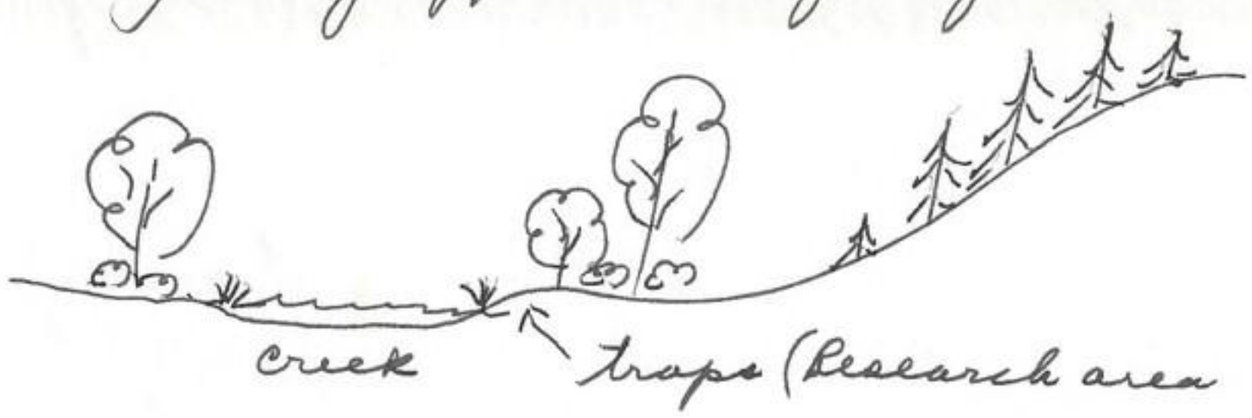
16(2)-8-17-48 _____.

Returned to base camp. In evening set traps at camp at 4 1/2 mi. W and 1 mi. S Buffalo, 5420 ft. Research area A-8-17-48 on microtus ochrogaster runways in a restricted area of 20 x 30 ft from the brink of the eroded benchland of gravel and poorly developed soils and vegetation.



area in successional stage of development and very xeric. Presence of microtus ochrogaster suggests new invasion into area and occupying the unused niche. microtus ~~pennsyl~~ longicaudus only other microtus in area and not in competition with ochrogaster. It is interesting that there is so few M. ochrogaster in these areas and that they are using such dry areas of sparse vegetation. In Kansas (eastern) they are more commonly found in grasses and sedges in damp situations. This condition in Kansas, however, may be the result of overgrazing and cultivation of native grass and the forcing of the vole into wet areas that support overhead protection. also established research area B-8-17-48 in same area but on flatter section of benchland which was dry and dominated by rose in large patches with artemisia subdominant. Chet grass, blue grass of coarse consistency. Traps 11-60 10 feet apart. From here went to 5 1/2 mi. W and 1 1/2 mi. S Buffalo, 5520 ft and established research area C-8-17-48. at edge of Creek in Canyon floor. Water level stabilized by artificial ponds. Sedges and grasses among riverside growth of cottonwoods, gooseberry, chokecherry, rose and willows. Castor Canadensis in ponds and cutting trees. All traps (58) placed on island of above types of

of vegetation. Side hill of ponderosa pine and short-grass and begenning approx. 50 feet from creek.



4 1/2 mi. W and 1 mi. S Buffalo; 5420 ft., Johnson Co., Wyoming
Aug 18, 1948

From research area B-8-17-48 collected 12 Peromyscus maniculatus and preserved the following:
1-8-18-48 largest; 2-8-18-48 average size of the 12 specimens; 3-8-18-48 smallest. No. 4-8-18-48 with exceptionally reddish color and irregular in color.

From research area A-8-17-48 collected; 5-8-18-48 Microtus ochrogaster; 6-8-18-48 Peromyscus maniculatus; 7-8-18-48 Peromyscus maniculatus.

Lonquist set 10 traps in this same area of 20×30 feet and caught 1 Microtus ochrogaster and 1 Peromyscus, all mammals from runways

From research area C-8-18-48 collected: Trap 1 Peromyscus (tail only); 3 Microtus pennsylvanicus 11-8-18-48; 7 spring; 10 spring; 15 Microtus longicaudus 12-8-18-48; 17 Sorex cinereus 13-8-18-48; 25 Peromyscus maniculatus 14-8-18-48; 27 Zapus princeps 15-8-18-48; 42 Zapus princeps 16-8-18-48; 43 Peromyscus maniculatus 17-8-18-48; 49 Microtus longicaudus 18-8-18-48; 50 Microtus longicaudus 19-8-18-48; From the above trap line collected the following grasses.

20 8-18-48 _____. as dominant from traps 1-23.

21-8-18-48 _____. dominant from 24-58.

The following associated and subdominant.

22(1)-8-18-48 _____

22(2)-8-18-48 _____

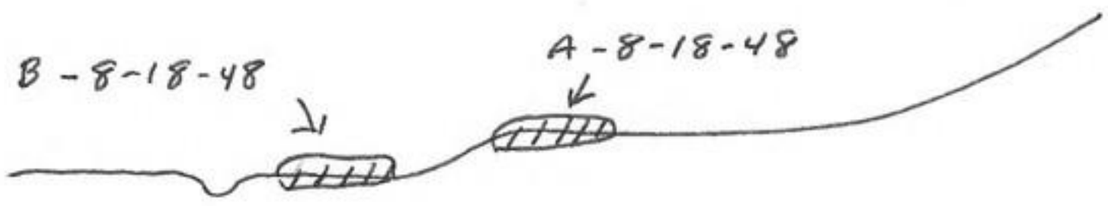
22(3)-8-18-48 _____

From 6 1/2 mi. W and 1 mi. S Buffalo, 5600 ft, collected the following from hillside in ponderosa pine.

30-8-18-48 Tamias cinereus
31-8-18-48 "
32-8-18-48 "
33-8-18-48 "

under the tree used as nesting tree the ground was covered with the terminal branches of the ponderasa pine (approx± 8" long) and as there was no evidence of the branches having been chewed assumed that they had been broken as a result of the squirrels climbing about the trees for cones. Each area inhabited by squirrels had 2 tree nests, one of which was alder. One dead prairie chicken here. Also one Erethrzon epipanthus dead by one of the nesting trees. There where approx 5 Tamiasciurus per 2½ hours at usual hillside gait of walking. Nucifraga Columbiana in area but did not recognize pinyon trees.

This afternoon went to 6½ mi. W and 1 mi. S Buffalo, 5620 ft to establish several research areas. Photo 34-8-18-48 of general area This canyon turns at right angles to the south at this point as determined by geological structure. All strata dipping sharply to the east. Ponderosa ponderosa dominant on south exposures and fir, spruce and aspen further up canyon. The montane in canyon floor. most of trapping on erosional benchland of grasses and on old creek channel in the canyon floor proper.



Established research area A-8-18-48 on benchland of grasses and adjoining present creek valley. Grasses mainly Chet grasses. Runways blend into shrubs of rose, Chokecherry, gooseberry and on partly exposed rocks - much like the area at 4½ mi. W and 1 mi. S Buffalo. In the above area (A-8-18-48) Microtus ochrogaster extended from the benchlands up slopes of Canyon walls. The trails were always associated with canyon floor communities and decreased with distance from the canyon floor. In river valley the runways were only in isolated areas of favorable grass communities. Trails almost continually or partially exposed to view from above. Traps 1-18 in this plot. Research area B-8-18-48 of traps 19-58 and in creek bottom adjoining benchland. It is a creek channel now disconnected. Supports good growth of short rose, gooseberry, Chokecherry and tall grasses. Maple bordering. Would estimate this area as supporting M. ochrogaster. One spurred towhee and a bluerace from here. Research area C-8-18-48 beyond bend in canyon and at the junction between transition and

montane along creek. The elevation here is 5720 feet and 300 yards beyond last set but will include as some locality. The grasses are dense and matted and trails hidden except when grass was separated. Runways seemed smaller than M. ochrogaster and in denser grasses than usually inhabited by M. ochrogaster. Traps 59-76 in runways. Research area D-8-18-48 on south side of creek in grasses at edge of aspen and 150 feet uphill from creek and water. Traps 77-86 here. Returned to base camp.

4½ mi. W and 1 mi. S Buffalo, 5420 ft., Johnson Co., Wyoming

Aug 19, 1948

This A.M inspected traplines at 6½ mi. W and 2 mi. S Buffalo, 5620 ft., Johnson Co., Wyoming. From research area A-8-18-48; trap 5 Microtus ochrogaster 1-8-19-48; 6 Peromyscus maniculatus 2-8-19-48 in same runway used by Microtus ochrogaster; 15 Peromyscus maniculatus 3-8-19-48 ibid; 18 Peromyscus maniculatus 4-8-19-48. From research area B-8-18-48; trap 21 Zapus princeps 5-8-19-48; 33 Peromyscus maniculatus 6-8-19-48; 38 Peromyscus maniculatus 8-8-19-48; ~~50~~ 47 Zapus princeps 8-8-19-48; 50 Zapus princeps 9-8-19-48. From research area C-8-18-48; 61 Peromyscus maniculatus 10-8-19-48. This area supported good runways and looked as if M. ochrogaster may have inhabited this area at one time and then retracted its range. From research area D-8-18-48 a single Peromyscus maniculatus from trap 79. Dominant grasses from area A-8-18-48 are;

13(1)-8-19-48 _____.

13(2)-8-19-48 _____.

From along creek among cottonwoods and spruce and aspen (research area C-8-18-48) collected two Tamiasciurus. A female 14-8-19-48 from area 50 flit from C-8-18-48. Returned to base camp. A rancher from Kaycee, Wyoming told me that there were 300 antelope on his ranch at Kaycee! Before 1931 they were rare. They came from the south and east. Antelope are rare from Buffalo to Sheridan. Antelope feed ~~in the~~ with cattle ~~in~~ on open fields while deer used cultivated fields and canyon bottoms. When antelope are with cattle in cultivated fields they feed on weeds. There is no vegetational change accompanying introduction of antelope to Kaycee. All canyons have abrupt entrance to Big Horn Range

This evening established research area A-8-19-48 at

480819-159

84-61-8-51

480819-160

7 1/2 mi. W and 1 mi. S Buffalo, 6500 ft. This area is on high flat glacial plateform of Big Horn Range and is in more direct contact or association with the montane communities. It is questionable whether Microtus ochrogaster is in this area. Photo 15-8-19-48 indicates nature of the topography and plant communities. Opens between timber support grasses but heavily grazed. Traps 1-105 in ~~gl~~ grasses & sedges in damp to wet swale along running water from springs. Open field-like and typical of Microtus montanus. All areas in Wyoming seem to be heavily grazed and this area is no exception. Returned to base camp. At 5 1/2 mi. W and 1 1/2 mi. S Buffalo collected one porcupine.

4 1/2 mi. W and 1 mi. S Buffalo, 5420 ft., Johnson Co., Wyoming

Aug. 20, 1948

This am. inspected research area A-8-1948 at 7 1/2 mi. W and 1 mi. S Buffalo, 6500 ft as follows: Trap 1 Peromyscus maniculatus 1-8-20-48; 34 Microtus montanus 2-8-20-48; 53 Peromyscus maniculatus 3-8-20-48; The dominant grass is: 7-8-20-48 _____. and from damp to wet soils along spring. It is surprising to find so few mammals here but probably due to excessive trampling. On return to camp collected 2 Eutamias minimus at 5 1/2 mi W and 1 1/2 mi. S Buffalo. nos 5-8-20-48 and 6-8-20-48 from rocks along edge of road. These chipmunks were heavily infected by bot flies. Photo 9-8-19-48 shows 4 bot flies on venter. Chipmunks heavily infected can be told in the field by the way they run and by the reduced efficiency of movement. Deer are also infested by a similar bot fly. Chipmunks of the above species are mainly in canyon floor proper. Many marmots and chipmunks in boulders used for road construction. From base camp drove 1 mi. E Buffalo and collected one lark bunting from a flock of 25. No rabbits after walking 45 minutes among artemisia. One dead rabbit in road 1/2 mi. E Buffalo. Returned to base camp. A mr. a. a. Stanley (approx 70 years of age) reports the following. (mr Stanley is camped at 4 1/2 mi. W and 1 mi. S Buffalo and remains here during hot part of summer for comfort and for fishing recreation): "In 1884 grasses in valley below were so high that one could not see deer. Blue stem and gramma grasses dormant during that time. Chet-grass invaded in

480820-161

9-8-20-48

the last 7 or 8 years. Blue stem used as food by cattle in early days. no noticeable change in vegetation in last few years. The mountain sheep ranged from field around Buffalo the year around to the highest peak of the Big Horn Range and at that time were more common than deer. At that time the mountain sheep were hunted for food, the domestic sheep drove them back into the mountains and then when the cattle arrived, drove them (the mt sheep) back into the higher country where they remained. During winter they (the Mt. sheep) died by the hundreds because they were forced to remain at the higher elevations. Near Buffalo in the foothills, he counted approx. 500 Mt. sheep skulls in a canyon where deep snow killed them. The sheep would paw the ground and keep the area open for food of grasses and plants. Buffalo common at Buffalo City in 1884 but last one (a cow) placed in City Park before entire herd was eliminated. The buffalo ranged mainly in parkland at base of mountains (see photo 15-8-19-48). Elk always ranged higher than Buffalo and remained there until driven down to lowlands by deep snows of heavy snow storms where they would remain for about 2 days before returning to higher country again. Antelope were never too common but always a few east of Buffalo City. Brown bear common in early days. At 5 1/2 mi. W and 1 1/2 mi S Buffalo 2 brown bears were noted in canyon bottom 3 years ago. At that same spot he observed (in fall) 75 elk come down from mountains to the south and drink from the creek. Tamiasciurus more numerous this year than last year. Sagebrush has always been here but has not been noticed because grasses cover it up.

Collected a grass 8-8-20-48 _____ from 4 1/2 mi. W and 1 mi. S Buffalo. which according to Mr. Stanley, was the dominant plant in early days and was found more commonly on slopes. It was from 2 to 3 feet high in early days. A Eutamias minimus was collected. It had Chokecherries in its mouth.

This afternoon climbed to top of mountain slope to south of base camp and recorded 2 photos of the slopes of grassland (Great Plains) and the contact of the range to the west (Big Horn Range). These two photos in panoramic view 9-8-20-48 and 10-8-20-48 show this interesting contact zone. There is an

abrupt change of grasses at the base of the mt. Range and the pine (Pinus ponderosa) covered slopes of the mountain. Pines penetrate the grasslands only in favorable edaphic communities in and along canyons or erosional gullies and then only on the north exposures and that had continuous contact with the main pine community of the mountain slopes. Such a contact would serve as a good place for an ecological study. With binoculars could not see either deer or elk beyond pines at the base of the range. The grasses on these slopes at my position where picture was taken, are in good stands even though many cattle grazed in the area. From here travelled east along crest of this mountain at at approx. 4 1/2 mi. W and 2 mi. S Buffalo, took photo 11-8-20-48 of the Buffalo (city) area and Great Plains to the east. Clear Creek Canyon below shows Pleistocene benchland and other erosional formations. The distant Great Plains appear to be dissected more than they actually are. As one travels N or S from here the Great Plains become more typically flat. This factor of greater relief of the plains at this area may account for the apparent absence of Antelope in this area.

This evening drove down to Klondike and established a transect up Crazy Women Canyon, starting at Buffalo Post Office at mileage 39.5 recorded rabbits and sagehens killed on highway: 39.5 Buffalo City; 41.6 3 rabbits; 45.3 1 rabbit; 46.2 2 rabbits; 46.7 1 rabbit; 47.6 1 sagehen (Centrocercus urophasianus); 48.3 2 rabbits; 49.7 2 rabbits; 50.2 2 rabbits; 54.1 1 rabbit; 54.6 2 rabbits; 56.3 1 rabbit; 58.2 1 rabbit; 58.7 1 rabbit; 59.2 1 rabbit. The rabbits were either white-tailed jackrabbits or cottontails. Up to now I had not seen rabbits at base camp but on flatter section of country (open and exposed) found them not to uncommon. Six other sagehens observed enroute (live ones in field) enroute to Klondike.

Established the following research areas on the Crazy Women transect as follows: Research area A-8-20-48, 20 traps at 1/4 mi. E Klondike, 5160 ft., Johnson Co., Wyoming. Traps every 10 feet in wet field of sedges and grasses. Area influenced by erosional levels of Pleistocene activity and some 2 mi. E of influence of mountain range. all traps on an obscure and abondoned irrigation ditch running

thru a cultivated meadow.

Research area B-8-20-48 at 1½ mi. W Klondike or at the mouth of the canyon proper of Crazy Women Canyon, 5,750 ft., Johnson Co., Wyoming. Traps 21-30 along creek with high solid rock slopes on both sides of the canyon. Kinnikinick, willow, cottonwood, rose, nine bark, grasses main vegetation.

Research area C-8-20-48 at 2 mi. W Klondike, 5980 ft., Johnson Co., Wyoming. Traps 31-39 at edge of Creek. Kinnikinick, willow, cottonwood, aspen associated along creek. Hillside like environs of Buffalo with ponderosa pines.

Research D-8-20-48 at 3 mi. W Klondike, 6280 ft., Johnson Co., Wyoming and similar to above but more montane. Traps 40 to 60.

Research area E-8-20-48 at 4 mi W and 1 mi. S Klondike, 6500 ft., Johnson Co., Wyoming. Traps 70-90 and placed along Creek. Lodgepole pine dominant, maple, aspen, willow and kinnikinnick associated. This canyon is restricting meadow formation. Returned to base camp. Collected two white-tailed jackrabbits at mouth of canyon. Also noted 2 prairie chickens here.

4½ mi. W and 1 mi. S Buffalo, 5420 ft., Johnson Co., Wyoming.
Aug. 21, 1948

Checked traplines at Crazy Women Canyon as follows:
Research area A-8-20-48: trap 3 Microtus pennsylvanicus 1-8-21-48; 10 microtus ochrogaster 2-8-21-48. The following grasses as dominant and used by mammals.
3(1)-8-21-48 _____. Associated grasses 3(2)-8-21-48 _____. 3(3)-8-21-48 _____.
Foxtail grass associated but not used by either microtus ochrogaster or microtus pennsylvanicus. These two mammals (above) taken 70 feet apart and in some floor of an irregation ditch that ran thru the field. Grasses growing throughout ditch area.

From research area B-8-20-48 as follows: 20 Peromyscus maniculatus 5-8-21-48; 27 Peromyscus maniculatus 6-8-21-48; 30 Peromyscus maniculatus 7-8-21-48.

From research area C-8-20-48: 31 Peromyscus maniculatus 8-8-21-48; 32 Peromyscus maniculatus 9-8-21-48; 33 Peromyscus maniculatus 10-8-21-48; 35 microtus longicaudus 11-8-21-48; 36 Peromyscus maniculatus 12-8-21-48; 37 Peromyscus maniculatus 13-8-21-48;

From research area D-8-20-48: 43 Peromyscus maniculatus 14-8-21-48; 48 sprung; 52 sprung.

From research area E-8-20-48 as follows: 71 Peromyscus maniculatus 5-8-21-48; 74 Peromyscus maniculatus 16-8-21-48; 76 Peromyscus maniculatus 17-8-21-48; 82 Peromyscus maniculatus 18-8-21-48; 85 Peromyscus maniculatus 19-8-21-48. Longuest caught one Cleithrionomys at this station. It is interesting to note that Peromyscus is common along creek but no microtus Returned to base Comp at Buffalo.

This evening established two trap lines at 6½ mi. W and 1 mi. S Buffalo, 5620 ft., Johnson Co., Wyoming. The first set in old research area A-8-18-48 and traps placed in runways (80 traps). Research area B-8-21-48 across creek from this above site and along spring course. The spring originated 120 feet up steep sidehill and flowed down slope in a supersaturated soil and among rocks covered with mosses. maples, aspen dominant trees with willow patches lining the creek. This trapline completely protected by trees. Traps 81-120 at 10 feet intervals along creek. Returned to base Camp.

4½ mi. W and 1 mi. S Buffalo, 5420 ft., Johnson Co., Wyoming

Aug 22, 1948

Examined traps in research area A-8-18-48 at 6½ mi. W and 1 mi. S Buffalo, as follows: Trap 17 Microtus ochrogaster 1-8-22-48; 18 Peromyscus maniculatus 2-8-22-48 in same runway system as used by microtus ochrogaster and 10 feet away; 24 Perognathus 3-8-22-48 and only 10 feet away from Microtus ochrogaster taken 8-19-48 on first inspection of trap line; 25 Peromyscus maniculatus 4-8-22-48 and 10 feet from Perognathus.

From research area B-8-21-48 on sidehill (Routine record only). No 5-8-22-48 Sorex; 6-8-22-48 Sorex (foot only); 7-8-22-48 Zapus princeps; 8-8-22-48 Cleithrionomys; 9-8-22-48 Peromyscus maniculatus. The Sorex and Cleithrionomys were 10 feet apart. Returned to base camp.

From side hill at 4½ mi. W and 1 mi. S Buffalo, 5440 ft; Johnson Co., Wyoming collected a Erethizon epixanthum measuring 804 total length, 191 tail, 104 hind foot, 41 ear, 29 lbs (measurements in mm). This animal was in a maple tree in a gulch surrounded by pine (Pinus ponderosa)

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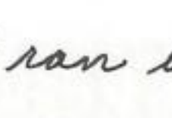
It ran under a rock  where its tail and lower back remained exposed. It was with considerable effort that this mammal was extracted from the rocks. This place had been used extensively by this porcupine. also collected a Tamiasciurus 12-8-22-48 at a tree 50 feet from the tree used by the porcupine. Another squirrel, Tamiasciurus 13-8-22-48 from 400 feet away. The best way to capture Tamiasciurus is to find tree where squirrels are active and then throw rocks into nesting area. If they are in area they will react by calling.

This evening set traps at 6½ mi. W and 2 mi. S Buffalo, 5620 ft., Johnson Co., Wyoming. Research area A-8-22-48 at head of canyon and on benchland in canyon floor. 80 traps set in grasses suitable for Microtus ochrogaster: It would appear that ochrogaster had previously used this field but had moved on to other sections of the field. Examined other localities between here and Buffalo with some signs of runways but not presently being used. This could represent a seasonal use of area or cyclic use of area, now with range restricted to more favorable localities. Established research area B-8-22-48 in gulch on west side of canyon just beyond research area A-8-22-48. In fact the alluvial deposit which formed the canyon floor was from this canyon. The gully was connected with aspen above and was choked with trees, gooseberry, aspen, kinnikinnik and moss covered rocks and soils. The gooseberry was so thick that navigation was almost impossible. Traps along running water from nos 81-120 and approx. 10 feet apart. One deer Odocoileus lemionus left canyon. Also 2 Erethizon epixanthus along creek. Returned to base camp and enroute observed 2 turkey vultures and one Aquila chrysaetos canadensis.

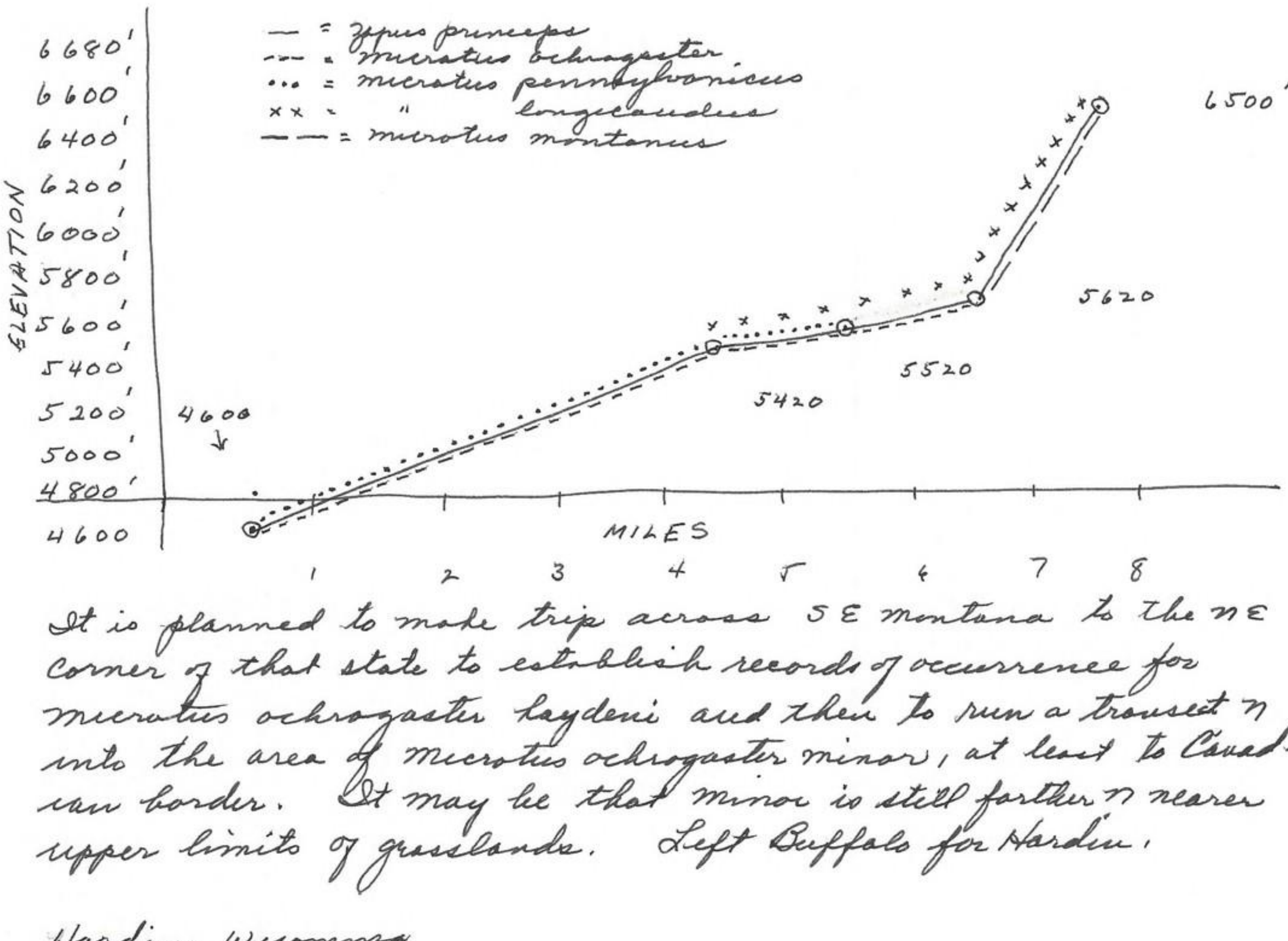
4½ mi. W and 1 mi. S Buffalo, Johnson Co., Wyoming.
Aug 23, 1948

After breakfast drove up to 6½ mi. W + 2 mi. S Buffalo., Johnson Co., Wyoming and inspected trap lines set last night.

From research area A-8-22-48. Collected: Trap 8 Thomomys 1-8-23-48 from a runway and at least microtine

40 feet from gopher diggings; 15 Reithrodontomys 2-8-23-48; 28 Perognathus 3-8-23-48; 67 Peromyscus maniculatus 4-8-23-48.

From research area B-8-22-48: 86 Microtus longicaudus; 94 Peromyscus maniculatus 6-8-23-48; 105 Peromyscus maniculatus 8-8-23-48. Returned to base camp. From the mammals collected at Buffalo and surrounding area constructed a distribution graph according to elevation as follows:



It is planned to make trip across SE Montana to the NE corner of that state to establish records of occurrence for Microtus ochrogaster kayeni and then to run a transect N into the area of Microtus ochrogaster minor, at least to Canadian border. It may be that minor is still farther N nearer upper limits of grasslands. Left Buffalo for Hardin.

Hardin, Wyoming

Aug 24, 1948

Camp N of Hardin at 2940 ft. Set trapline along irrigation ditch. ^ last night Ponderosa pine and Artemisia in fields. Checked lines this A.M as follows: Trap 6 Microtus 1-8-24-48; trap 7 Microtus 2-8-24-48; trap 8 Microtus 3-8-24-48, testes 13 mm; 10 Reithrodontomys 4-8-24-48 in Microtus runway; trap 11 Microtus 2×1 emb 26 mm crown-rump length, 5-8-24-48; 15 Microtus 6-8-24-48, 1×0 emb at 28 mm; 17 Microtus 7-8-24-48, 3×0 emb 16 mm; 25 sprung; 29 Microtus 8-8-24-48; 30 Microtus 9-8-24-48, testes 8 mm; 32 sprung. no 10-8-24-48 dominant grass. Second set as above but traps not in runways: trap 33 Microtus 11-8-24-48, testes 14 mm; 37 Reithro

480824-168

dentomys 12-8-24-48; 43 Peromyscus 13-8-24-48; 60 Peromyscus 14-8-24-48; 65 end of line. Continued n to Raymond, Montana.

7 mi. n Raymond, 2340 ft., Sheridan Co., Montana
Aug 24, 1948

Set 30 traps in prairie in runways which were microtine in character. Also 40 traps at 3 mi. S Medicine Lake City, 1880 ft., Sheridan Co. Montana. 2 mi. E + 5 mi. S Culbertson 1860 ft., Richland Co., Montana E of Culbertson 1880, Richland Co Montana. Aug 25, 1948

Collected mammals from trapline: Trap 6 microtus 1-8-25-48; 15 microtus 2-8-25-48; 16 microtus 3-8-25-48; 24 microtus 4-8-25-48; 28 microtus 5-8-25-48. The second set from 3 mi. S Medicine Lake City as follows: trap 41 microtus 6-8-25-48; 48 microtus 7-8-25-48; 49 Microtus 8-8-25-48; ~~The third set at E Culbertson~~ 50 Peromyscus 9-8-25-48; 54 Peromyscus 10-8-25-48; 56 microtus 11-8-25-48; 57 Peromyscus 12-8-25-48; 60 microtus 13-8-25-48; 61 microtus 14-8-25-48; 65 microtus 15-8-25-48; 68 Perognathus 16-8-25-48; 17-8-25-48 the dominant grass, 18-8-25-48 sub dominate grass. Traps 70-80 from E of Culbertson 1880 ft., Sheridan Co., Montana as follows; 72 Peromyscus 19-8-25-48; 75 Peromyscus 20-8-25-48; 78 Peromyscus 21-8-25-48. at 2 mi. E + 5 mi. S Culbertson, 1860 ft., Richland Co., Montana collected the following (this area on S side of River): 92 microtus 22-8-25-48; 95 ~~Peromyscus~~ microtus 23-8-25-48; 97 Peromyscus 24-8-25-48; dominant grass 25(1)-8-25-48 and equal dominant 25(2)-8-25-48. The microtines were microtus ochrogaster. Longquist took 4 and are my numbers 25-26-27-and 28. Left area and travelled West. at 6 mi. E Zurich collected a mustela frenata, 2200 ft elev. in road. This area is swampy grown to bullrushes + cattails in wet meadows. Surrounding area grassland + some Cottonwood trees. Numerous red-wing blackbirds in area as well as yellowheaded blackbirds. Camp west of Malta and set traps

1 mi. W + 1 mi. N Malta, 2248 ft., Phillips Co., Montana
Aug 26, 1948

Caught 55 animals (see Catalogue. Dominant grass no 60(1)-8-26-48 and 60(2)-8-26-48. Left area and Continued to Cutbank, Montana. and set traps along edge of river slope.

1 mi. W Cutbank, 3650 ft., Glacier Co., Montana
Aug 27, 1948

From 80 traps Collected 25 mammals (see Catalogue).

480827-169

dominant grasses: 30-8-27-48; 31-8-27-48; 31(1)-8-27-48; 31(2)-8-27-48; 31(3)-8-27-48; 31(4)-8-27-48; 31(5)-8-27-48. Continued W to Blackfeet, Montana Set 120 traps.

4 mi. E and 10 mi. S Blackfeet, 3900 ft., Glacier Co., Montana
Aug 28, 1948

Caught 15 mammals in 120 traps. Grasses 16(1)-8-28-48; 16(2)-8-28-48; 17(1)-8-28-48; 17(2)-8-28-48; 17(3)-8-28-48; 17(4)-8-28-48; 17(5)-8-28-48; 17(6)-8-28-48; 17(7)-8-28-48; 17(8)-8-28-48; 18-8-28-48; 19-8-28-48. Continued to Springdale, set 120 traps.

Springdale, 4100 ft., Park Co., ~~Wyoming~~ Montana
Aug 29, 1948

In 120 traps caught 60 mammals (see catalogue). Dominant grass 70(1)-8-29-48 and 70(2)-8-29-48. Treed 80% cast & prone. Most grasses 71(1)-8-29-48; 71(2)-8-29-48; 71(3)-8-29-48; 71(4)-8-29-48; 71(5)-8-29-48 and 71(6)-8-29-48 used by microtes. Continued to Greybull and set traps in several places.

8/10 mi. S Greybull, 3788 ft., Bighorn Co., Wyoming
Aug 30, 1948

* From 10 traps took two microtes ochrogaster nos 1-8-30-48 and 2-8-30-48. Dominant grasses 6(1)-8-30-48; 6(2)-8-30-48; 7(1)-8-30-48; 7(2)-8-30-48.

1 mi. S Greybull, 3795 ft., Bighorn Co., Wyoming
Aug 31, 1948

From 10 traps took 7 mes musculus.. no 8-8-30-48 dominant grass.

7½ mi E Greybull, , Bighorn Co., Wyoming
Aug 31, 1948

From 10 traps collected 1 Reithrodontomys 4-8-30-48. Several traps were set in good runways of Microtes ochrogaster but all snapped & without mammals.

* [31 mi. E and 10 (?) mi. N Greybull, Bighorn Co., Wyoming
Aug 30, 1948

Collected one Tamiasciurus.]

From Greybull Continued S. Lynxlagus 1 per 10 miles of road kill. Golden eagle 20 mi. S Buffalo. Area near Midwest appears to be formedable to microtes ochrogaster.

arrived Alcova and set several traps in various plant and animal communities.

Alcova, 5180 ft., Natrona Co., Wyoming
Aug 31, 1948

From 10 traps along river (1 to 5 feet from edge) in grasses (dominant 1(1)-8-31-48 and 1(2)-8-31-48) and in runways. collected one microtus ochrogaster 2-8-31-48. 4 traps were snapped. The riparian vegetation was willow, sage (12 ft high) and adjoining a hillside of sage, juniper, gutierrezia and greasewood. From set second set of 10 traps in sandy area of sage, gutierrza, greasewood above first set collected dipodomys 3-8-31-48 and dipodomys 4-8-31-48. also two Perognatus 5 and 6-8-31-48. Returned to camp.

Left Alcova and made rabbit census from North of Independence Rock to Independence Rock; starting at mileage 299.5. (these are rabbits and other mammals killed in road). 299.5 3 jackrabbits; 99.6 Sylvilagus; 99.9 Sylvilagus; 00.2 Sylvilagus & jackrabbit; 00.3 Sylvilagus; 00.6 Sylvilagus; 01.6 Sylvilagus; 00.6 Sylvilagus (the area is rabbitbrush & sage brush with grasses between, horned larks common all along the way) elevation 5800 ft.; 01.0 3 Sylvilagus; 01.4 Sylvilagus; 01.5 2 Sylvilagus; 01.6 1 Sylvilagus; 01.6 Sylvilagus; 01.8 2 Sylvilagus; 02.0 2 Sylvilagus; 02.2 Sylvilagus; 02.3 Sylvilagus; 02.5 Sylvilagus; 02.7 Sylvilagus; 03.1 3 Sylvilagus; 03.1 sageken, Dipodomys; 03.2 sageken; 03.3 sageken; 03.6 3 Sylvilagus (bridge); 03.8 1 Sylvilagus; 03.7 Sylvilagus; 04.3 Sylvilagus; 04.5 Sylvilagus; 04.6 Sylvilagus; 04.9 Sylvilagus; 05.5 Dipodomys; 05.7 Sylvilagus; 05.8 Sylvilagus; 06.0 Sylvilagus; 06.2 Sylvilagus; 06.6 Sylvilagus; 06.7 Dipodomys; 06.9 3 Sylvilagus; 07.1 Sylvilagus; 07.2 Sylvilagus; 07.3 Dipodomys; 07.6 Sylvilagus, horned larks always present along road in flocks 5-50. In either flock or singles every 200 feet average; 08.2 2 Dipodomys; 08.4 1 Sylvilagus; 08.5 Sylvilagus; 08.7 Sylvilagus; 08.8 Sylvilagus; 08.9 Sylvilagus; 09.3 Sylvilagus; 094 Dipodomys and one Sylvilagus; 09.7 2 Sylvilagus; 10.0 bridge, Sylvilagus; 10.2 Sylvilagus; 10.7 sageken; 11.4 1 cottontail, sparrow hawk; 11.5 Sylvilagus; 11.9 Sylvilagus; 12.7 Independence Rock. end of census. Sagehens across entire area from Grey Bull to Laramie. From Laramie continue to Pole Mt and procured permit to trap on the Federal Refuge.

mr. Ned a. Avery (acting Forest Supervisor) issued a permit with the following reservations 1. Permission is hereby granted to James W Bee to trap or shoot rodents, except beaver, on the Pole Mountain Federal Refuge, Medicine Bow National Forest, from Sept 1 to Sept 30, 1948 inclusive. 2. In issuing this permit, it is agreed that the Government assumes no obligation whatever in respect to the security of the property of the permittee from theft, loss or damage of any kind. 3. The holder of this permit is authorized to carry firearms on the Pole Mt. Refuge. Set 30 traps at Ranger Station.

Pole mountain Federal Refuge, Wyoming

Sept. 1, 1948

From 30 live traps caught 1 microtus m. during day caught 5 Sorex. One Sorex 5-9-1-48 from live trap. No. 4-9-1-48 a microtus montanus. From ponderosa pines collected 2 Tamiasciurus, 1 Eutamias.

Sept. 2, 1948

From 30 live traps only 2 Sorex. 3 Peromyscus from 25 snap traps. Ranger reports that there are a few bear in area. 32 coyotes killed last year. All camp sites are poisoned. Turkeys increased from 11 to 600 at Laramie Peak area. Tularemia suspected in beaver. In general area overgrazed and barren of much wildlife except deer. Pack rats common at one time but now slow to come back Transition life zone higher on east side than W because of climate deference. Left area and went to Sybylle Creek where the objective was to run transect between microtus ochrogaster from the east & M. montanus from W. Camped 1.2 mi down east road from divide. (divide at 7169 ft and located at 25 1/4 mi. N and 4 mi. E Laramie, albany Co., Wyoming). The following stations will be located on Sybille Creek:

26 mi N and 4 1/2 mi E Laramie, 6960 ft., Albany Co., or 16.2 miles up Sybille Creek from albany - Platte Co. line. on highway 20.

26 3/4 mi. N and 5 1/2 mi. E Laramie, 6760 ft., albany Co., or 14.8 mi. up Sybille Creek from albany - Platte Co., line on highway 20.

26 3/4 mi. N and 6 1/4 mi. E Laramie, 6700 ft., albany Co. or 14.1 mi. up Sybille Creek from albany - Platte Co line on highway 20

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27 3/4 mi. N and 6 3/4 mi. E Laramie, 6600 ft., Albany Co., Wyoming
or 13.3 mi. up Sybille Cr on highway 26 from Albany - Platte Co. line.
28 1/4 mi. N and 7 1/4 mi. E Laramie, 6500 ft., Albany Co., Wyoming
or 12.1 mi. up Sybille Cr. on highway 26 from Albany. Platte Co. line.
29 mi. N and 8 3/4 mi E Laramie, 6420 ft., Albany Co., Wyoming
or 10.5 mi up Sybille Cr on highway 26 from Albany Co.-Platte Co line
(= 1/4 ? ?)
29 3/4 mi. N and 9 1/2 mi. E Laramie, 6350 ft., Albany Co., Wyoming
or 9.5 mi up Sybille Cr on highway 26 from Albany - Platte Co. line.
31 1/4 mi N and 12 mi. E Laramie, 6160 ft., Albany Co., Wyoming
or 6.8 mi. up Sybille Cr. on highway 26 from Albany - Platte Co. line
32 mi. N and 12 1/2 mi. E Laramie, 6080 ft., Albany Co., Wyoming
or 5.8 mi. up Sybille Cr on highway 26 from Albany - Platte Co. line.
35 1/2 mi. N and 18 mi. E ~~Albany~~ Laramie, 5500 ft., Platte Co., Wyoming
or 2 mi. down (@ NE) from Albany - Platte Co on highway 26.

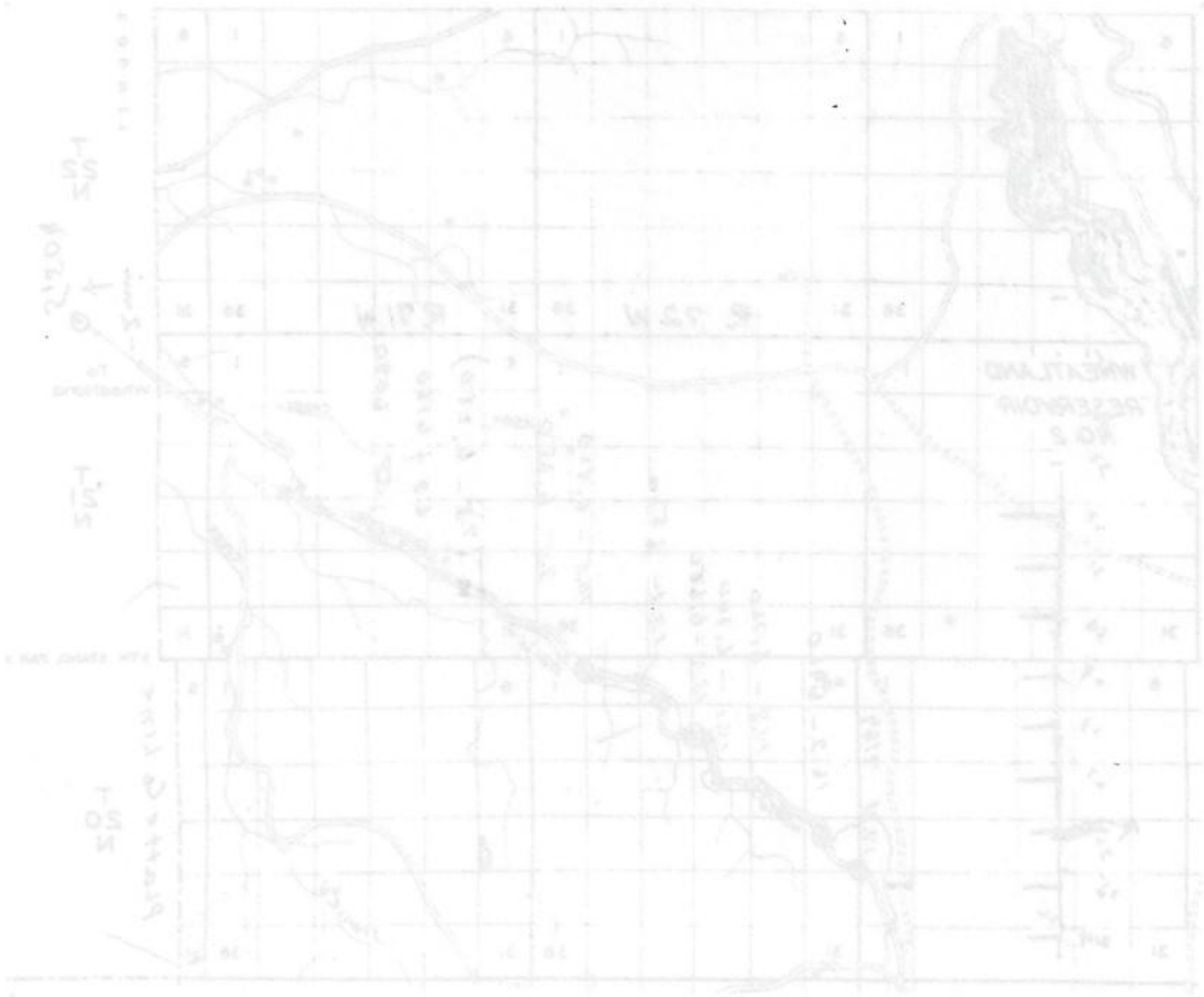
Focal point in Laramie for above localities is 1/4 mile east of SW corner of sec 28 of T16N, R 73W.

From Wyoming State Highway Department - 1936.

original locality designations by measuring on a map are:

6.7 -	6080 FT	5.8
7.5	6160	6.8
10.2	6350	9.5
11.2	6420	10.5
12.6	6500	12.1
13.4	6600	13.3
14.2	6700	14.1
14.9	6760	14.8
16.4	6940	16.2
17.1	7169	17.4

remeasured by car as:



This evenng set 40 traps at 26 mi N & 4 1/2 mi. E Laramie, 6900 ft. and between 4:00 PM and 7:00 P.M caught 1 microtus longicaudus. Examined this line again at 10:30 P.M and caught two Sorex nos 6-9-2-48 and 7-9-2-48 and two microtus montanus (live). This afternoon also set traps at 3 1/4 mi N and 12 mi. E Laramie, 6160 ft., albany Co. (the county line is 17.6 miles east along highway 26 from durde near camp). Ins evenng heard the poor-will calling. Subsequent measurement of highway by car has changed localities. Notes as they stand are correct.

31/4 mi. N 12 mi. E Laramie, 6160 ft., albany Co., Wyoming

Sept 3, 1948

Inspected the 84 traps set last evenng as follows: trap 1. microtus ochrogaster 1-9-3-48; 2 microtus ochrogaster 2-9-3-48; 4 microtus ochrogaster 3-9-3-48; 5 sprung; 8 sprung; 10 microtus ochro 4-9-3-48; 11 microtus ochro 5-9-3-48; 18 microtus ochro 6-9-3-48; 20 sprung; 21 microtus ochro 7-9-3-48; 22 microtus ochro 8-9-3-48; 25 microtus ochro 9-9-3-48; 28 microtus ochro 10-9-3-48; 29 sprung; 31 sprung; 32 microtus ochro 11-9-3-48; 38 Peromyscus 12-9-3-48; 42 microtus ochro 13-9-3-48; 43 microtus ochro 14-9-3-48; 45 microtus 15-9-3-48; 46 sprung; 47 Peromyscus 16-9-3-48; 50 Peromyscus 17-9-3-48; 52 microtus ochrogaster 18-9-3-48; 58 sprung; 61 sprung; 63 Peromyscus 19-9-3-48; 64 microtus ochrogaster 20-9-3-48; 65 microtus 21-9-3-48; 67 microtus ochro 22-9-3-48; 70 Peromyscus 23-9-3-48; 71 sprung; 72 Peromyscus 24-9-3-48; 74 sprung; 77 Peromyscus 25-9-3-48; 78 Peromyscus 26-9-3-48; 79 microtus ochro 27-9-3-48; 80 microtus ochro 28-9-3-48. The vegetation was rank and associated with drainage channel. Pulled traps.

On return to base camp at 30 1/2 mi. N and 11 mi. E Laramie at 6250 ft. noted 2 stripped skunks. Returned to camp and checked traps set at 3 1/4 (26) mi. N & 4 1/2 (4 1/2) mi. E Laramie, 6460 (6900) ft., albany Co. Dominant grass no 30-9-3-48. Are microtus ochrogaster? no 31-9-3-48 from runway in grass among sagebrush (Xeric) and 50 feet from typical microtus montanus community of damp sedges & grasses. Reset traps in above area and at 5:00 P.M caught one microtus montanus and 2 Sorex. This afternoon set several lines as follows (all in immediate area of 26 mi. N & 4 1/2 mi. E Laramie). Eight traps on west side of highway on shoulders in dry runways (these areas are marginal for M. ochrogaster and may represent areas used during high population numbers but now deserted and retracted to areas farther down canyons).

artemisia and sparse grass in contrast to lush grasses & sedges of microtus montanus in wet meadows. M. ochrogaster seems to prefer dry situations in its western limits of distribution.

One set in lateral canyon about 200 feet in length and separated from main canyon by vegetation artemisia.

One set bordering wet meadows in dry grasses.

26 mi N and 4 1/2 mi. E Laramie, 6960 ft., Albany Co., Wyoming

Sept 4, 1948

Examination of live traps: Last night when temp cold and sky clear caught 1 microtus montanus; at 7:00 A.M another taken; traps examined 4 times between 7:00 A.M and 4:00 P.M without results. At 1 hour after dark caught 8 microtus montanus. This evening was cloudy and warm. It is apparent that they are active according to weather conditions, temperature etc. The same condition prevailed in snap traps set on west side of road. Last night caught 2 Peromyscus and nothing until dark at 7:00 P.M when I caught one microtus montanus 14-9-4-48 and one microtus montanus 15-9-4-48 and 3 Peromyscus. Other sets examined this afternoon and no mammals active except one microtus montanus caught at 3:30 P.M in dry grass line. It would appear that microtus montanus are active during cloudy weather regardless of time of day.

This afternoon set several sets down canyon (Sybille Creek) to Sybille bridge. Enroute noted 2 mule deer, 5 Sylvilagus, golden eagle, marsh hawk, turkey vultures. Five sage hens 1/10 mi. S of Camp.

From traps at camp collected 1 microtus montanus 6-9-9-48 from dry grass set bordering main damp meadow (out of 60 traps) and one microtus montanus 7-9-4-48. 4 Sorex 8-9-4-48 to 11-9-4-48; two Peromyscus 12-9-4-48 and 13-9-4-48 from dry area of grass adjacent wet meadow. Sorex when placed with microtus montanus do not aggressive but stands up on hind feet and exposes one side. Adult microtus montanus have no trouble with Sorex. In one trap of live trap set found a 4 foot thamnophis. Have noted 5 other thamnophis in area. Jim shot at Eutamias, 1 mustela frenata 300 feet east of camp. The rock wren and greentailed towhee in area. One porcupine killed in road

1 mile down canyon from camp. a road kill (mustela frenata) 30 feet from a road kell (mustela frenata) noted about a month ago. (See previous notes.) a Peromyscus and a Neotoma road kell in same area. Gophers active. Have noticed that Sorex die quickly when in live traps. These animals have probably reached their minimum size in relation to mass-surface.

35½ mi. N and 18 mi. E Laramie, 5500 ft., Albany Co., Wyoming
Sept. 5, 1948

This A.M checked snap traps set yesterday evening. This locality is also recorded by me as 2 mi NE of Albany-Platte Co. at the Sybille bridge on highway 26. Traps among high grasses & sedges bordering cattails, Salix. no ponderosa pine but artemisia beyond wet areas. Water cress in water.
17 traps had been set at 20 feet intervals.

1-9-5-48	microtus ochrogaster	trap 4
2-9-5-48	" "	trap 7

The above specimen was eaten on side of head and neck but not by a mustela.

3-9-5-48	microtus ochrogaster	trap 9
4-9-5-48	" "	trap 14
5-9-5-48	" "	trap 15
6-9-5-48	" "	trap 16
7-9-5-48	" "	trap 19

The above microtus were caught in rank vegetation & would expect to find microtus pennsylvanicus (domp, wet).
Traps 10, 12 sprung.
8-9-5-48 dominant & associated grasses.

32 mi N and 12½ mi E Laramie, 6080 ft., Albany Co., Wyoming.
Sept 5, 1948

Checked trapline of 25 traps (18-43 at 20' intervals) set yesterday afternoon. The locality is also recorded as 5.8 miles up Sybille Creek on highway 26 from the Albany-Platte Co. line. In this area there is more artemisia, boulder more numerous with more magpie nests & magpies, yucca, cacti, than previous locality. Rose dominant. Collected the following mammals from trap line.

9-9-5-48	Peromyscus	trap 18
10-9-5-48	"	Trap 24
11-9-5-48	microtus ochrogaster	trap 26

12-9-5-48	Colubor constrictor	trap 28
13-9-5-48	Microtus ochrogaster	trap 30
14-9-5-48	Peromyscus	trap 31
15-9-5-48	"	trap 35
16-9-5-48	"	trap 38
17-9-5-48	Microtus ochrogaster	trap 39
18-9-5-48	Peromyscus	trap 40
19-9-5-48	Microtus ochrogaster	trap 42

Trap nos 23, 25, 32, 33, 34, 37, 41 and 43 sprung.

20-9-5-48 dominant grass and only one present.

29 3/4 mi. N and 9 1/2 mi. E Laramie, 6350 ft., Albany Co., Wyoming

Sept. 5, 1948

This locality is also recorded as 9.5 miles up Sybille Creek on highway 26 from the Albany - Platte Co. line. Check the 31 traps (44-74) set yesterday afternoon. This area has more meadows with willow dominating creek along with a few cottonwood and ponderosa pine. Artemisia and grasses on hills adjacent. Collected the following mammals:

21-9-5-48	Peromyscus	trap 44
22-9-5-48	"	trap 48
23-9-5-48	Microtus ochrogaster	trap 63
24-9-5-48	" "	trap 64
25-9-5-48	Peromyscus	trap 65
26-9-5-48	"	trap 66
27-9-5-48	"	trap 68
28-9-5-48	Microtus ochrogaster	trap 73

The above microtus in damp to wet high growth which is typical for Microtus pennsylvanicus. Microtus ochrogaster seems to be found in much wetter situation in this canyon than, say at Loveland, Colorado where it is predominantly a dry community form.

29-9-5-48	Microtus ochrogaster	trap 74
29a-9-5-48	associated grasses.	

Trap nos 46, 47, 63 sprung.

29 mi. N and 8 3/4 mi E Laramie, 6420 ft., Albany Co., Wyoming.

Sept 5, 1948

This locality is also referred to as 10.5 mi. up Sybille Creek on highway 26 from the Albany - Platte Co., line. Inspected traps 75 to 86 (20 feet apart) set yesterday evening. This locality is similar to above except damp meadows more extensive and with more standing water. Trap in damp to wet meadow of grasses and sedges

bordering a beaver pond. willows dominate edge of creek.
The following mammals collected.

30-9-5-48	Microtus	pennsylvanicus	trap 75
31-9-5-48	"	ochrogaster	trap 76
33-9-5-48	"	"	trap 78
34-9-5-48	"	"	trap 79

The M. pennsylvanicus was in the same coupled of runways as was used by M. ochrogaster and only 20 feet apart. Traps nos 83, 84 sprung.

From a spot 50 feet from above locality but along an irregation canal with dry grasses and white + yellow clover with old stems forming a mat condetion, collected the following mammals from traps nos 87 to 100. place there yesterday evening.

35-9-5-48	Peromyscus	trap 87
36-9-5-48	"	trap 89
37-9-5-48	"	trap 90
38-9-5-48	"	trap 91
39-9-5-48	"	trap 93
40-9-5-48	"	trap 98
		trap 94

Trap no 92 sprung.

29 mi. N and 8 3/4 mi. E Laramie, 6420, Albany Co., Wyoming

Sept. 6, 1948

This locality is also listed as 10.5 mi. up Sybelle Creek on highway 26 from the Albany Co. line. Because of insufficiency of adequate maps this same locality may also carry the designation of 27 mi. N and 8 mi E Laramie, 6420 ft., albony Co., Wyoming.
Yesterday evening set 42 traps here in a grass meadow which was damp to wet. These are native grasses & sedges of river bottoms.
Mammals from this trap line are: (traps 20 feet apart)

1-9-6-48	Microtus	longicaudus	trap 9
2-9-6-48	"	ochrogaster	trap 11
3-9-6-48	"	ochrogaster	trap 12
4-9-6-48	Peromyscus		trap 16
5-9-6-48	Lincoln sparrow		trap 19
6-9-6-48	Microtus	ochrogaster	trap 24
7-9-6-48	"	"	trap 25
8-9-6-48	"	"	trap 27
9-9-6-48	"	"	trap 28
10-9-6-48	Peromyscus		trap 35

46C

480906-178

11-9-6-48 microtus ochrogaster trap 38

12½-9-6-48 " " trap 41

The following traps were sprung: 5, 8, 10, 13, 14, 23, 26, 31, 33, 34, 36.
The microtus longicaudus was in a trap near a patch of Salix.
From a line of 15 live traps placed in some meadow, caught:

13-9-6-48 Zapus
14-9-6-48 Microtus ochrogaster
15-9-6-48 Sorex vagrans
16-9-6-48 Reithrodontomys
17-9-6-48 Zapus
18-9-6-48 Microtus ochrogaster.

Jim Fennquest caught 2 M. ochrogaster in same area.

29 mi. N and 8 3/4 mi. E Laramie, 6420 ft., Albany Co., Wyoming
Sept. 7, 1948

(see previous localities for other locality designations). Inspected 40 traps left set and untouched since yesterday morning in same positions. Part of meadow wet to saturated. Mammals are;

1-9-7-48 Microtus ochrogaster trap 1
2-9-7-48 " " trap 2
3-9-7-48 Zapus princeps trap 3
4-9-7-48 Microtus longicaudus trap 4
5-9-7-48 " ochrogaster trap 5
6-9-7-48 " " trap 6
7-9-7-48 Zapus trap 7
8-9-7-48 Sorex trap 8
9-9-7-48 Microtus ochrogaster trap 14
10-9-7-48 " montanus trap 16
11-9-7-48 " " trap 17
12-9-7-48 " ochrogaster trap 20
13-9-7-48 " longicaudus trap 21
14-9-7-48 " ochrogaster trap 22
15-9-7-48 " longicaudus trap 23
16-9-7-48 Reithrodontomys trap 30
17-9-7-48 Sorex trap 31
18-9-7-48 Sorex trap 32
19-9-7-48 Peromyscus trap 33
20-9-7-48 Reithrodontomys trap 34
21-9-7-48 Zapus trap 35
22-9-7-48 Microtus ochrogaster trap 36
23-9-7-48 Zapus trap 37

24-9-7-48 Zapus trap 38

Traps sprung were not recorded.

From a second series of 50 traps set in same field but in a drier part are as follows; (15 traps 20 feet apart)

25-9-7-48 Microtus ochrogaster trap 41
26-9-7-48 " " " 42
27-9-7-48 " " " 43
28-9-7-48 " " " 44
29-9-7-48 " " " 46
30-9-7-48 " " " 47
31-9-7-48 Peromyscus " 48
32-9-7-48 microtus " 50
33-9-7-48 microtus " 51
34-9-7-48 Peromyscus " 55

From 30 traps in same area as above in what would be considered good for microtus ochrogaster as I usually understand as typical for this area, that is dry grasses.

35-9-7-48 Peromyscus maniculatus trap 56
36-9-7-48 " " " 57
37-9-7-48 " " " 58
38-9-7-48 " " " 60
39-9-7-48 " " " 61
40-9-7-48 " " " 63
41-9-7-48 " " " 65
42-9-7-48 " " " 66
43-9-7-48 " " " 67
44-9-7-48 microtus ochrogaster " 69
45-9-7-48 Peromyscus maniculatus " 70
46-9-7-48 " " " 77

Here again it is indicated that microtus ochrogaster prefers damp grassy areas instead of dry communities as is found at Loveland and up Big Thompson Canyon.

From the meadow of this locality collected the following grasses and sedges.

47b-9-7-48 dominant
47a-9-7-48 dominant
47c-9-7-48 dominant

These sedges of about 1½ foot to 3 feet high in damp to wet soils. not matted and surrounding beaver pond and adjacent to willows.

48a-9-7-48 to 48q-9-7-48 associated grasses & sedges distributed among the dominants.

46a

480907-180

Reexamined the trap line of first 40 traps (nos 1-40) already checked this morning (see results of this line of this morning's examination) to see extent of activity during the day. The first collection this A.M was result of all day yesterday + last night.

49-9-7-48	microtus	longicaudus	trap 16
50-9-7-48	"	ochrogaster	" 18
51-9-7-48	"	montanus	" 26
52-9-7-48	"	montanus	" 31

Pull all traps except 40 (1-40) around beaver pond, which has not be moved since first set Sept 5 (in evening). Others placed at several test sites up canyon toward the meadow supporting good microtus montanus, to show zone of contact between M. ochrogaster and M. nauntanus.

29 mi. N and 8 3/4 mi. E Laramie, 6420 ft. Albany Co. Wyoming.
Sept. 8, 1948

This locality is also referred to as 10.5 mi up Sybille Creek from Albany-Platte Co. Check trap (and pull) 1-40 around beaver pond, set since evening Sept 5 and left in same position. This field is E and down canyon from the Bell Ranch on who's property I have been trapping. Mammals taken are:

1-9-8-48	Zapus		trap 5
2-9-8-48	"		" 8
3-9-8-48	"		" 12
4-9-8-48	Sorex palustris	164-77-20.2-12 gms ♂ M. only.	" 24
5-9-8-48	Zapus		" 27
6-9-8-48	microtus ochrogaster		" 31

Traps 20+21, 28 were sprung.
Photographs 7-9-8-48, ~~8-9-8-48~~, and of this trapping area.
In this meadow have observed: frogs, mourning dove, marsh hawk, kingbird, eastern kingbird, flicker, goldfinch, 20 magpies, Lincoln sparrow, robin, night hawk, poor-will, sharp-shinned hawk, Coopers hawk, green-tailed towhee, lark sparrow, house wren, great horned owl.

28 1/4 mi. N and 7 1/4 mi E Laramie, 6500 ft., Albany Co., Wyoming
This same locality is referred to as 12.1 mile up Sybille Creek from Albany-Platte County line on highway 26. This is at the E end to the S of the upper Bell Ranch. It is continuous with meadows of 29 mi N + 8 3/4 mi E Laramie site but meadows not wet

meadow grass cut annually. 10 traps were set here last evening in runway of what appeared to be microtus ochrogaster in artemesia ~~and~~ grasses and ~~thistle~~ stinging nettle. no water but in valley floor.
From the 9 traps (36-45) collected:

9-9-8-48	microtus ochrogaster	trap 36
10-9-8-48	Sorex	" 39
11-9-8-48	Microtus ochrogaster	" 40
12-9-8-48	" "	" 41
13-9-8-48	" "	" 45

Traps 37, 38, 43 sprung.
14-9-8-48 dominant grass
15a-9-8-48, 15b-9-8-48, 15c-9-8-48 associated grasses.
noted a garter snake in area
Jim Lonnquest caught 3 microtus ochrogaster + 1 Peromyscus in 10 traps set in some setting as nos. 9a-9b-9c-9-8-48.

27 3/4 mi. N and 6 3/4 mi. E Laramie, 6600 ft., Albany Co., Wyoming
Sept. 8, 1948

Same locality as 13.3 mi. up Sybille Creek from Albany-Platte Co. line. Examined 12 traps set here last evening (traps 46-58) These traps were set in same creek valley as previous set but at this point there is no grass meadow as such. A thin ~~pouch~~ an old road crosses the face of the bare cliff to N. Mammal are:

16-9-8-48	Peromyscus	trap 46
17-9-8-48	"	" 50
18-9-8-48	"	" 52
19-9-8-48	"	" 55
20-9-8-48	"	" 56
21-9-8-48	"	" 58

Dominant grasses here are 22-9-8-48 and 22a 9-8-48 and 23a-9-8-48, 23b-9-8-48 and 23c 9-8-48. as equal subdominants.
Jim Lonnquest caught a Microtus longicaudus (21a-9-8-48) in some area in 10 traps, showing that M. longicaudus is less dependant on grasses.

26 3/4 mi. N and ~~6~~ 6 1/4 mi E Laramie, 6700 ft., Albany Co., Wyoming
Sept 8, 1948

This locality is also designated as 14.1 mi. W up Sybille Creek from Albany-Platte Co. line on highway 26. Inspected traps set last evening (5 traps) This area is similar to last locality and does not support broad valley meadows. Grass here but locally.

46g

This collecting site is designated mallard cliff because of a male mallard resting on creek when first approached. Mammals are:

24a-9-8-48	Microtus longicaudus	trap 59
24-9-8-48	Zapus	" 60
25-9-8-48	microtus montanus	" 61

Traps 62 + 63 were sprung.

Jim caught three microtus montanus (nos 25b-9-8-48, 25c-9-8-48, 25d-9-8-48 and one shrew 25a-9-8-48. It measured 110-47-13.5-5gms)

In this same locality inspected 5 traps set last evening in tall grass on the dry side-hill beyond valley floor as:

26-9-8-48	Peromyscus	Trap 66
27-9-8-48	"	" 67
28-9-8-48	"	" 68
29-9-8-48	microtus montanus	" 69

Trap 66 sprung. These traps are all in what I would have considered good Microtus ochrogaster community.

26 3/4 mi. N and 5 1/2 mi. E Laramie, 6760 ft., Albany Co., Wyoming.

Sept 8, 1948

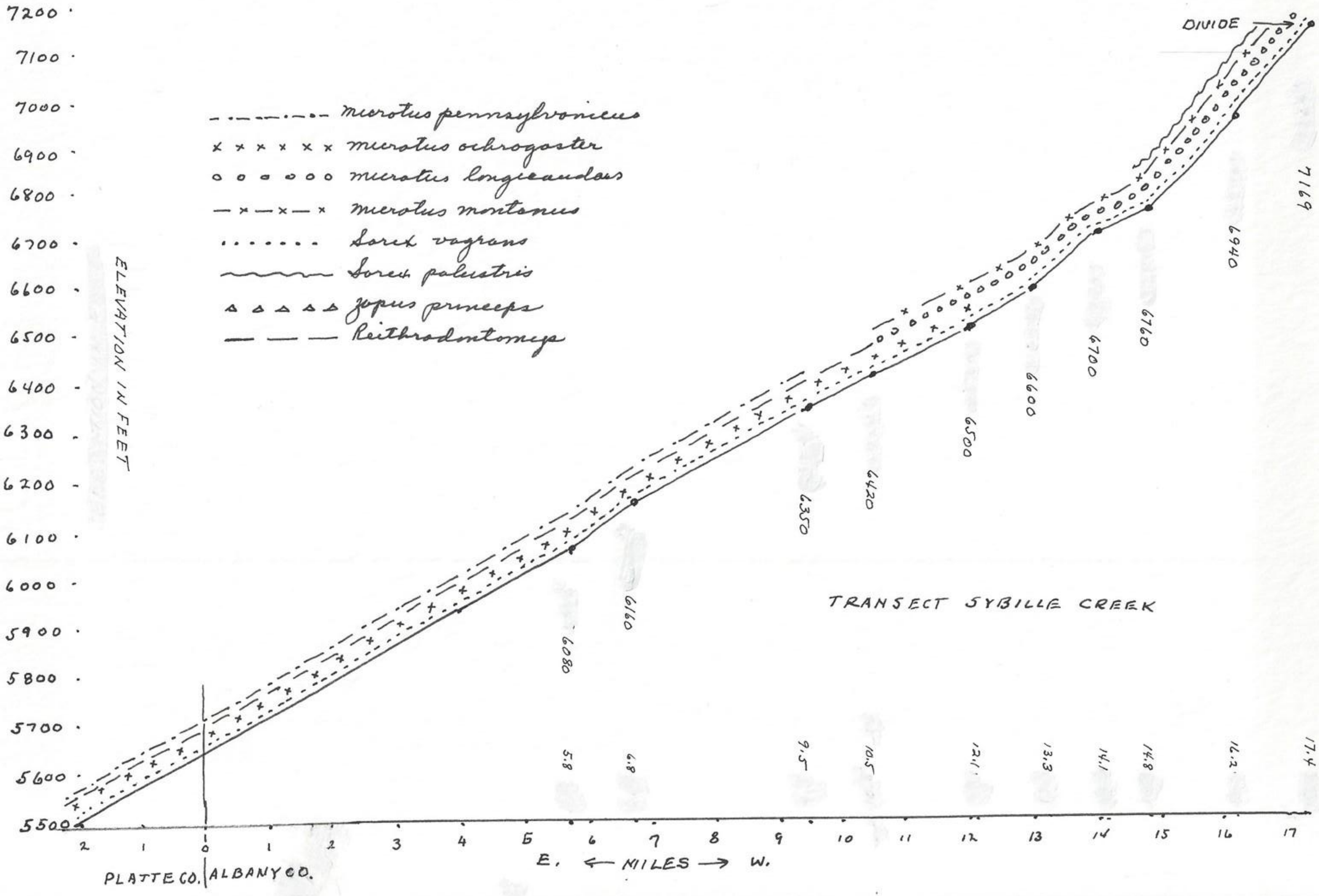
This locality is same as 14.8 miles up Coon Lybille Creek from albany-Platte County line on highway 26. At this point is the beginning of good meadows of sedges & grasses inhabited typically by Microtus montanus. These meadows are grazed but not cut and are characterized by predominance of sedges & wet soils. From 5 traps set adjacent to meadow on dry soils and in runway & believed to be Microtus ochrogaster (marginal to dominance of M. montanus) caught:

30-9-8-48	Peromyscus	Trap 70

Traps 72, 74 sprung.

Jim Lonnquist caught 1 shrew (30a-9-8-48), one Peromyscus maniculatus in wet meadow.

In the above area found several runways which were bordering the damp meadows, mainly on dry slopes among coarse vegetation. Others on shoulder of road in weeds and grasses. These runways did not appear to be used for the last year or year and a half and may have been those of Microtus ochrogaster when this species numbers were considerably higher than this year and had extended their range up canyon into the normal range of Microtus montanus now inhabiting the wet marshy meadow adjacent to these runways. Or it is possible that the Microtus montanus extended its range down canyon into the range of Microtus ochrogaster. The meadow however, is one that is associated with Microtus montanus.


7200
7100
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6000
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5600
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ELEVATION IN FEET
microtus pennsylvanicus
microtus ochrogaster
microtus longicaudus
microtus montanus
Sorex vagrans
Sorex palustris
Zapus princeps
Reithrodontomys
DIVIDE
7169
6940
6760
6700
6600
6500
6420
6350
6190
6080
5.8
6.8
9.5
10.5
12.1
13.3
14.1
14.8
16.2
17.4
TRANSECT SYBILLE CREEK
2 1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
E. ← MILES → W.
PLATTE CO. | ALBANY CO.

480908-183

[INSERT] 480908-184

Laramie, Albany Co., Wyomming and catalogue of grasses
Sept 8, 1948 [letter inserted from July 3, 1950]

The following information was sent to Dr. Bertrand Harrison of the Botany Dept., Brigham Young University. Two summers ago I was thru Colorado, Wyoming and Montana, collecting mammals and other ecological information for my study of Microtus ochrogaster At each trapping locality the dominant and associated grasses and sedges were taken to define the animal-plant community. Would this collection of plants be of value to your herbarium in filling any geographical gap. If so I list additional particulars.

a. Approximately 171 specimens are included, practically all either grasses or sedges, from 35 collecting localities.

b. All specimens are properly pressed and labelled.

c. The greater number are from the precise ecological contact between the Rocky Mountains and the Great Plains, or between the contact zone of microtus montanus (a Rocky mt species of rodent) and microtus ochrogaster (a plains form of rodent).

d. all specimens were taken between July 3 and Sept. 9, 1948.

e. every specimen is correlated with complete ecological information.

If your program would permit identification of these plants for me I would feel it quite a honor to have them accepted into your collection.

480908-185

GRASSES AND SEDGES (DOMINANTS AND ASSOCIATED) COLLECTED ON TRIP THRU COLORADO, WYOMING AND MONTANA - 1948.
(sent to Bertrand Harrison for identification)

14 mi. S and 2 mi. E Robertson, 9000 ft., ~~Uinta Co.~~ Summit Co., ~~Wyoming~~ Utah. 3 July, 1948.
Intermontane meadow. Salix bordering creek. Picea, Populus tremuloides, Abies concolor on slopes. Soils damp to saturated depending upon proximity to lakes

250(1)-7-3-48 (dominant)
250(2)-7-3-48 "
250(3)-7-3-48 "
250(4)-7-3-48 (subdominant)
250(5)-7-3-48 "
250(6)-7-3-48 "
250(7)-7-3-48 "
255(2)-7-3-48 (dominant)

9 1/2 mi. S and 1/2 mi. W Robertson, 8600 ft., Uinta Co., Wyoming. 5 July 1948.
Intermontane meadow. Hillsides of Populus tremuloides. Willow along creek

35-7-5-48 (Soils damp, and only grass present)
36-7-5-48 (Saturated soils)
37-7-5-48 (Standing water several inches deep)
38-7-5-48 (Open damp meadow on upper end of lake drainage)

9 mi. N and 3 mi. E Encampment, 6500 ft., Carbon Co., Wyoming. 7 July, 1948.
River bottom meadow land. Soils dry. Adjoining field of same composition but grazed.

17-7-7-48 (dominant and only grass present)

1 mi. S Lake Marie, 9600 ft., Carbon Co,, Wyoming. 11 July, 1948. Upper Montane. Elevated mound on side hill associated with typical alpine meadows below. Soils from dry to wet.

27(1)-7-11-48 (dominant)
27(2)-7-11-48 (dominant)
28(1)-7-11-48 (associated)
28(2)-7-11-48 "
28(3)-7-11-48 "
28(4)-7-11-48 "
28(5)-7-11-48 "
28(6)-7-11-48 "
28(7)-7-11-48 "
28(7)-7-11-48 "
28(8)-7-11-48 "
28(9)-7-11-48 "

7 7/10 mi. SSW Laramie, 7200 ft., Albany Co., Wyoming. 20 July, 1948.
Plains marsh with open lake. Grasses ranging from open water to dry, alkaline encrusted slopes of grease wood and dry wire grass.

9-7-20-48 (dominant)

3 1/2 mi. W Loveland, 5030 ft., Larimer Co., Colorado. 23 July, 1948.
Grassland-Transition contact. Abandoned cultivated fields. Occaisionally inundated by flood waters from the Big Thompson River.

18-7-23-48 (dominant)
19-7-23-48 (dominant)

6 mi. W and 1/2 mi. S Loveland, 5200 ft., Larimer Co., Colorado. 26 July, 1948. Grassland-Transition contact. Marsh in open valley, surrounded by damp meadows.

13(1)-7-26-48 (dominant)
13(2)-7-26-48 "
13(4)-7-26-48 "
14(1)-7-26-48 "
14(2)-7-26-48 (subdominant)
14(3)-7-26-48 (dominant)
14(4)-7-26-48 "
14(5)-7-26-48 "

9 1/4 mi. W and 1/2 mi. N Loveland, 5600 ft., Larimer Co., Colorado. 29 July, 1948 Grassland-Transition contact. Canyon floor bordering stream course. Canyon slopes of Pinus ponderosa. Chrysothamnus, vines, mullen associated with grasses.

8(1)-7-29-48 (dominant)
8(2)-7-29-48 "

12 mi. W and 1 1/2 mi. N Loveland, 6020 ft., Larimer Co., Colorado. 29 July, 1948. Grassland-Transition contact. River occupying greater area of canyon. Gooseberry cacti, and Pinus ponderosa present.

10(1)-7-29-48 (dominant)
10(2)-7-29-48 (subdominant)
10(3)-7-29-48 "

16 mi. W Loveland, 6840 ft., Larimer Co., Colorado. 29 July, 1948. Transition. Erosional benchland above river bed. Meadow from dry to saturated.

15(1)-7-29-48 (dominant)
15(2)-7-29-48 "
15(3)-7-29-48 "
15(4)-7-29-48 "
15(5)-7-29-48 "
15(6)-7-29-48 "

19 1/2 mi. W and 2 1/2 mi. S Loveland, 7280 ft., Larimer Co., Wyoming 29 July, 1948. Transition-Lower Montane. Intermontane valley by creek. Willow, geranium, mallow, gooseberry present.

22(1)-7-29-48 (dominant)
22(2)-7-29-48 "
22(3)-7-29-48 "
22(4)-7-29-48 "

26 mi. N and 4 1/2 mi. E Laramie, 6960 ft., Albany Co., Wyoming. 5 Aug. 1948. Transition. Canyon meadow with side hills of Artemisia. and occaisional Pinus ponderosa. Meadow with deep entrenched creek and bordered by saturated and dap soils. Contact between grasses of meadow and the Artemisia of the hill sides generally of gooseberry, thistle and high pampas grasses.

52-8-5-48 (dominant)
53-8-5-48 "
54-8-5-48 (dominant begond meadow on dry exposures)

1 1/2 mi. W and 2 1/4 mi. S Casper, 5250 ft., Natrona Co., Wyoming. 8 Aug, 1948. Grassland-Transition contact. Entrenched creed at base of range. Grasses from erosional level one fcot abcve the present creek level. Soils slightly damp.

5(1)-8-6-48 (dominant)
5(2)-8-6-48 "
6-8-6-48 "

7 mi. S and 2 mi. W Casper, 6300 ft., Natrona Co., Wyoming. 8 August, 1948. Grassland-Transition contact. Isolated willow stand with spring water forming a damp meadow below. On piedmont of grassland bordering range. Aspen and Ponderosa Pine associated.

11-8-8-48 (dominant)
12-8-8-48 (dominant)

6 mi. W. and 2 mi. W Casper, 5900 ft., Natrona Co., Wyoming. 9 August, 1948. Grassland-Transition contact. Wet meadow below spring area on piedmont.

5(1)8-9-48 (dominant)
5(2)-8-9-48 "
5(3)-8-9-48 "
6(1)-8-9-48 "
6(2)-8-9-48 "

3 2/10 mi. E and 6/10 mi. S Cody, 5020 ft., Park Co., Wyoming. 12 August, 1948. Spring and marsh on benchland in creek valley.

40-8-12-48 (dominant)
41(1)-8-12-48 "
41(2)-8-12-48
42(1)-8-12-48 (subdominant)
42(2)-8-12-48 "
42(3)-8-12-48 "

1 mi. W and 8/10 mi. S Buffalo, 4600 ft., Johnson Co., Wyoming. 17 August, 1948. Grassland-Transition contact. Marsh in river valley. Considerable alkali and mud holes associated.

13-8-17-48 (dominant)
14(1)-8-17-48 "
14(2)-8-17-48 "
14(3)-8-17-48 "
15(1)-8-17-48 (subdominant)
15(2)-8-17-48 "
15(3)-8-17-48 "
15(4)-8-17-48 "
15(5)-8-17-48 "
15(6)-8-17-48 "
15(7)-8-17-48 "
16(1)-8-17-48 (dominant)
16(2)-8-17-48 "

6 1/2 mi. W and .1 mi. S Buffalo, 5600 ft., Johnson Co., Wyoming. 18 Aug., 1948. Grassland-Transition contact. Canyon floor at edge of creek. Grasses completely covering area. Wild rose, gooseberry, chokecherry associated nearby. Hillside of Artemisia and Pinus ponderosa and dry grasses. Canyon corwded with cottonwoods, willow and typical stream side vegetation.

20-8-18-48 (dominant)
21-8-18-48 "
22(1)-8-18-48 (subdominant)
22(2)-8-18-48 "
22(3)-8-18-48 "

6 1/2 mi. W and 2 mi. S Buffalo, 5600 ft., Johnson Co., Wyoming. 19 August, 1948. Grassland-Transition contact. Dry slopes of canyon floor above creek plain.

13(1)-8-19-48 (dominant)
13(2)-8-19-48 "

4 1/2 mi. W and 1 mi. S Buffalo., 5420 ft., Johnson Co., Wyoming. 20 Aug., 1948. Grassland-Transition contact. Along edge of spring from damp to standing water.

7-8-20-48 (dominant)
8-8-20-48 "

1/4 mi. E Klondike, 5160 ft., Johnson Co., Wyoming. 21 August 1948. Grassland-Transition contact. Wet cultivated meadow.

3(1)-8-21-48 (dominant)
3(2)-8-21-48 "
3(3)-8-21-48 "

7 mi. N Raymond, 2340 ft., Sheridan Co., Montana. 25 August 1948. Open prairie grassland.

5(1)-8-25-48 (dominant)
5(2)-8-25-48 (subdominant)
5(3)-8-25-48 "

3 mi. S Medicine Lake City, 1880 ft., Sheridan Co., Montana. 25 August 1948. Grassland bordering Medicine Lake.

17-8-25-48 (dominant)
18-8-25-48 (dominant)

3 mi. E and 5 mi. S Culbertson, 1860 ft., Rickland Co., Montana. 25 August, 1948. Grassland river valley on shoulder of road grade, dry and dusty.

25(1)-8-25-48 (dominant)
25(2)-8-25-48 "

1 mi. W and 1 mi. N Malta, 2248 ft., Phillips Co., Montana. August 26, 1948. Grassland. Steep slope of river canyon. Soils sandy and dry.

60(1)-8-26-48 (dominant)
60(2)-8-26-48 "

1 mi. W Cutbank, 3650 ft., Glacier Co., Montana. 27 August, 1948. Grassland. Steep side wall of canyon. Sandy soils.

30-8-27-48 (dominant)
31-8-27-48 (subdominant)
31(1)-8-27-48 "
31(2)-8-27-48 "
31(3(-8-27-48 "
31(4)-8-27-48 "
31(5)-8-27-48 "

4 mi. E and 10 mi. S Blackfeet, 3900 ft., Glacier Co., Montana. 28 August 1948. Grassland. Wet upland valley with drier slopes.

16(1)-8-28-48 (dominant)
16(2)-8-28-48 "
17(1)-8-28-48 (subdominant)
17(2)-8-28-48 "
17(3)-8-28-48 "
17(4)-8-28-48 "
17(5)-8-28-48 "
17(6)-8-28-48 "
17(7)-8-28-48 "
17(8)-8-28-48 "
18-8-28-48 (dominant)
19-8-28-48 "

Springdale, 4100 ft., Park Co., Wyoming. August 29, 1948. River valley. Railroad grade, luxuriant vegetation, cultivated fields adjacent.

70(1)-8-29-48 (dominant)
70(2)-8-29-48 "
71(1)-8-29-48 (subdominant)
71(2)-8-29-48 "
71(3)-8-29-48 "
71(4)-8-29-48 "
71(5)-8-29-48 "
71(6)-8-29-48 "

8/10 mi. S Greybull, 3788 ft., Bighorn Co., Wyoming. 30 August, 1948. Slope of road grade, cultivated fields adjacent.

6(1)-8-30-48 (dominant)
6(2)-8-30-48 "
7(1)-8-30-48 (subdominant)
7(2)-8-30-48 "

1 mi. S Greybull, 3795 ft., Bighorn Co., Wyoming. August 31, 1948. Slope of road grade, cultivated fields adjacent.

8-8-31-48 (dominant)

Alcova, 5180 ft., Natrona Co., Whoming. August 31, 1948. Edge of river and directly influenced by the water. Dry hill slope beyond.

1(1)-8-31-48 (dominant)
1(2)-8-31-48 "

29 mi. N and 8 3/4 mi. W Laramie, 6420 ft., Albany co., Wyoming. 7 Sept., 1948 Grassland-Transition contact. Damp meadow in canyon floor. Surrounding hillsides of Artemisia and a few Ponderosa pine. Soils from granite rocks. Permanent meadows in canyon floor and kept wet by springs that drain into a small pond which is bordered by willow.

47(1)-9-7-48 (dominant in wet areas of meadow)
47(2)-9-7-48 " " " " " "
48(1)-9-7-48 (associated and uncommon)
48(2)-9-7-48 "
48(3)-9-7-48 "

48(4)-9-7-48 (associated and uncommon)
48)5)-9-7-48 "
43(6)-9-7-48 "
48(7)-9-7-48 "
48(8)-9-7-48 "
48(9)-9-7-48 "
46(1o)-9-7-48 "
48(11)-9-7-48 "
48(12)-9-7-48 "
48(13)-9-7-48 "
48(14)-9-7-48 "
48(15)-9-7-48 "
48(16)-9-7-48 "

28 1/4 mi. N and 7 1/4 mi. E Laamie, 6500 ft., Albany Co., Wyoming. 8 Sept., 1948 Grassland-Transition contact. Broad canyon valley. Adjacent hillsides of Artemisia. Used for wild grass crops which are annually cut. Soils damp at earlier part of season but now dry.

14-9-8-48 (dominant)
15(1)-9-8-48 (subdominant)
15(2)-9-8-48 "
15(3)-9-8-48 "
15(4)-9-8-48 "

27 3/4 mi. N and 6 3/4 mi. E Laramie, 6600 ft., Albany Co., Wyoming. 8 Sept., 1948. Grassland-Transition contact. From erosional bank of creek. Hillside rocky. Willow dominante shrub along creek edge.

~~14-9-8-48 (subdominant)~~
~~15(1)-9-8-48 "~~
~~15(2)-9-8-48 "~~
~~15(3)-9-8-48 "~~
15(4)-9-8-48 "
21(1)-9-8-48 (dominant)
22(1)-9-8-48 "
22(2)-9-8-48 "
22(3)-9-8-48 "
22(4)-9-8-48 "
23(1)-9-8-48 "
23(2)-9-8-48 "
23(3)-9-8-48 "

7 2/10 mi. E and 1 2/10 mi. S Oaks, 1200 ft, Sargent Co., North Dakota. 19 July, 1950.

500719-11 (dominant among shrubs)
500719-12 (subdominant)
500719-13 (dominant grass used for runways)
500719-14 (subdominant)

1 3/4 mi. N and 3/4 mi. W Pierre, 1440 ft., Hughes Co., South Dakota. 26 July ,1950.

500726-1 (dominant)
500726-2 (dominant)

1 mi. E and 3 mi. S Lawrence, Douglas Co., Kansas

Sept 25, 1948

This morning took 20 students to Haskell Bottoms to check traps set the previous evening. Traps along railroad right-of way at point where it crosses Haskell Avenue. Result of trapping: Trap 1 Peromyscus leucopus ♀, weeds from 3 to 5 feet high; 2. not sprung; 3 not sprung; 4 not sprung; 5 untouched; 6 not sprung; 7 uneffected (not sprung or bait not touched; 8 Peromyscus maniculatus, ♀ suckling; 9 bait gone; a Tipulid on trap; 10 uneffected; 11 bait gone; Considerable sign of cut veg. & fecal pellets; 12 uneffected; 13 sprung, bait gone 14 uneffected; 15 bait gone, numerous beetles; 16 uneffected; 17 uneffected, insects on trap; 18 uneffected; 19 uneffected; 20 bait gone; old rabbit droppings and cuttings; 21 uneffected; 22 uneffected; 23 sprung; 24 sprung and holding tail feathers of a blackbird; 25 sprung, bait gone; 26 bait gone; 27 uneffected; 28 uneffected; 30 Peromyscus maniculatus, immature ♀ partially eaten around ear and shoulders; 31 microtus ochrogaster, ♀, on upper shoulder of railroad track on n exposure, three puncture of insects into abdomen; 32 sprung; 33 not sprung; 34 uneffected; 35 uneffected, trap in area of cuttings; 36 sprung, in runway of rabbit and muskrat; 37 uneffected; 38 uneffected; 40 Cryptotis parva ♂, 20 feet from railroad grade in borrow pit with grasses 2 feet high and damp soils; 41 uneffected; 42 to 44 uneffected; 45 bait removed by grasshoppers; 46 mus musculus ♂, eye eaten; 47 uneffected; 48 uneffected; 49 uneffected; 50 uneffected. Birds observed in area; Agelaeus phoeniceus, 10 to groups of 200; Lanius borealis (sp.?); Colaptes auratus 1; Melothrus ater 20-150; Thryothrus ludovicianus 1; Accipiter cooperi 1, Circus hyaneus hudsonius; Other kinds of animals were: Rana pipiens, approx 10 per pond 10 x 20 feet; monarch butterflies flying to S.; Acris gryllus blanchardi, 60 per 10 x 20 ft; thamnophis sirtalis parietalis one ♀ 10 feet from pond supporting many frogs. One mustela frenata and a dead Sylvilagus noted. Returned to K.U. at 11:00 A.M. noted a marmota monax bunkeri at 6th and Ohio St. Lawrence feeding on lawn.

1½ mi W and ½ mi S of the University of Kansas, Lawrence, Douglas Co., Kansas.

October 2, 1948

Took 20 students to Pioneer Cemetery to check traps set the previous afternoon. Traps set at peripheral edge of cemetery around fence line where grasses were relatively uncut. Day overcast and slight

Plant cover relatively stable with matted grasses. Result of trapline: 1. uneffected; 2 uneffected, trap in runway; 3 uneffected, trap in runway; 4 uneffected, meadowlark flew from trap area, no water; 5 uneffected; 6 Sigmodon hispidus texanus, 1/3 grown ♀ from runway; 7 uneffected, in runway; 8 sprung; 9 sprung, bait gone; 10 sprung, bait gone; 11 sprung, trap removed 3 feet; 12 uneffected; 13 sprung, bait gone; 14 sprung, bait gone, 16 Sigmodon hispidus, 1/3 grown ♂; 17 uneffected; 18 sprung, bait gone; 19 sprung, bait gone; 20 sprung, bait gone; 21 sprung, 10 feet from a live box turtle; 22 sprung a ♀ Reithrodontomys captured alive 23 sprung, trap removed; 24 uneffected; 25 uneffected; 26 uneffected; 27 and 28 sprung, bait gone; 29 sprung, trap carried one foot; 30 Sigmodon hispidus ♀; 31 Sigmodon hispidus ♀, eaten around jaw and ear; 32 sprung, bait gone, dominant grass or sedge? shoulder high; 33 uneffected; 34 uneffected; 35 sprung, bait gone; 36 uneffected; 37 sprung, bait gone; 41 sprung, bait gone; 42 uneffected. A live Reithrodontomys 10 feet from last trap; 43-44-45 sprung and bait gone; 46 uneffected; 47 uneffected; sprung, bait gone.

Birds observed.

Calopites auratus - group of 4 in cemetery, some on posts.
Dendroica coronata ?- group of 14 feeding in isolated trees.
Dendrocopos pubescens medianus - one.
Cyanocitta c cristata - one flew into cemetery and fed with flickers and warblers
Chaetura pelagica - occasionally one in air.
Agelaeus phoeniceus - group of 14 at cemetery
sparrow sp.
Sturnus v. vulgaris - flock & flew over area.

Lawrence, Douglas Co., Kansas
Oct 5, 1948

Observed apprad. 400 Chaetura pelagicus case a single Falco s. sparverius as it flew across the ridge at K.U. campus just south of the museum of natural Hestory building. This hawk continued east just above the tree tops and as it left the ridge (mt. Oread) the chattering swifts immediately dispersed and returned to the various buildings where they normal remained, circling above. At 17th and Ohio in noted several Sciurus niger in area. Also an Accipiter striatus velox was flying east above tree tops. ~~Preceding~~ Preceding this hawk was 8 Sturnus vulgaris about 50 feet, flying back and forth as if attempting to or annoy the hawk. I have observed this action before.

Lawrence, Douglas Co., Kansas
Oct. 6, 1948

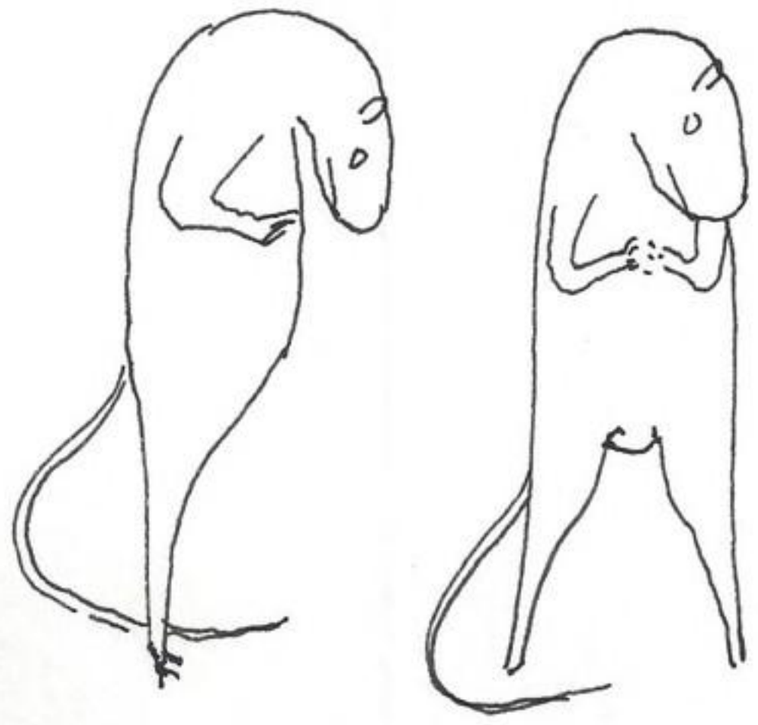
First rain since warm summer. Last week signs of color in leaves. a few maples turning brilliant red, otherwise deciduous trees only yellow change from the normal green of summer.

Oct. 7, 1948

Cold last night and windy today. Noticeable yellow in leaves of deciduous trees, especially on campus (K.U). Chaetura pelagica present but in greatly depreciated numbers since 3 days ago before inclement weather set in.

Lawrence, Douglas Co., Kansas
Oct 7, 1948

On Oct. 2 (see notes of that date) a ♀ Leithrodentomys megalotis dychei was captured and reared at the museum of Natural History at K.U. She was kept in a wire cage for further observation and study. Food was dry oats and grapes and only source of subsistence. On this date (Oct 7) at 2:00 P.M two young were born. The time of birth was between 12:00 A.M and 2:00 P.M (probably about 1:40 P.M). At 2:00 P.M the ♀ neglected the young, being left upon the bare floor of the cage. A small box with excelsior was provided which she immediately accepted and made a nest where she placed the young. Between 2:00 P.M and 3:08 P.M she spent either in the nest or walking about the cage. The young in her body were vigorously kicking at her sides. At 3:09 she was resting in nest with head thrusted down under her body: ♋. Respiration 170 per minute. In this position she had 4 instantaneous and involuntary reflexes of the back, lasting for 1 second each and outside of a sharply curved and angled back, still maintained her curled position. At 3:09 for 18 seconds she raised her head and shoulders and stood upright with hind legs straight and tense. Shoulders and head lowered. Her eyes were closed. At 3:09 and 25 seconds her entire body reacted voluntary to the eternal emergence of the foetus. This movement forced her up 2 inches on the side of the cup of the nest. Her position was



as illustrated with hind legs rigid and slightly extended from the vertical. The curved back was retained and emphasized when the foetus continued to emerge. The upward thrust of the body was a reaction to the first phase of the foetus expulsion. The six seconds during this time the foetus was 1/4 expelled the female vigorously handled and cleaned the foetus by licking and eating the membranes and solutions accompanying the birth of the young. JW The second phase, at 3:09 and 31 seconds, the foetus was expelled to the 2/3 position where it remained for another 6 seconds, this may or may not have been helped by a reflex action. Here the body was even more vigorously handled with blood and membranes being consumed. At 3:09 and 37 seconds the foetus dropped to the floor of the nest cup where it was temporarily neglected until the female had cleaned herself for about 12 seconds afterwhich she attended her new born young. The placenta was first eaten by the female, using her hands for holding and then the umbilical cord was progressively eaten up to its attachment on the body. The female did not use her hands in assisting the birth of the young in pulling the foetus from the body and the placenta accompanied the foetus during birth. The next three minutes were used in dressing up the young one and cleaning the blood from her own front legs and paws. At the conclusion of this final act of face and hand washing the ♀ thrust her nose into the side walls of the nest. The fourth young arrived at 3:25 P.M. Its arrival was preceeded again by a vigorous involuntary reflex of the back. This was followed by a strain of 6 seconds in the standing position. Approx 5 seconds after this voluntary or otherwise pain, she again stood upright with a profound and upwardly directed thrust as in the preceeding instance, except that the ♀ remained on the floor of the nest cup and not on the upper edge of the nest cup as was the case in the previous birth. The expulsion of the foetus followed a similar pattern as above but with more vigorous cleaning of the young and herself. It took 7 minutes for this young to be born from time of reflex of back to expulsion of foetus. As in the above case, after cleaning the young and herself, she thrust her nose into the edge of the nest cup. At 3:35 the female was in a curled position and resting with head tucked under her body and resting upon the young. Occasionally she would readjust young, and clean her genital region. At 3:40 P.M and from her

curled position, 3 reflexes were observed again in the body. She reacted by standing upright with eyes closed. In eight seconds the foetus appeared during a moment of body push and thrust. The head remained protruding for 10 seconds and was then completely expelled in 6 more seconds. At the final act of expulsion the female used her front feet in forcefully handling and pushing the foetus from the vagina. As the young dropped to the nest the ♀ immediately directed her attention to the cleaning of the vagina and tail region. The initial act of the female was one in which the lower jaw was thrust into the vagina and the secretions were sucked out. After 12 seconds of this action, she returned to the young and first started on the placenta and umbilical cord. In this case the foetus was handled and slightly rotated by the females hands at the time the foetus was partially discharged. The seventh young followed closely and at 4:05 the female remained in a curled position in the nest. After 2 minutes of rest she left the nest and went over to the oatmeal but where she ate three flakes of cereal in 15 seconds. afterwhich she returned to nest and settled down. The young gave audible squeaks at nest. The following weights of the young are (not actually according to sequence of birth): no1. .8 gms; 2 .80 gms; 3 .80 gms; 4 .70 gms 5 .85 gms; 6 .70 gms; 7 .90 gms. Weight of female after delivery of young = 9.85 gms. Original weight of female before parturition 15.30 gms. Percentage of ♀ body weight to young 55%

Lawrence, Douglas Co., Kansas
Oct. 8, 1948

Large flocks of Quiscalus quiscula forming lines 400 feet long and 30 feet wide in vicinity of the University of Kansas. Have noticed these flocks for last 5 days but increasing in last 2 days.

Lawrence, Douglas Co., Kansas
Oct 8, 1948

The young born yesterday (Reithrodontomys) were all eaten except bones and head of one young. Weight of ♀ at 3:00 P.M = 16.00 gms.

3 mi S and 1½ mi W Pleasant Grove, Douglas Co., Kansas
Oct 9, 1948

Today took Phil Krutzsch and Rowland Baker to area I had been investigating for tularemia project. Checked a feed used

by microtus ochrogaster just. sw of intersection of above locality. The field had been planted with grasses and partially cultivated since last inspected this spring. Grass about same elevation without heterogeniety of last spring. Runways present and active signs but all covered by dense matted grasses. No signs of grazing. Sylvilagus rare compared to last spring and winter. also checked Neotoma area on Henry Flarey farm about 600 feet east of above locality. Nests mainly deserted because of live trapping this spring. Some were partly dissected. Sylvilagus more common where weeds are higher. Grass as if not grazed this summer.

2 1/2 mi. S and 1 1/2 mi. W, Pleasant Grove, Douglas Co., Kansas

Oct 9, 1948

Observed two marmota monax bunkeri in open cultivated field north of the Dunbert church. They had been feeding some 300 feet from their dens when first observed. As the car stopped the marmots ran to burrows where they remained until we approached and they then dropped down into the holes. One reappeared for a few seconds and then disappeared again. Burrows approx. 150 feet from county road.

Lawrence, Douglas Co., Kansas

Oct 9, 1948

Noticeable increase in Turdus migratorius and Agelaeus phoeniceus in area. Weather cool but sun shining.

Lawrence, Douglas Co., Kansas

Oct 9, 1948

Weight of Reithrodontomys at 4:30 P.M. at 12.1 gms or an increase of 3.7 grams since October 8.

Oct 11, 1948

weight of Reithrodontomys at 5:10 P.M. = 9.2 ms

Oct 12, 1948

Weight of Reithrodontomys at 5:00 PM = 8.3 gms

Oct 13, 1948

weight of Reithrodontomys at 5:05 = 7.7 gms. The mouse showed considerable irritation and exhaustion from running around cage and climbing across underneath side of cage.

Lawrence, Univ. Kansas, Douglas Co., Kansas

Oct 14, 1948

The Rethrodontomys of Oct 8 observation (see notes of that date) was chloroformed at 8:00 A.M. wt at this time 6.6 gms and measured 135-62-17-12-6.6 gms. Skin prepared by Phillip Krutzsch no 729.

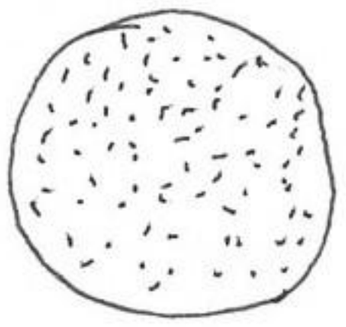
appro 870 ft,
307 W and 23rd St., Lawrence, Douglas Co., Kansas.

Oct 15, 1948

The last two days great numbers of the following, in composite groups, have been visiting the fields just south and west of the trailer at Carl Drakes resident.

Agelaeus phoeniceus
Molothrus a. ater
Sturnus v. vulgaris

At periods when these birds are not disturbed, they are formed into a compact flock and move about the fields like a serpent but never loosing their composite flock formation. If they move from the field entirely, they leave together and form a long continuous line of 3/4 miles and 100 feet in width. This line represents a bold front line at times but usually is a trailing line of undulating dips. as they move about the field the rear section of feeding birds leave the ground and move up to the front of the group. This is perpetual motion and moves the flock progressively forward; however, in areas of good feeding, there is a tendency for these birds to remain static. as these birds frequently fly by at 70-80 feet it would be possible to knock them out of the sky. It is interesting to note that the three species have synchronized their maneuvering movements. At certain movements when a group would rise, the entire sky was black as if a dark piece of canvas had been thrown into the sky. These sudden movements were always accompanied by a wing sound, some of the noise made by the wings of one bird touching the wings or body of another bird. Estimation of numbers of birds was difficult. The following seemed most accurate. Several cards were covered with dots of different concentrations and then these were compared with the actual concentration of birds seen in the field of the binoculars of birds observed at a known distance. as these birds flew from one field to another, the



binoculars were trained on the passing flock and the number of binocular fields were counted representing the entire flock. Actually 31 such fields were recorded and on the basis of 155 birds per pattern estimated 4,805 birds. As all field estimates are generally under-estimates I believe this number of birds is conservative. The per cent frequency of the three species are: molothrus ater = 80%; Agelaius phoeniceus 13%; Sturnus vulgaris 7%. The sex ratio of molothrus was approx 8 ♂♂ to 1 ♀. In the case of Agelaius phoeniceus and Sturnus was not able to estimate percentages of sexes. I did not see the females of Agelaius but believe there were a few represented. The most noticeable thing about this flock was that all three species were uniformly distributed without tendency for separation. Flock movement of several species of birds are not governed conditioned training so it would indicate that the three species have had a long period of evolution together. Observation made at 4-5 P.M.

307 W 23rd St., Lawrence, Douglas Co., Kansas

Oct 16, 1948

The same flock of birds were feeding in field this afternoon as was there yesterday. At 5:10 P.M they left wilfully and flew to the south. They fed for some time earlier in a corn field.

Lawrence, Douglas Co., Kansas

Oct. 17, 1948

First frost last night. Practically all maples at maximum color.

Oct 18, 1948

Frost checked many flowering plants. Noted 5 robin enroute to K.U.

Oct 30, 1948

At 5:30 P.M heard several Cicadas calling enroute to trailer at W 23rd St. from to K.U. (east side of campus hill). With practically all leaves off trees, & wonder what they feed upon. Temp last few days with frosty morning.

Oct. 31, 1948

Last night and this morning with fog and visibility approx 200 feet. Enroute to school from 307 W 23rd St to Museum Natural History at K.U. observed the highest concentration of robins birds in the area. This unusual number was correlated with fog. The following

birds were observed.

Turdus migratorius. Appox 45 on campus 200 feet east of Dyche museum, others noted along Ohio street.

Junco hiemalis. First ones this autumn at trailer but others have been observed a week or so ago, this group represents the size of flocks that winter here.

Boeolophus bicolor. One bird.

Coloptes auratus. 2 birds

Passer domesticus. few

Sturnus vulgaris. Several small flocks of about 20 each. They were all in tops of trees and called frequently.

Dendrocopas purpureus. one bird

Cyanocitta cristata 1 bird

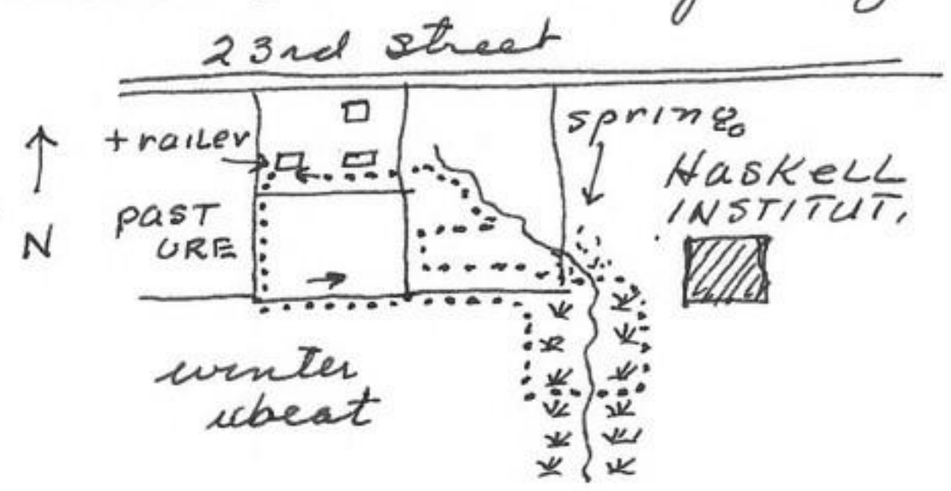
Richmondena cardinalis two birds.

Quescalus quiscalis 5 feed with on berry seed on campus.

307 W 23rd St., Lawrence, Douglas Co., Kansas

Nov. 4, 1948

Took bird census from trailer house south along osage orange for two blocks, thence east to Haskell bottomlands 1 block west of the Haskell Institution. Adjoining areas corn ar winter wheat. Haskell bottoms of good grasses, willow and larger trees, water from spring area above and running water in canal below. On field from 2:00 P.M to 3:30 P.M. Observed the following:



Corvus platyrhynchos. 4 birds flying over area. During the summer these birds are practically absents from area but in winter and autumn are frequently observed about 2/10 miles south of the trailer.

Turdus migratorius. 4 birds on top of tree with 3 Sturnis vulgaris

Sturnus vulgaris. Three above. no cowbirds or redwings today.

Ducks Eight flying south in Wakarusa valley.

Passerherbulus caudacutus. Approx 18 birds along drainage sw of Haskell Institution, moving along fence row, and in tall & short Andropogon along drainage creek. These sparrows are as closely associated with these Andropogon grasses as are marsh

wrens to cattails. One difference between these sparrows and the other kinds of sparrows is that the Passerherbulen remains in same area rather than leaving area when approached. They remain in areas of Andropogan for protection. Their habits remind one of wrens, remaining within 8-12 feet with confidence, and expressing curiosity by approaching one closer, moving up and down the stems of the grasses.

Spizella arborea. One individual in Haskell bottoms associated with other sparrows.

Junco hyemalis. Practically all of the 65 juncos were in fields and would fly up into hedge row and then move progressively down the hedge as I approached.

Zonotrichia querculo. 13 birds. Juncos, Harris sp and Ordinal associated.

Melospiza melodia 3 birds in Haskell bottoms

Richmondena cardinalis. 6 birds observed, 2 of them in a pair of a ♂ & ♀. Two males were chasing one another in the hedgerow.

Cyanocitta cristata. 3 birds. Jays seem to be more numerous in the winter than in the summer.

Dendrocopos pubescens 1 bird in hedgerow.

Sturnella magna 13 birds in one feeld of short grass

Buteo borealis s johannis? flying S of the trailer

Parus atricapillus septentrionalis. 8 birds in isolated group generally associated with juncos.

Spinus pinus pinus 7 flew passed over

Spinus t. tristis 4 birds in top of tree at edge of a corn feeld.

Colinus v. virginianus One bird in corn feeld.

Calcaptes auratus 2 bird left grass area where meadowlarks were feeding. They flew to trees in peripheral edge of feeld.

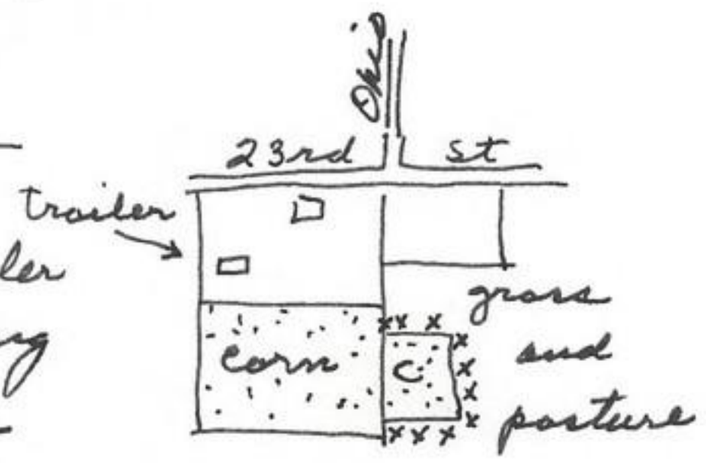
Temperature chilly and skies overcast.

4 Sigmodon hispidus noted. Microtus ochrogaster trails in grassy feeld. 1 black weat of Haskell Institute. 4 Sylvilagus floridanus mearnsi in various types of cover.

307 west 23rd Street, Lawrence, Douglas Co., Kansas

Nov. 5, 1948

Set 10 traps along fence line SW of the trailer The fence (vegetation) was protected from either cutting or grazing and as a result had retained a



considerable amount of tall grass that gave overhead protection. Corn field on one side and old grazed pasture on the other side, recently cut. Set traps at 5:30 P.M with cool drizzling rain and skies completely overcast. On return trips picked up a Segnodon hispidus 1-11-5-48 in trap no. 4. This animal was taken 8 minutes after the trap was set. At 9:00 P.M made another check of this trapline and picked up the following:

2-11-5-48 mus musculus from trap 1
trap 2 sprung
trap 3 uneffected
trap 4 Segnodon hispidus 3-11-5-48
trap 5 sprung
trap 6 Segnodon hispidus 4-11-5-48
trap 7 " " 5-11-5-48
trap 8 uneffected
trap 9 Segnodon hispidus 6-11-5-48
trap 10 uneffected.

Tonite with rain, cold & windy.

307 west 23rd St., Lawrence, Douglas Co., Kansas

Nov. 6, 1948

Inspected trapline set yesterday afternoon. This line was checked twice last night (see above). Inspection in early A.M. at 7:30 at about sunup.

Trap 1 sprung and trap displaced.
2 Segnodon hispidus 1-11-6-48
3 uneffected
4 Peromyscus maniculatus 2-11-6-48
5 mus musculus 3-11-6-48
6 uneffected
7 Segnodon hispidus 4-11-6-48
8 mus musculus 5-11-6-48
9 microtus ochrogaster 6-11-6-48
10 sprung.

This evening at sundown inspected trapline of above and collected one mus musculus 7-11-6-48 in trap no. 4. Still warm. and one Segnodon hispidus 8-11-6-48 in trap no. 5. Other traps uneffected

Nov. 7, 1948

Inspected the 10 traps set nov 5 and checked since then (see above) The results are as follows:

Trap 1 uneffected (neither bait gone or sprung)
" 2 sprung
3 uneffected
4 mus musculus 1-11-7-48
5 uneffected
6 Sigmodon hispidus 2-11-7-48
7 mus musculus 3-11-7-48
8 uneffected
9 "
10 "

Pulled this set of traps this morning. The composite results are;

Traps
1 mus, sprung
2 sprung, Sigmodon sprung
3 uneffected
4 Sigmodon, Peromyscus, mus, mus
5 sprung, mus, Sigmodon,
6 Sigmodon, Sigmodon
7 Sigmodon, Sigmodon, mus
8 mus
9 Sigmodon, Microtus ochro,
10 sprung.

6 mus
8 Sigmodon
1 Microtus ochro.
4 sprung
1 Peromyscus
16 mammals all total or 1.6 mammal per trap.

The two most common forms are introduced (in the case of a mus) or recently invader into the area (Sigmodon)

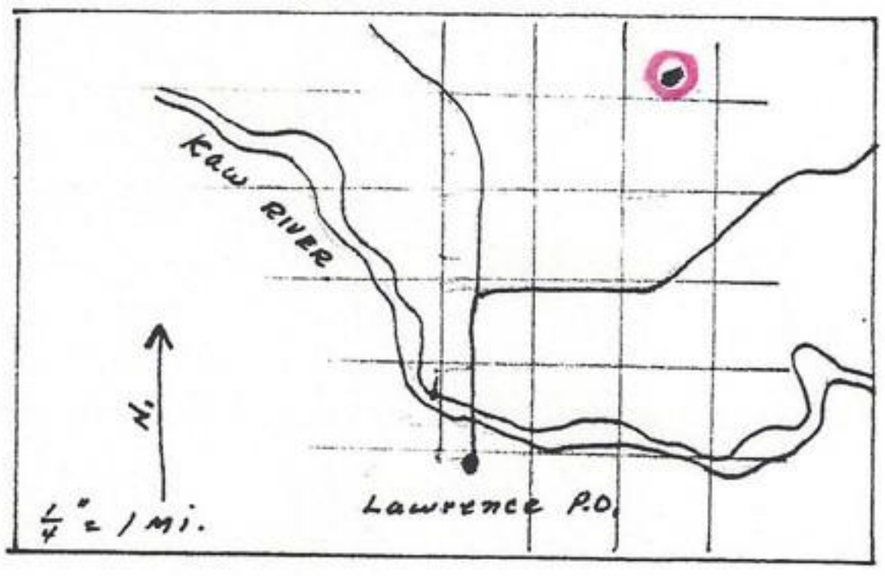
This morning frost heavy. 3 Sylvilagus in area. a Charadrius vociferous heard in area about an hour before daylight, calling in the air as it passed over.

307 W 23rd St, Lawrence, Douglas Co., Kansas
Nov 17, 1948

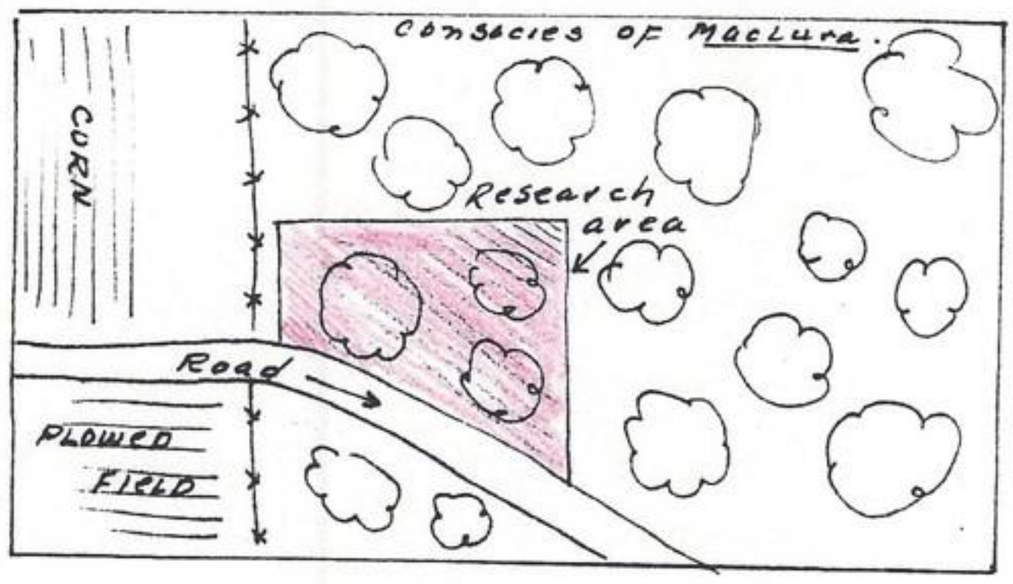
17 Colinus virginianus at trailer, feeding along fence line. These birds have been seen at various places 5 of the trailer. They roost in close formation in grasses in the fields. Their group probably represents 2 flocks. Fewer are noted on each observation.

miscellaneous materials in the area. The house was built in 5 consecutive layers, each layer a distinct combination of materials. The uppermost layer was of cow dung and placed as if for protection against rain. The other layers were dried sticks of the most available tree, osage-orange. Two entrances led into the house, one from the north side on the ground level and one from the roof, leading down along the trunk of the tree to the ground level. Three side chambers intercepted the tunnel leading from the roof opening. One of the chambers held compact green leaves lining a central cavity. Another chamber held a store of locust seeds, and a third, the remains of partially eaten osage-orange seeds. The south facing entrance had fresh dirt piled beyond the entrance; dirt that had recently been excavated from a subterranean chamber beneath the house. Removal of the house structure revealed the nest which was placed centrally on the ground level. The nest was made of the dried bark of Maclura. The opening of the nest was 2 inches above the ground level and led by diverging passageways to either the roof corridor, the ground exit or the subterranean escape chamber. The escape chamber was built under a root of the tree and no doubt offered additional protection. In summary can say that

1. The house is constructed at various intervals because of the layered effect of the structure; each layer a different composition.
2. At this time of the year, subterranean chambers are being excavated, either for protection or more lekely as a retreat during excessively cold weather when winds blow through the stick structure and bark nest.
3. Above the nest are successive arranged platforms, each higher than the previous one, for the storage of food.
4. Three types of entrances are used; one at top of nest to permit access to upper limit of tree; a second one to permit exit on the ground floor, and a third one leading into a ground chamber.
5. Territorial limits are defined by trail systems leading from the nest. Some trails are continuous with other houses.
6. The greatest feeding activity is associated with areas of Symphoricarpus, adjacent to the nest.
7. Fruit of maclura is the principal food at this time of the year.



A



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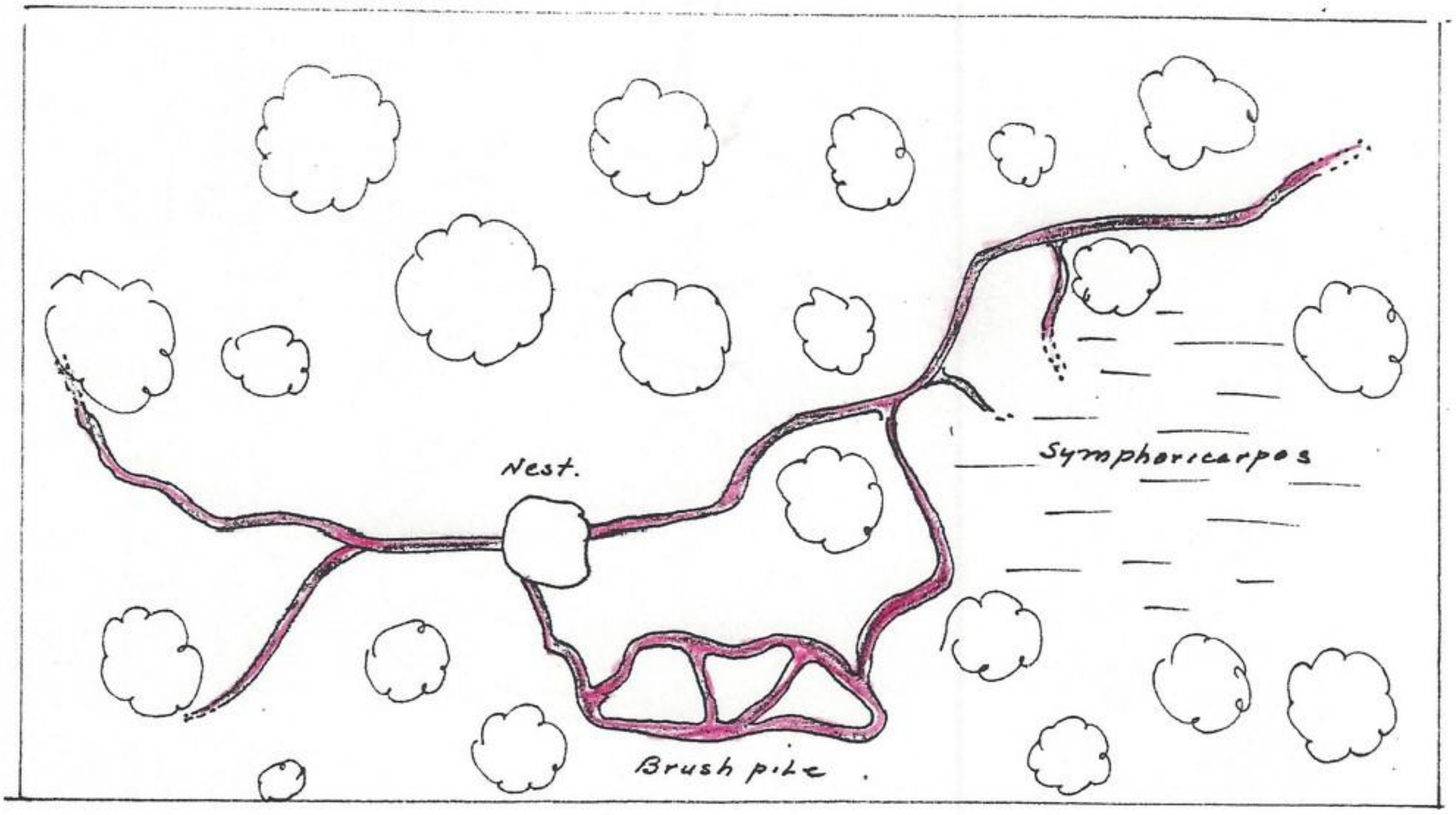


C

Figure 1. A. Geographical location of research area. B. General associated environs of Neotoma study. C. House and runways of Neotoma in the area examined.

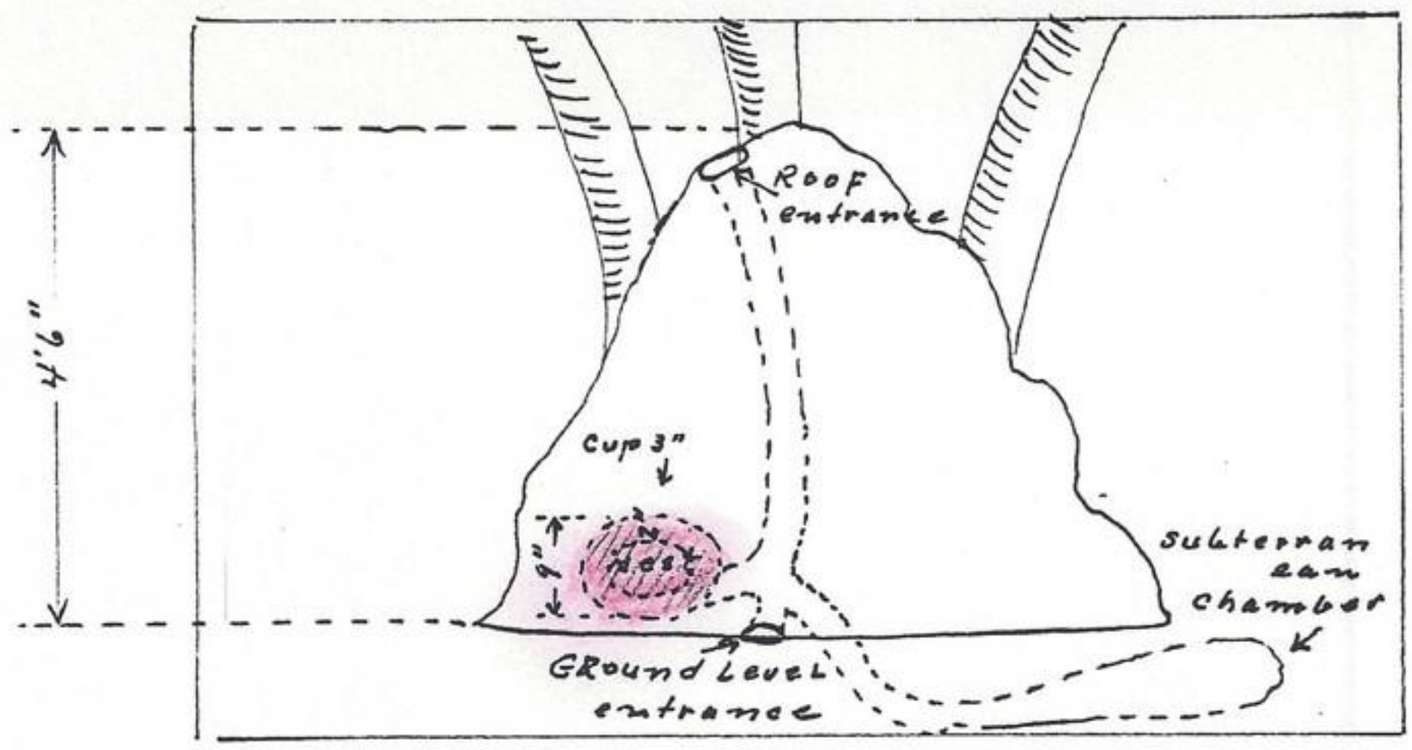


Figure 2. A. Crossection of Neotoma house showing architectural plan of nest with storage chambers and subterranean escape corridor. B. Aerial view showing relative position of nest and nest corridors.

481117-203

#1/4 mi N and 2 1/2 mi E Lawrence, Douglas Co., Kansas

Nov. 17, 1948

Made study of the house and runway patterns of Neotoma floridana. The area is between prairie & woodland. The deciduous element on the prairie is artefical; hedge of osage orange, and trees and shrubs have been planted by man. Runways leading to the house was investigated by removing successive layers. All material was carefully examined. The area where the study was made is a slope between the broad valley floor and a higher hilly country and is unsuitable for cultivation. The dominant tree Maclura pomifera, a shrubby tree look much like the other elements of the deciduous forests. These trees are closely arranged so that the ground beneath is completely protected from the sun. Consequently understory vegetation is almost lacking; even the shade-loving Symphoricarpos orbiculatus grows sparsely here. The ground was completely covered with dry leaves of the osage-orange tree and there was approx. one fallen fruit of this dominant tree per four square yards of ground surface. Partly eaten fruits were found, especially where overhead protection was present. Three conspicuous runways free of vegetation led from the house, one to a pile of brush which was piled by man, and the other two in the direction of other nearby houses. Whether the vegetation had been intentionally removed from the runways or whether continual use accedentally removed it was not determined. no well-used trail connected one house with another but each runway extended in the direction of the house. The runways to the brush pile appeared to be in frequent use and apparently were confined to use in this accumulation of debris. Ramifying from the principal trails were lateral branches, apparently infrequently used. The leaves on the ground interferred with recognition of these lateral trails, but the numerous parteally eaten osage orange fruits bore evidence of their use of these areas as feeding grounds. Fruits among Symphoricarpos were more commonly eaten than those in the ground without overhead protection. The distinctiveness of trails was proportional to the distance from the house.

~~The House~~ The house (Fig. 2A-B) was situated at the base of a tree and consisted of a pyramid-shaped structure of approx 2 bushels of dried sticks and leaves of maculra and other

481117-207

3 3/4 mi. N and 1 1/2 mi E Lawrence, Douglas Co., Kansas

Nov. 17, 1948

R. Baker and I checked trap line NE town. Baker had set a national census line. Area wet with usual grasses & sedges surrounded by cultivation and closely grazed pastures. Andropogon beyond wet area. Traps set in groups of 3 every 25 feet. Trap supported 8 Sigmodons & one Reithrodontomys. Last inspection yesterday and then only a mus musculus was captured. Last year one zapus was taken at this same trapping area.

4 mi N and 3 1/3 mi. E Lawrence, Douglas Co., Kansas

Nov. 24, 1948

Trapped for small mammals in two areas. One in research area A-11-24-48 in native Andropogon (large and short stemmed). and ~~reserve~~ research area B-11-24-48 of fottails in matted condetions and adjoining the first research area. In several hours of Neotoma found Peromyscus leucopus inhabiting. These houses were abandoned. Collected two neotoma from a stick house placed low in a tree and by probing nest with a stick forced the woodrat out of the nest and into the tree above when it was then shaken out of the tree to the ground and a stick was placed over the body until the woodrat could be placed in a cloth bag.

4 mi N and 3 1/3 mi. E Lawrence, Douglas Co., Kansas

Nov 25, 1948

From research area A-11-24-48 collected 5 Sigmodon hispidus and 2 mus musculus in 15 live traps. From research area B-11-24-48 took 1 Cryptotis, 5 Reithrodontomys, 1 mus musculus and 3 Sigmodons in 20 traps

This evening set 35 traps in research area A-11-25-48 at 4:30 P.M in Klopfeld field at 1 1/3 mi. W & 2 mi. S Lawrence. This field has not been plowed in several years and the grasses are dense and matted with an overhead protection of weeds. 3 acres in extent. Traps in runways 20' apart. Reexamined at 9:00 P.M as follows: 12 Sigmodons, 1 mus musculus, 3 Reithrodontomys, 3 Peromyscus maniculatus. all from live traps.

1 1/2 mi. W and 2 mi. S Lawrence, Douglas Co., Kansas

Nov. 26, 1948

Examination of live traps in Klopfeld field in research area

A-11-25-28 at 8:00 A.M as follows: 12 Sigmodon hispidus, 1 Reso-
muscus, 2 microtus ochrogaster. At 10:00 A.M took 6 Sigmodons
and 1 microtus ochrogaster. At 12:00 noon took 7 Sigmodon.
At 3:00 P.M took 8 Sigmodon. at 10:00 P.M took 10 Sigmodons,
3 Peromyscus maniculatus and 2 mus musculus. Traps have
been in same position and will so remain until the end of
the collecting experiment.

1½ mi. W and 2 mi S Lawrence, Douglas Co., Kansas
Nov. 27, 1948

Inspected traps in research area A-11-25-48 as follows: Last
night freezing. 1 dead mus, 2 live and 1 dead microtus ochrogaster,
3 dead and 1 live Peromyscus maniculatus, 1 live and 2 dead
Reithrodontomys, 10 live Sigmodon. The Sigmodon resist cold
better than small forms because of mass to surface ratio and heavier
fur. The degree of ability to resist cold is as follows. Sigmodon,
microtusochrogaster, Peromyscus, mus, Reithrodontomys + Cryptotis.
Just a few hours of exposure to low temperatures will kill Reithros
and mus.

1½ mi. W and 2 mi. S Lawrence, Douglas Co., Kansas
Nov. 28, 1948

Inspected research area A-11-25-48 as follows: Did not in-
spect last evening. (rain & freezing). 2 live and 8 dead
microtus ochrogaster, 9 live & 6 dead Sigmodon hispidus,
1 live and 2 dead Reithrodontomys, 1 dead mus musculus.

Measurements of above dead microtus ochrogaster.

1-11-28-48 ♂	microtus ochrogaster		96-26-17.5-9-10 gms
2-11-28-48 ♂	"	"	120-36-19-10-17 gms
3-11-28-48 ♂	"	"	128-39-19-10-19 gms
4-11-28-48 ♂	"	"	126-39-19.5-10-20 gms
5-11-28-48 ♂	"	"	132-37-20-11-26 gms
6-11-28-48 ♂	"	"	127-37-19.2-11-21 gms
7-11-28-48 ♀	"	"	148-40-19-11-33 gms
8-11-28-48 ♂	"	"	147-40-19-11-37 gms

It is interesting to note that there is an increase in microtus ochrogaster
after Sigmodon are first trapped out of area (or reduced)

At 7:00 P.M Collected the following mammals and pulled all traps.
8 live Sigmodon hispidus, 1 microtus ochrogaster, 1 mus musculus.
On two consecutive nights I have flushed (10:00 P.M) closely grouped
bobwhites in same spot of field. They fly about 100 feet & then drop to ground.

Perry, Jefferson Co., Kansas

Nov. 29, 1948

Collected 12 Peromyscus, 8 Reithrod, and 4 mus musculus from feeld. Traps set yesterday afternoon. Dry grass and matted.

2 2/10 mi. S and 1/10 mi W Lawrence, Douglas Co., Kansas

Dec. 11, 1948

Set 40 live traps in approx 100 x 100 feet in feeld 1 block W of Haskell Institution. The area is damp and with water in creek. Andropogan and very little green grass associated. Traps 10 feet apart. Set at 3 oclock P.M and inspected at 5:00 Pm as follows: 10 Sigmodon and 1 mus musculus.

2 2/10 mi. S and 1/10 mi W Lawrence, Douglas Co., Kansas.

Dec 12, 1948

Examined 40 live traps set yesterday at and collected the following. (9:00 A.M): 15 Sigmodon, 1 microtus ochrogaster.
At 4:30 P.M inspected again as follows: 12 Sigmodon.

2 2/10 mi. S and 1/10 mi. W Lawrence, Douglas Co., Kansas

Dec 13, 1948

From traps set yesterday caught: 6 Sigmodon, 1 Peromyscus maniculatus, 1 mus musculus

(P.O)

9/10 mi. S and 2 1/2 mi. W Lawrence, Douglas Co., Kansas

Dec. 16, 1948

Established 4 research areas in at feeld of uncultivated native grass to test the mammal composition or status of a community for one particular point in time. Such information will be valuable when comparing populations in the future.

Four research areas were established within the confines of the feeld. Area A (A-12-16-48) consisted of two isolated plots of Andropogon of equal size but separated by a discontinuity of native grasses. Area B (B-12-16-48) of a single unit of Andropogon, equal in size to all of area A. Area C (12-16-48) twice as large as area B or A or same size as area A and B together. These three area A-B-C are in a continuous feeld of Andropogan, the areas outside of research areas, however are cut annually, leaving these isolated remnants of undisturbed native grasses. Area D (D-12-16-48) along a fence with 3 feet of uncut grasses (second half of fence line-traps 150-200), on east side of fence between the fence and feeld roadway and cut Andropogon feeld to west. The first half of fence line with a single foot wide strip of grass below wire.

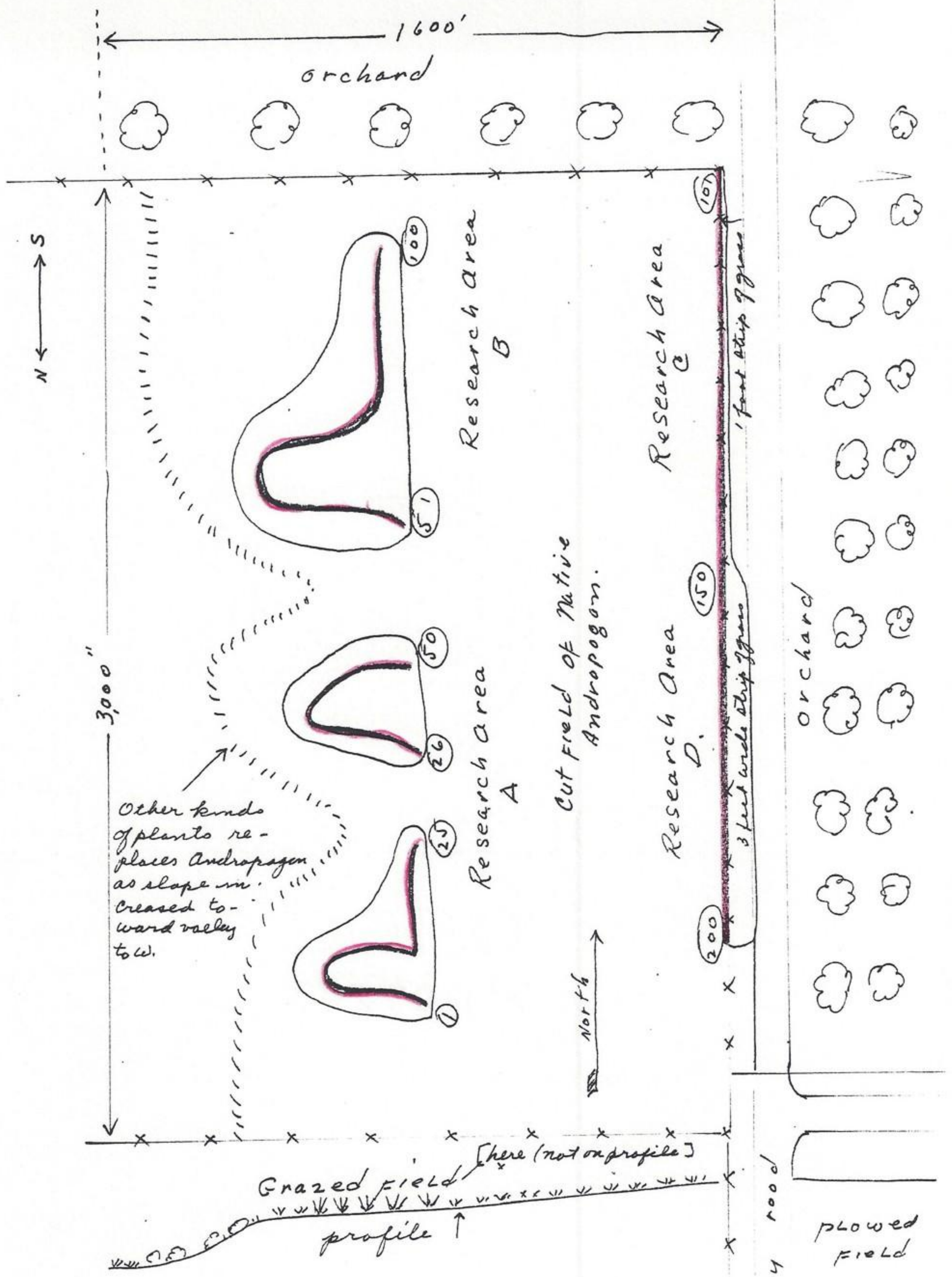


FIGURE 1. Trapping area.

were placed in the four research areas; 25 in research area A-12-16-48, 25 in research area B-12-16-48; 50 in research area C-12-16-48 and 100 in research area D-12-16-48. These were relegated according to size of plot or area. All traps within each area were 20 feet apart in leanear placement and placed in established runways of the small mammals inhabiting the plant community. For seven days, the total of 200 traps ~~were~~ was investigated at 12:00 noon and the findings recorded.

The area is situated on a flat part (2° slope to W) of the somewhat hilly terrain on the east side of a drainage system. Beyond this flat part, the surface slopes down to the valley to the west. The relatively flat surface holds moisture and is better for development of permanent vegetation than elsewhere. It is also beyond the influence of flooding waters of the drainage system below. The area to the east is a flat ridge which slopes east to another drainage system paralleling the one to the west of the trapping area.

The dominant grass is Andropogon furcatus (Muhl.) with Muhlenbergia schreberi Gmel and Bouteloua curtipendula Michx as subdominants. The two latter grasses form the understory and cover for runway development. The Andropogan is the overhead protection. The green grasses of Muhlenbergia are prerequesite for the best development of these mammal communities.

Concluded trap line setting at 4:00 P.M and rechecked again at 4:20 P.M. Day clear but cold. Twilight about 5:00 P.M During the original setting frequently heard traps go off one trap back. Only a few mammals were noted running along runways while setting the traps.

Collected the following mammals from the first inspection at 4:20 P.M: (the field number of the animal represents the trap number as well, example trap 13 is incorporated in the field number as 13-12-16-48) will give mammals first and then the condition of the trapline as to whether trap was not touched (uneffected), sprung, bait gone etc.

2-12-16-48	Sigmodon hispidus	190-70-25-17-63 gms ♂ testis 4 mm.
8-12-16-48	" "	181-70-27-15-40 gms ♀ no embryos
10-12-16-48	Microtus ochrogaster	125-28-17-15-32 gms ♂ Testes 5 mm
13-12-16-48	Sigmodon hispidus	180-71-27-15-43 gms ♂ testes 4 mm
21-12-16-48	" "	193-83-29-15-48 gms ♂ " 5 mm
22-12-16-48	" "	209-83-28-16-70 gms ♀ no embryos
24-12-16-48	"	177-70-25-10-48 gms ♂ testes 4 mm

25-12-16-48	Sigmodon hispidus	202-75-29-71 gms ♂ testes 4 mm
27-12-16-48	Microtus ochrogaster	138-33-19-10-36 gms ♀ 1x2 emb 6 mm
31-12-16-48	Sigmodon hispidus	226-86-29-14-85 gms ♂ testes 5 mm
36-12-16-48	"	"	198-75-26-12-64 gms ♂ testes 4 mm
39-12-16-48	"	"	212-89-30.5-15-75 gms ♂ testes 7 mm.
49-12-16-48	Microtus ochrogaster	[110]-[0]-20-12-36 gms ♂ testes 9 mm
52-12-16-48	Sigmodon hispidus	193-73-28.5-13-60 gms ♀ no embryos
62-12-16-48	"	"	218-85-30-12-91 gms ♂ testes 5 mm
69-12-16-48	"	"	200-76-29-16-66 gms ♀ no embryos
71-12-16-48	"	"	194-76-27-15-60 gms ♂ teste 5 mm
76-12-16-48	"	"	entirely eaten by a marsh hawk.
77-12-16-48	"	"	211-86-29-15-78 gms ♀ no emby
89-12-16-48	"	"	196-75-28.5-15-66 gms ♂ testes 7 mm
93-12-16-48	"	"	195-80-22-25-72 gms ♀ no emb.
120-12-16-48	"	"	190-87-26-14-79 gms ♂ testes 4 mm
137-12-16-48	Microtus ochrogaster	129-34-19.5-11-30 gms ♀ no emb.
139-12-16-48	"	"	156-38-19.5-11-49 gms ♀ no emb.
144-12-16-48	Sigmodon hespidus	210-88-30.5-16-76 gms ♂ testes 5 mm
145-12-16-48	"	"	198-82-29-15-56 gms ♀ no emb.
146-12-16-48	"	"	213-86-30-16-75 gms ♂ testes 5 mm.
147-12-16-48	"	"	196-77-30-10-69 gms ♀ no emb.
148-12-16-48	"	"	196-80-28-12-68 gms ♀ no emb.
149-12-16-48	"	"	201-78-27-12-71 gms ♂ testes 4 mm
152-12-16-48	"	"	201-81-28-15-66 gms ♀ no emb.
159-12-16-48	"	"	200-80-28-15-70 gms ♀ no emb
160-12-16-48	"	"	206-89-29-16-69 gms ♂ testes 5 mm
162-12-16-48	Microtus ochrogaster	160-40-20-11-45 gms ♀ no emb.
166-12-16-48	"	"	142-38-20-12-31 gms ♀ no emb
167-12-16-48	"	"	170-48-21-13-56 gms ♂ testes 16 mm
169-12-16-48	Sigmodon hispidus	196-75-29-14-60 gms ♂ testes 5 mm
175-12-16-48	"	"	200-82-28-15-60 gms ♀ no emb.
179-12-16-48	Microtus ochrogaster	163-47-20-11-52 gms ♂ testes 14 mm
185-12-16-48	"	"	144-35-20-12-35 gms ♀ no emb.
187-12-16-48	"	"	157-41-20.5-11-54 gms ♂ 9 mm
188-12-16-48	Sigmodon hispidus	206-84-29-15-67 gms ♀ no emb.
189-12-16-48	"	"	220-96-30-14-74 gms ♂ testes 5 mm
200-12-16-48	"	"	240-100-32.5-16-94 gms ♂ testes 7 mm

The condition of the other traps on this line are indicated by:

no = uneffected or not visited

sp : sprung

b.g : bait gone

trap 1 no; 3 sp.; 4 sp; 5 no; 6 sp; 7 sp; 8 no; 11 sp; 12 sp; 14 sp; 15 sp; 16 sp; 17 sp; 18 sp; 19 sp; 20 no; 23 sp; 26 no; 28-29 no; 30 sp; 32-34 no; 35 sp; 37-38 no; 40 sp; 41-48 no; 50,51 no; 53-55 sp; 56 no; 57-60 sp; 61 no; 63,64 sp; 65 no; 66 sp; 67-68 no; 70 no; 72 sp; 73 no; 74 sp; 75 no; 78-81 no; 82-86 sp; 87 no; 88 sp; 90 sp; 91,92 no; 94 no; 95 sp; 96-113 no; 114 sp; 115-117 no; 118 sp; 119 sp; 121-136 no; 138 no; 140-143 no; 151 no; 153 no; 154 sp; 155-158 sp; 161 no; 163-165 no; 168 no; 170-173 sp; 174 no; 176+177 no; 178 sp; 180,181,182 no; 183 sp; 184 no; 186 no; 190 no; 191-193 sp; 194 no; 195 sp; 196 no; 197 sp; 198 sp; 199 no.

9/10 mi. S and 2½ mi. W Lawrence (P.O); Douglas Co., Kansas

Dec. 17, 1948

Continuation of study started Dec 16 in above area; Dupicated research areas A-12-16-48, B-12-16-48, C-12-16-48 and D-12-16-48. at 1:30 P.M. as follows; (listing mammals caught followed by Condition of trap along the line);

1-12-17-48	Microtus ochrogaster	160-38-20-11-50 gms ♂
2-12-17-48	Peromyscus leucopus ?	192-90-21-16-16 gms ♂
4-12-17-48	Sigmodon hispidus	215-86-29-16-70 gms ♀ no emb.
9-12-17-48	Microtus ochrogaster	132-28-29-12-28 gms ♀ " "
12-12-17-48	Peromyscus maniculatus	140-60-19-12-15 gms ♀ " "
17-12-17-48	Sigmodon hispidus	211-80-29-16-65 gms ♀ " " back leg eaten
19-12-17-48	" "	185-75-27-14-½ gms ♀ " "
20-12-17-48	" "	185-80-27-20-68 gms ♂ testes 5 mm
22-12-17-48	Microtus ochrogaster	125-29-19-11-28 gms ♀ no emb.
23-12-17-48	" "	132-28-29-12-29 gms ♀ " "
24 34-12-17-48	Sigmodon hispidus	185-75-27-14-44 gms ♂ testes 4 mm
25-12-17-48	" "	185-78-26-14-44 gms ♀ no emb.
29-12-17-48	Peromyscus maniculatus	155-65-18.5-14-22 gms ♀ 2×3 emb 4.5 mm
30-12-17-48	Sigmodon hispidus	198-77-27.5-15-60 gms ♀ ~~2×3 emb~~ no emb.
36-12-17-48	" "	216-85-29-16-68 gms ♀ no emb.
41-12-17-48	Reithrodontomys	120-55-16-12-10 gms ♀ no emb
47-12-17-48	Microtus ochrogaster	160-38-20-11-50 gms ♀ no emb
48-12-17-48	" "	132-30-19-11-26 gms ♂ testes 4 mm
49-12-17-48	" "	131-31-19.5-11-28 gms ♀ no emb
52-12-17-48	Peromyscus maniculatus	140-68-19-11-16 gms ♀ no emb.
53-12-17-48	Microtus ochrogaster	161-39-20-11-51 gms ♀ no emb.
55-12-17-48	Peromyscus maniculatus	150-64-19.5-14-19 gms ♂ testes 4 mm
57-12-17-48	Sigmodon hispidus	214-85-16-64 gms ♂ testes 5 mm
58-12-17-48	Microtus ochrogaster	160-44-20.5-12-51 gms ♀ 2×2 emb 5 mm
59-12-17-48	Sigmodon hispidus	193-83-27-15-50 gms ♂ testes 7.5 mm this animal had a very ochraceous venter.

60-12-17-48 Reithrodontomys 121-54-16.5-12-9 gms ♀ no emb
61-12-17-48 Microtus ochrogaster 168-45-20-13-60 gms ♂
64-12-17-48 Sigmodon hispidus 193-80-25-14.75 gms ♀ no emb
66-12-17-48 Microtus ochrogaster 151-36-18-11-47 gms ♀ no emb
67-12-17-48 Sigmodon hispidus 178-78-~~22~~27-14-38 gms ♀ no emb
74-12-17-48 " " 176-72-27-14-38 gms ♀ no emb
79-12-17-48 Peromyscus maniculatus 140-68-19-11-17 gms ♂ teste 6 mm
83-12-17-48 Sigmodon hispidus 220-96-31.5-17-76 gms ♀ no emb.
87-12-17-48 Microtus ochrogaster 150-35-18-11.5-46 gms ♀ no emb
88-12-17-48 Reithrodontomys 122-60-16-12-8 gms ♂
91-12-17-48 " 121-57-17-11-9 gms ♂
95-12-17-48 Peromyscus maniculatus 120-45-18-12-11 gms ♂ teste 5 mm
97-12-17-48 Reithrodontomys 125-60-17-11-11 gms ♀ no emb
100-12-17-48 " 120-54-17-11-8 gms ♀ no emb
102-12-17-48 Peromyscus maniculatus 140-70-19-11-17 gms ♂ teste 6 mm
112-12-17-48 " " 141-69-19-11-13 gms ♂ teste 5 mm
131-12-17-48 " " 150-65-18.5-14-17 gms ♀ no emb.
148-12-17-48 Sigmodon hispidus 198-78-27-15-62 gms ♂ teste 4 mm
153-12-17-48 Peromyscus maniculatus 116-50-18-12-12 gms ♀ no emb
155-12-17-48 Microtus ochrogaster 132-28-30-12-30 gms ♀ no emb
156-12-17-48 Sigmodon hispidus 200-81-28-15-63 gms ♀ no emb
160-12-17-48 Peromyscus maniculatus 103-36-17-12-7 gms ♀ no emb
166-12-17-48 Microtus ochrogaster 133-29-31-12-32 gms ♀ no emb.
167-12-17-48 Sigmodon hispidus 201-80-28-15-65 gms ♀ no emb
168-12-17-48 Microtus ochrogaster 108-26-27.5-7-14 gms ♂ teste 3 mm
176-12-17-48 Sigmodon hispidus 211-80-29-16-65 gms ♀ no emb
177-12-17-48 Microtus ochrogaster 168-46-19-12-54 gms ♀ no emb
183-12-17-48 Peromyscus maniculatus 122-48-19-12-15 gms ♂ 5 mm
188-12-17-48 Microtus ochrogaster 169-47-19-12-53 gms ♂ teste 6 mm
194-12-17-48 Sigmodon hispidus (190)-(60)-30.5-16-68 gms ♀ no emb.
197-12-17-48 " " 214-85-16-63 gms ♂ testes 5 mm
198-12-17-48 Peromyscus maniculatus 152-64-19-14-18 gms ♂ teste 7 mm

Condition of traps in this line other than those ~~taken~~ holding mammals; 3 sp; 5,67 sp; 8 no; 10 no; 11 sp; 13-16 sp; 18 sp; 21 sp; 26,27 sp; 28 no; 31-35 sp; 37-40 no; 42 sp; 43-46 no; 50-51 no; 54 sp; 56 sp; 62 sp; 63 no; 65 sp; 68-69 sp; 70 no; 71,72 sp 73 no; 75-77 sp; 78 no; 80-82 no; 85,86 sp; 89,90 sp; 92 sp; 93 no; 94 sp; 96 sp, 98,99 no; 101 no; 103-105 no; 106 sp; 107-111 no; 113 sp; 114-119 no; 120 sp; 121-130 no; 132 no; 133 no; 134 sp; 135-145 no; 146 sp; 147 sp; 149- no; 150-152 sp; 157-159 sp; 161-165 no; 169-174 sp; 175 no; 178-180 sp; 181,182 no; 185, 186 sp no; 187 sp; 189 sp; 190 no; 191 sp; 192 no; 193 sp; 195 sp; 196 no; 199 sp; 200 no. Corvus brachyrhynchos in area of traps.

481218-215

9/10 mi. S and 2 1/2 mi. W Lawrence, Douglas Co., Kansas

Dec. 18, 1948

Continuation of study started Dec 16 and checked research areas A-12-16-48, B-12-16-48, C-12-16-48 and D-12-16-48. at noon. Beginning last night rained gently during several periods but total precipitation slight. This morning until noon a fine rain continuously but only slight precipetation. Temp above freezing. Skies overcast since yesterday evening and fog this morning.

3-12-18-48	Sigmodon hispidus	225-93-31-16-92 gms ♀ no emb.
4-12-18-48	Microtus ochrogaster	160-34-21-18-48 gms ♂ testes 8 mm
5-12-18-48	Reithrodontomys	118-51-16-11-8 gms ♀ no emb.
6-12-18-48	Sigmodon hispidus	230-96-31-17-87 gms ♂ testes 6 mm
8-12-18-48	"	" 122-93-31-17-80 gms ♀ no emb.
11-12-18-48	"	" 208-82-29-15-63 gms ♂ testes 5 mm
12-12-18-48	Reithrodontomys	completely eaten except head.
19-12-18-48	Sigmodon hispidus	216-88-30-17-76 gms ♂ testes 6 mm
20-12-18-48	"	" 198-78-29-16-68 gms ♀ no emb.
23-12-18-48	"	" 206-87-30-16-70 gms ♀ no emb
24-12-18-48	"	" 195-80-26-15-47 gms ♀ no emb
26-12-18-48	Peromyscus maniculatus	110-45-18-11-11 gms ♀ no emb
28-12-18-48	Sigmodon hispidus	223-92-30-16-86 gms ♂ testes 7 mm
35-12-18-48	"	" 210-44-28-17-74 gms ♂ testes 7 mm
36-12-18-48	"	" 280-113-33-18-120 gms ♀ no emb ♥ mammae ar legs & belly
37-12-18-48	Reithrodontomys	130-63-17-13-10 gms ♀ no emb
39-12-18-48	Sigmodon	213-82-30-15-79 gms ♀ no emb
41-12-18-48	Peromyscus maniculatus	no tail 18-12-17 gms ♀♂ no emb.
42-12-18-48	"	" 111-44-18-11-11 gms ♂ testes 5 mm
51-12-18-48	"	" 110-44-18-11-10 gms ♀ no emb
52-12-18-48	Reithrodontomys	118-51-16-11-8 gms ♀ no emb.
54-12-18-48	Sigmodon hispidus	205-82-27-16-60 gms ♀ no emb.
55-12-18-48	"	" 200-73-29-15-70 gms ♀ no emb
57-12-18-48	Sigmodon hispidus	181-76-25-16-44 gms ♀ no emb.
59-12-18-48	Microtus ochrogaster	143-39-20-12-32 gms ♂ testes 7 mm
60-12-18-48	Sigmodon hispidus	168-65-25-14-35 gms ♀ no emb
64-12-18-48	"	" 260-100-31-17-125 gms ♀ no emb
66-12-18-48	Microtus ochrogaster	144-36-20-12-37 gms ♀ no emb
67-12-18-48	Peromyscus maniculatus	136-58-18-12-13 gms ♂ testes 5 mm
69-12-18-48	Sigmodon hispidus	218-88-30-17-85 gms ♂ testes 6 mm
73-12-18-48	"	" 200-80-29-16-70 gms ♀ no emb.
76-12-18-48	"	" 190-75-27-16-43 gms ♂ testes 5 mm
78-12-18-48	microtis ochrogaster	164-44-20-11-54 gms ♂ testes 10 mm

79-12-18-48	microtus ochrogaster	126-31-20-10-24 gms ♀ no emb
80-12-18-48	Peromyscus maniculatus	132-51-17.5-12-12 gms ♂
82-12-18-48	Sigmodon hispidus	218-88-30.5-16-90 gms ♂ testes 6 mm
93 ~~-12-18-48~~	~~Sigmodon~~ Sigmodon hispidus	200-75-28-16-68 gms ♀ no emb.
96-12-18-48	Peromyscus maniculatus	130-50-17-10-12 gms ♀ no emb
97-12-18-48	Sigmodon hispidus	203-80-29-16-67 gms ♂ testes 5 mm
100-12-18-48	" "	228-96-30-15-68 gms ♂ testes 6 mm
101-12-18-48	Peromyscus maniculatus	120-46-17-10-11 gms ♀ no emb
104-12-18-48	" "	120-46-17.5-12-15 gms ♀ no emb
113-12-18-48	" "	140-54-18-13-19 gms ♀ no emb
121-12-18-48	Sigmodon hispidus	180-70-27-14-50 gms ♀ no emb
126-12-18-48	Peromyscus maniculatus	135-52-18-13-15 gms ♂ 6 mm
131-12-18-48	microtus ochrogaster	164-45-20-11-51 gms ♂ testes 11 mm
152-12-18-48	Sigmodon hispidus	212-85-29-15-90 gms ♂ testes 6 mm
158-12-18-48	" "	208-80-29-16-86 gms ♂ testes 6 mm
162-12-18-48	microtus ochrogaster	106-25-18-8-14 gms ♀ no emb
165-12-18-48	Peromyscus maniculatus	130-54-28-12-13 gms ♀ no emb
166-12-18-48	Sigmodon hispidus	211-86-30-18-90 gms ♂ testes 7 mm
167-12-18-48	Peromyscus maniculatus	131-51-18-13-14 gms ♂ testes 5 mm
172-12-18-48	Sigmodon hispidus	[172]-[55]-28-16-53 gms ♂
177-12-18-48	microtus ochrogaster	125-29-19-11 gms ♂ testes 5 mm
178-12-18-48	Peromyscus maniculatus	141-66-18 ♀ head eaten to thoracic level
179-12-18-48	Sigmodon hispidus	198-80-29-17-60 gms ♀ no emb.
182-12-18-48	Peromyscus maniculatus	131-53-18-12-12 gms ♀ no emb
183-12-18-48	microtus ochrogaster	168-45-20.5-12-54 gms ♂ testes 11 mm.
186-12-18-48	" "	156-40-21-12-42 gms ♀ no emb.
187-12-18-48	Reithrodontomys	125-55-16-11-8 gms.
188-12-18-48	microtus ochrogaster	135-84-19-10-25 gms ♀ no emb
189-12-18-48	Sigmodon hispidus	220-90.30-16-80 gms ♀ no emb.
195-12-18-48	microtus ochrogaster	154-41-19.5-10-44 gms ♀ no emb
197-12-18-48	Sigmodon	200-82-27-60 gms ♀ no emb.
198-12-18-48	microtus ochrogaster	135-28-19-11-37 gms ♂ teste 6 mm
200-12-18-48	Peromyscus maniculatus	~~200~~ 140-75-18-12-16 gms ♂ teste 6 mm.

Traps, other than those holding mammals are as follows:

1,2 sprung; 7 sprung; 9,10 sp; 13-18 sp; 21,22 sp; 25 no; 27 sp; 29-31 sp; 32,33 no; 34 sp; 38 sp; 40 sp; 43 sp; 44-47 no; 48-50 sp; 53 sp; 56 sp; 58 sp; 61-63 sp; 65 sp; 68 no; 70 no; 71 sp; 72 sp; 74,75 sp; 77 sp; 81 no; 83-92 sprung; 94,95 sp; 98,99 no; 102 sp; 103 no; 105 sp; 106-112 no; 114 no; 115 sp; 116-120 no; 122-124 no; 125 sp; 127 sp; 128-129 no; 130 sp; 132-141 no; 142 sp; 143-149 no; 150,151 sp; 153-157 sp; 159 sp; 160 sp; 161 no; 163,164 no; 168-171 sp; 173,174 sp; 175 no; 176 sp; 180,181 sp; 184,185 sp; 190,191 no; 192-194 sp; 196 no; 199 sp.

481219-217

9/10 mi. S and 2 1/2 mi W Lawrence (PO); Douglas Co.; Kansas

Dec. 19, 1948

Continued study of small mammal population started Dec. 16. Today at noon inspected research areas A-12-16-48; B-12-16-48; C-12-16-48; D-12-16-48. Cloudy last night but no precipetation. Minimum temp last night 28°F.

1-12-19-48	Peromyscus leucopus	161-71-22.5-15-19 gms ♀ no emb.
2-12-19-48	micratus ochrogaster	160-42-20-13-45 gms ♀ 1x0 emb. 4 mm
5-12-19-48	Peromyscus leucopus	148-70-21.5 ♀ partly eaten
8-12-19-48	Sigmodon hispidus	215-90-31-16-66 gms ♂ testes 5 mm
9-12-19-48	" "	230-98-31-16-98 gms ♂ testes 5 mm
12-12-19-48	Reithrodontomys	119-55-16.5-11-6 gms ♀ no emb
13-12-19-48	Peromyscus maniculatus	156-68-18.5-13-18 gms ♂
23-12-19-48	micratus ochrogaster	140-38-19-11-30 gms ♀ no emb.
26-12-19-48	Peromyscus maniculatus	foot 18.5 17 gms ♂ testes 6 mm
28-12-19-48	Sigmodon hispidus	235-91-31-17-80 gms ♂ testes 6 mm
29-12-19-48	Peromyscus maniculatus	148-16-19.5-14-20 gms ♂ testes 9 mm
35-12-19-48	Sigmodon hispidus	no tail foot 27.5, 56 gms ♀ no emb.
38-12-19-48	Micratus ochrogaster	161-43-20.5-13-54 gms ♂ testes 11 mm
43-12-19-48	Peromyscus maniculatus	143-46-18-14-14 gms ♂ testes 5 mm
48-12-19-48	micratus ochrogaster	130-33-19.5-10-24 gms ♀ no emb
49-12-19-48	" "	162-44-20.5-12-50 gms ♂
51-12-19-48	Peromyscus maniculatus	140-55-18.5-11-18 gms ♂ testes 5 mm
55-12-19-48	Sigmodon hispidus	185-72-27-14-47 gms ♂ testes 4 mm
57-12-19-48	Micratus ochrogaster	148-38-21-11-34 gms ♂ testes 8 mm
58-12-19-48	Sigmodon hispidus	198-82-27-14-44 gms ♀ no emb.
63-12-19-48	Reithrodontomys	125-54-17-11-8 gms ♀ no emb.
67-12-19-48	Peromyscus maniculatus	145-58-18-15-20 gms ♂ testes 7 mm.
72-12-19-48	" "	no tail, foot 17 mm, 13 gms, ♀ no emb
74-12-19-48	" "	Completely eaten.
77-12-19-48	Sigmodon hispidus	185-72-26-15-45 gms ♀ no emb
79-12-19-48	" "	186-73-26-15-42 gms ♂ testes 5 mm
82-12-19-48	" "	209-88-28-68 gms ♀ no emb. Eaten on head
83-12-19-48	" "	230-83-31.5-17-98 gms ♂ testes 7 mm
84-12-19-48	" "	227-88-30-18-90 gms ♂ testes 6 mm
88-12-19-48	Micratus ochrogaster	142-36-19.5-11-35 gms no emb.
90-12-19-48	" "	168-43-20-12-54 gms ♀ no emb
93-12-19-48	Sigmodon hispidus	206-80-28-15-66 gms ♀ no emb
96-12-19-48	micratus ochrogaster	110-26-17-9-16 gms ♀ no emb
102-12-19-48	Peromyscus maniculatus	120-47-18-13-12 gms ♀ no emb
105-12-19-48	" "	tail only.

111-12-19-48 Peromyscus maniculatus 144-51-17-13-12 gms ♀ no emb.
115-12-19-48 mus musculus 140-70-17-13-10 gms ♀ no emb.
118-12-19-48 Peromyscus maniculatus 122-48-18-13-12 gms ♂ testes 4 mm
120-12-19-48 microtus ochrogaster 153-38-21-11-45 gms ♂ testes 7 mm
126-12-19-48 Peromyscus maniculatus 118-46-17-11-10 gms ♂ 4 mm testes.
130-12-19-48 Leithrodontomys 120-55-16-11-7 gms ♂ testes 2 1/2 mm
151-12-19-48 Peromyscus maniculatus 117-46-17-13-10 gms ♀ no emb.
171-12-19-48 Sigmodon hispidus 225-90-30.5-16-71 gms ♀ no emb.
179-12-19-48 " " 219-89-30-18-88 gms ♀ no emb.
182-12-19-48 Reithrodontomys 122-57-15.5-11-8 gms ♀ no emb
183-12-19-48 Peromyscus maniculatus 134-58-18-13-14 gms ♀ no emb
188-12-19-48 microtus ochrogaster From same hole as one taken yesterday 138-35-19.5-10-81 gms ♂ testes 6 mm ^ 13 mm apart at junction of uterus
197-12-19-48 Sigmodon hispidus 286-122-33-18-145 gms ♀ no emb. ^
199-12-19-48 " " 118-86-30-16-71 gms testes 6 mm.

Mr Miller presented me with one Sigmodon hispidus taken from his residence 2/10 mi. E. It measured 248-104-33-17-134 gms.

Condition of traps other than those holding mammals:
3 no; 4 sp; 6 no; 7 sprung; 10 sp; 11 sp; 14-18 sp; 19, 20 unaffected; 21, 22 sprung; 24 sprung; 25 no; 27 sprung; 30, 31 sprung; 32, 33 no; 34 sp; 36, 37 no; 39 no; 40 sp; 41, 42 no; 44-47 no; 50 sp; 53 54 sp; 56 no; 59-42 sp; 64 no; 65, 66 sprung; 68-70 no; 71 sp; 73 sprung; 75; 76 no; 78 sp; 80, 81 no; 85-87 sp; 89 sp; 91 sp; 92 no; 94 sp; 95 sp; 97 sp; 98 no; 99 sp; 100-101 no; 103, 104 no; 106-110 no; 112 sp; 113, 114 no; 116, 117 no; 119 no; 121 sp; 122 no; 123-125 no; 127-129 no; 131-133 no; 134 sp; 135-150 no; 152, 153 no; 154, 155 sp; 156-160 no; 161, 162 sp; 163-167 no; 168, 169 sp; 172, 173 sp; 174-177 no; 178 sp; 180 sp; 181 no; 184-187 no; 189-194 no; 195 sp; 196 no; 198 sp; 2000 p.

9/10 mi. S and 2 1/2 mi. W Lawrence (P.O), Douglas Co., Kansas
Dec. 20, 1948

Inspected research areas A-12-16-48, B-12-16-48, C-12-16-48, D-12-16-48. at 1:00 P.M. Cold last night and clear and windy today. Temperatures moderating. mammals collected from line of traps are:

1-12-20-48 Peromyscus leucopus 193-91-21-16-28 gms ♀ no emb.
2-12-20-48 " " 164-71-22.3-15-21 gms ♂
3-12-20-48 " " — 67-21-15-12 gms ♂ head, neck, chest eaten
6-12-20-48 Sigmodon hispidus 212-90-29-16-60 gms ♀ no emb
9-12-20-48 " " 216-96-30-16-67 gms ♀ no emb.
10-12-20-48 " " 184-71-25-15-45 gms ♀ no emb
11-12-20-48 " " 185-72-26-15-42 gms ♂ testes 5 mm
12-12-20-48 " " 209-88-28-16-68 gms ♀ no emb
14-12-20-48 " " 229-83-32-17-90 gms ♂ testes 6 mm
15-12-20-48 226-87-30-18-90 gms ♂ testes 6 mm

17-12-20-48 Sigmodon hispidus 110-88-28.5-16-52 gms ♀ no emb
23-12-20-48 microtus ochrogaster 168-45-20-11-55 gms ♂ testes 11 mm
28-12-20-48 Sigmodon hispidus 283-118-32-18-120 gms ♀ no emb.
49-12-20-48 Peromyscus maniculi. 131-54-18-13-13 gms
56-12-20-48 Sigmodon hispidus 180-76-27-16-41 gms ♂ testes 4 mm
57-12-20-48 " " 200-86-28-16-53 gms ♀ no emb
58-12-20-48 " " eaten nest 12" x 16', cup 3½" x 2"
59-12-20-48 " " completely eaten except entrails
60-12-20-48 " " " " (prob an owl or hawk)
64-12-20-48 " " 218-81-29-17-8 gms ♀ no emb.
65-12-20-48 microtus ochro. 141-36-20-11-36 gms. testes 8 mm ♂
67-12-20-48 Peromyscus manic. 140-61-19-14-15 gms ♀ no emb.
68-12-20-48 " " 128-52-18-14-13 gms ♀ no emb.
72-12-20-48 Sigmodon hispidus 202-80-28-15-60 gms ♂ testes 6 mm, dark ochraceous belly
79-12-20-48 microtus ochrogaster 165-43-21.5-12-58 gms, testes 15 mm
80-12-20-48 Sigmodon hispidus 205-80-30-16-68 gms, ♂ testes 5 mm
82-12-20-48 microtus ochrogaster 150-37-19.8-11-43 gms ♀ no emb.
85-12-20-48 Sigmodon hispidus 208-85-28.5-17-67 gms ♀ no emb.
87-12-20-48 " " 230-96-31-16-87 gms ♂ testes 5 mm
90-12-20-48 " " 210-89-29-18-75 gms ♀ no emb
94-12-20-48 " " 120-89-29.5-16-82 gms ♀ no emb
100-12-20-48 Reithrodontomys 128-56-16.2-12-8 gms ♂
153-12-20-48 Peromyscus manic (125)-(32)-19-14-16 gms ♂ testes 7 mm
154-12-20-48 Sigmodon hispidus Completely eaten
161-12-20-48 microtus ochrogaster 118-32-18-8-14 no emb. ♀
193-12-20-48 Reithrodontomys 118-55-16-10-6 ♀ no emb.
196-12-20-48 Pitymys pinetorum 142-30-19-9-40 gms.
199-12-20-48 Sigmodon 210-86-30-17-65 gms ♂ testes 5 mm

Conditions of traps other than those holding mammals:
4 sp; 5 no; 7,8 no; 16 no; 18-22 sprung; 24 sp; 25 sp; 26 no; 27 sp; 29,30 sp; 31-41 no; 42 sp; 43-48 no; 50 no; 51,52 no; 53-55 sp; 61-63 sp; 64 no; 61-71 no; 73-78 no; 81 no; 83,84 no; 80 no; 88,89 no; 91,92 sp; 93 no; 95-97 sp; 98,99 no; 101-150 no; 151 sp; 152 no; 155,156 no; 157 sp; 158,159 no; 160 sp; 162 no; 163-170 no; 171 sp; 172-182 no; 183 sp; 184-187 no; 188 sp; 189 no, 190 no; 191,192 no; 194,195 no; 197; 198 no; 200 sp.

9/10 mi S and 2½ mi. W Lawrence (P.O.); Douglas Co., Kansas
Dec 21, 1948

Continued study started Dec 16. At 1:00 P.M inspected research areas A-12-16-48, B-12-16-48, C-12-16-48 and D-12-16-48 as follows;
7-12-21-48 Sigmodon hispidus 235-100-31-16-90 gms ♀ no emb.

19-12-21-48	Sigmodon hispidus	263-114-32-17-125 gms ♀ no emb
23-12-21-48	Microtus ochrogaster	140-34-19-12-30 gms ♀ no emb
27-12-21-48	" "	140-36-20-11-38 gms ♀ no emb
38-12-21-48	" "	168-45-20.5-12-60 gms ♀ no emb
58-12-21-48	" "	155-40-20-10-47 gms ♀ (caught in nest)
65-12-21-48		111-22-20-9-13 gms ♂ 5 mm testes
68-12-21-48	Peromyscus maniculatus	122-49-17-12-12 gms ♀ no emb
69-12-21-48	" "	118-28-17-11-17 gms ♂ testes 6 mm
71-12-21-48	Sigmodon hispidus	trap misplaced.
77-12-21-48	" "	" "
79-12-21-48	" "	completely eaten by hawk or owl
105-12-21-48	Peromyscus maniculatus	126-48-19-12-12 gms ♂ testes 4 mm
154-12-21-48	Sigmodon hispidus	trap misplaced.
170-12-21-48	" "	" "
195-12-21-48	Reithrodontomys	113-52-16-11-8 gms ♀ no emb.
198-12-21-48	Sigmodon hispidus	223-96-31.5-16-80 gms ♂ testes 6 mm

Condition of traps not holding mammals:

1 no; 2-5 no; 6 sp; 8 sp; 10, 11 no; 12 sp; 14 no; 15-18 sp; 20-22 no; 24 sp; 25, 26 no; 28-37 no; 39 no; 40 sp; 41-53 no; 54-57 sp; 59 no; 60-64 sp; 66, 67 sp; 70 no; 72 sp; 73 no; 74 sp; 75 no; 76 sp; 78 sp; 80 sp; 81 no; 82 sp; 83 no; 84, 85 sp; 86, 67 no; 88, 89 sp; 90 no; 91-97 sp; 98-99 no; 100 sp; 101-104 no; 106-128 no; 139 sp; 140-153 no; 155 no; 156-158 no; 159 sp; 160-169 ~~sp~~ no; 171, 172 no; 173 sp; 174-180 uneffected; 181 sp; 182-194 no; 196, 197 no; 199, 200 no.

9/10 mi. S and 2 1/2 mi. W Lawrence (P.O), Douglas Co., Kansas

Dec. 22, 1948

Continued study of small mammal population. at 1:00 P.M checked research areas A-12-16-48, B-12-16-48, C-12-16-48, D-12-16-48. Last night cold, today cloudy & less wind.

2-12-22-48	Peromyscus leucopus	185-86-22-15-28 gms ♂
3-12-22-48	Microtus ochrogaster	151-36-19.5-32 ♀
9-12-22-48	Sigmodon hispidus	233-96-31-86 gms ♀
10-12-22-48	" "	trap misplaced or better, displaced
16-12-22-48	" "	243-104-31-18-96 gms ♀
17-12-22-48	" "	210-84-30-15-76 gms ♂
30-12-23-48	Microtus ochrogaster	eaten
36-12-23-48	Sigmodon hispidus	233-93-32.5-17-97 gms ♂
52-12-23-48	" "	198-80-28-15-52 gms ♀
55-12-23-48	Peromyscus manic.	122-46-18-13-12 gms ♂
58-12-23-48	Microtus ochrogaster	113-30-16-9-14 gms ♂

63-12-22-48 Segmodon hispedus 210-82-29-16-65 gms ♀ no emb.
65-12-22-48 microtus ochrogaster 116-31-17-9-15 gms ♀ no emb
100-12-22-48 " " 144-37-20-10-32 gms ♀ no emb

Traps not holding mammals are: 1 no; 4-7 no; 8 sp; 11-14 no; 15 sp; 18-29 no; 31-35 no; 37-51 no; 53-54 no; 56-57 no; 59 no; 60-62 sp; 64 no; 67-81 no; 82 sp; 83-84 no; 85 sp; 86-87 no; 88 sp; 89 no; 90-91 sp; 92-93 no; 94 sp; 95-96 no; 97 sp; 98-99 no; 101-157 no; 158 sp; 159-200 no.

3 Corvus brachyrhynchos and a marsh hawk in trapping area.

9/10 mi. S and 2½ mi. W Lawrence (P.O), Douglas Co., Kansas

Dec 23, 1948

At 11:00 A.M started to snow and by 12:00 A.M sufficient snow to cover ground & traps. Had efpected to run traps this last day but will consider dec 22 as the final run. When snow has left ground will reclaim traps rather than try to dig them out individually. I have noticed a tendency of mammals captured on trapline to alternate in kinds taken as the study progressed instead of a register of the same kind of mammal in consecutive traps.

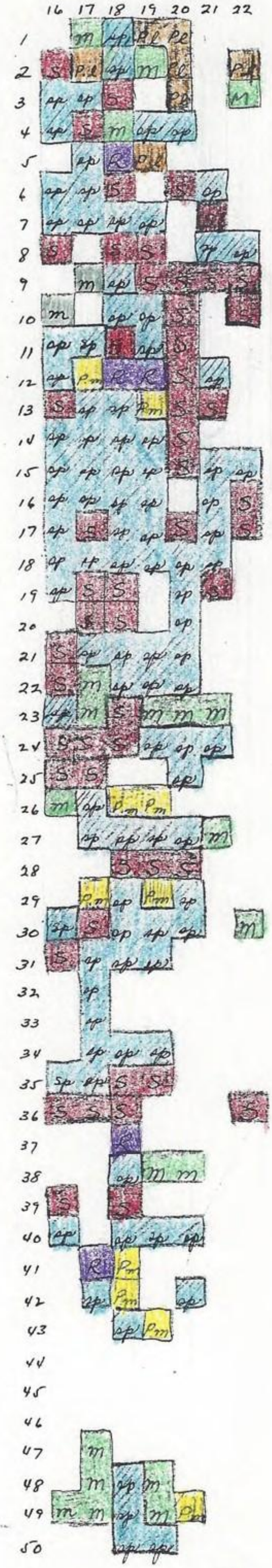
Some general considerations in summary of the above study started Dec 16, 1948 are:

1. microtus ochrogaster is generally distributed throughout the animal community and are not being displaced or crowded to peripheral or localized areas.
2. Microtus ochrogaster have a preference for Andropogon – muhlenbergia – Boutelova association and are found less commonly outside these areas.
3. Sigmodon hispidus has a greater latitude of adaptability for different plant associations than Microtus ochrogaster
4. Microtus ochrogaster can tolerate small areas of the plant community than Sigmodon.
5. Peromyscus leucopus is confined to peripheral edge bordering trees. Peromyscus maniculatus is found throughout the grass area.
6. Sex ratio of microtus normal in usual plant-animal community but is disproportionate in peripheral areas.
7. Mus musculus found associated with Peromyscus areas
8. Pitymys is outside Sigmodon–microtus community
9. Males larger than females except Pero. leucopus; females occur in greater numbers than males; males, except Pero leucopus, are heavier.
10. Sigmodon are in microtus community on the basis of 2 to 1 in favor of Sigmodon
11. Sigmodon has a greater survival value than microtus because of ability to use different ecological communities.

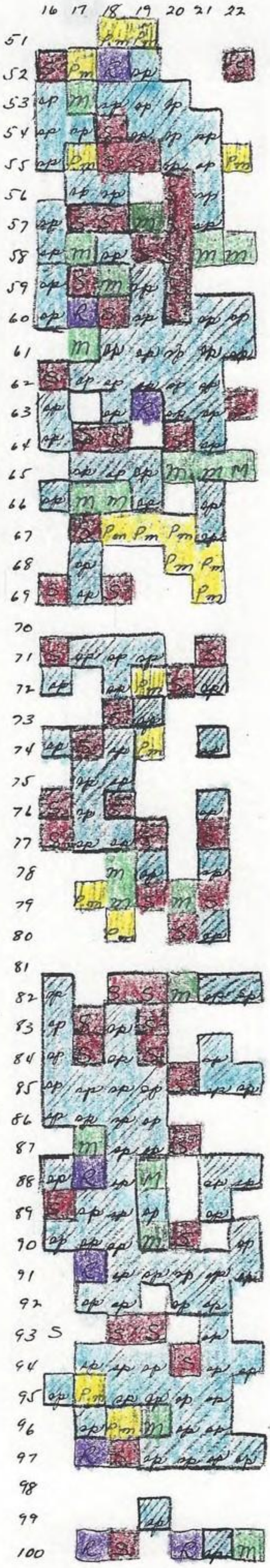
The following is a summation of this study (Dec 16-23)

481223-222

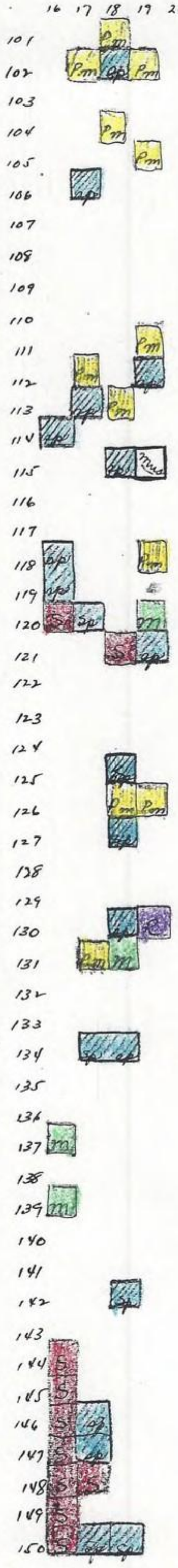
Research area A-12-16-48
Dates



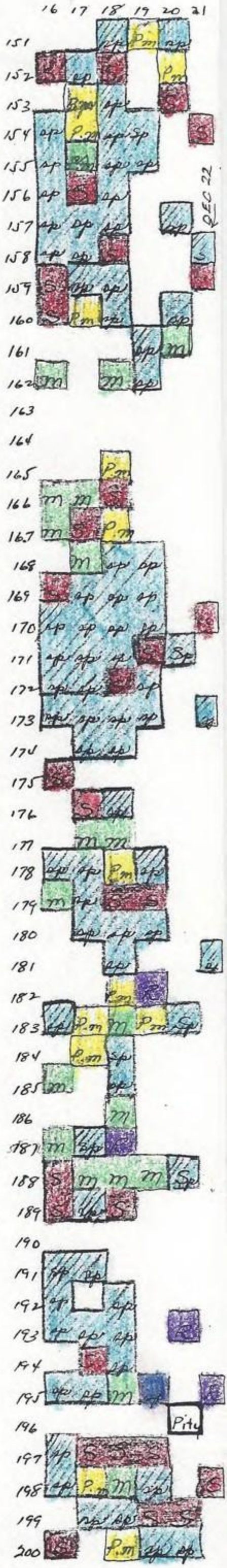
Research area B-12-16-48
Dates



Research area C-12-16-48
Dates



RESEARCH AREA D-12-16-48
Dates



DEC 22

KEY

S = Sigmodon hispidus — Pm = Peromyscus maniculatus
M = Microtus ochrogaster — Pitty = Pitymys nemoralis
R = Reithrodontomys — Mu = mus
Pe = Peromyscus leucopus — sp = spermophilus

(The control of Sigmodon is dynamic) Frequency pattern of mammal catch

The species of mammals collected are all considered to be common to the general area and include the following:

Microtus ochrogaster ochrogaster (Wagner)
Sigmodon hispidus texianus (Audubon and Bachman)
Peromyscus leucopus noveboracensis (Fishher)
Peromyscus maniculatus bairdii (Hoy and Kennicott)
Reithrodontomys sp?
Mus musculus Linnaeus.
Pityms nemoralis (Bailey)

Frequency and percent frequency of the various members of the species in the aggregate of the research areas.

Microtus	Sigmodon	Peromyscus L.	Peromyscus m.	Reithro	Mus	Pityms
66 - (25%)	126 - (47%)	7 - (.03%)	47 - (17%)	18 - (07%)	1 - (001%)	1 - (004%)

Frequency and percent frequency of species in individual research areas.

	Microtus	Sigmodon	Peromyscus L	Peromyscum	Reithro.	Mus	Pityms.
A	21 - (24%)	46 - (52%)	7 - (.08%)	9 - (17%)	5 - (05%)	0 - (0%)	0 - (0%)
B	21 - (27%)	46 - (50%)	0 - (0%)	19 - (20%)	8 - (08%)	0 - (0%)	0 - (6%)
C	4 - (15%)	10 - (37%)	0 - (0%)	11 - (40%)	1 - (.03%)	1 - (03%)	0 - (0%)
D	20 - (35%)	20 - (42%)	0 - (0%)	8 - (12%)	4 - .14%	0 (0%)	1 - (02%)

Visitation to individual trap sets during 7 day period.

Area A	Area B	Area C	Area D
197 (56%)	214 (61%)	49 (14%)	143 (41%)

Individual trap visitations.

Area A	Area B	Area C	Area D
47 - (94%)	48 (96%)	30 (60%)	47 (94%)

Visitation of individual traps as an aggregate. 172 - (86%)

Sex ratio of the species in the aggregate.

	Microtus	Sigmodon	Peromyscus L	Peromyscus m.	Reithro	Mus.	Pityms
♂	27 (41%)	57 (45%)	5 (71%)	25 (53%)	7 (39%)	0 (0%)	0 (0%)
♀	39 (59%)	69 (55%)	2 (29%)	22 (47%)	11 (61%)	1 (100%)	1 (100%)

Sex ratios in individual areas.

		Microtus	Sigmodon	Pero. L	Pero. m.	Reithrodontomys	Mus	Pityms
A	♂	8 (38%)	21 (45%)	5 (100%)	5 (55%)	1 (25%)	0 (0%)	0 (0%)
	♀	13 (62%)	25 (54%)	0 (0%)	4 (45%)	3 (75%)	0 (0%)	0 (0%)
B	♂	8 (38%)	19 (41%)	0 (0%)	11 (58%)	3 (37%)	0 (0%)	0 (0%)
	♀	13 (62%)	27 (59%)	0 (0%)	8 (42%)	5 (63%)	0 (0%)	0 (0%)
C	♂	2 (50%)	6 (60%)	0 (0%)	5 (55%)	2 (100%)	0 (0%)	0 (0%)
	♀	2 (50%)	4 (40%)	2 (100%)	6 (45%)	0 (0%)	1 (100%)	0 (0%)
D	♂	9 (45%)	11 (46%)	0 (0%)	4 (50%)	1 (25%)	0 (0%)	0 (0%)
	♀	11 (55%)	13 (54%)	0 (0%)	4 (50%)	3 (75%)	0 (0%)	1 (100%)

Average measurements of specimens from the individual areas.

Sigmodon hispidus

Research Areas	Sex and no.	Length	tail	foot	ear	wt.	testis or em
A	♂ 21	208 (235-177)	85 (98-71)	28.8 (32.5-25)	15.5 (20-12)	75 (98-43)	5.1 (7-4)
	♀ 25	207 (283-110)	80.3 (118-70)	29.4 (33-26)	15.1 (18-14)	75 (125-40)	0 (0-0)
B	♂ 19	202 (230-180)	82.5 (96-72)	28.8 (31.5-27)	15.7 (18-12)	68.5 (98-41)	6.7 (7.5-4)
	♀ 27	197 (260-168)	80.8 (100-65)	27.8 (31.5-22)	15.3 (18-13)	65.5 (125-38)	0 (0-0)
C	♂ 6	204 (213-190)	83.5 (88-78)	28.3 (30.5-26)	17.5 (16-12)	73 (79-62)	4.5 (5-4)
	♀ 4	193 (198-180)	77 (82-70)	28.3 (30-27)	12.7 (15-10)	60 (69-50)	0 (0-0)
D	♂ 11	205 (246-118)	88 (100-75)	28.7 (32.5-16)	15.5 (18-14)	76 (94-53)	5.8 (7-5)
	♀ 13	213 (286-198	86 (122-80)	29.1 (30.5-27)	16 (18-15)	64 (145-60)	0 (0-0)

Average of sexes of aggregate area.

♂	206.7	84.7	28.6	16.1	70.0	5.0
♀	205.0	81	28.4	14.7	66.6	0
sexes combined	205.9	82.8	28.5	15.4	68.2	

Microtus ochrogaster

Research Area	Sex and no.	Length	tail	foot	ear	wt.	testis or em
A	♂ 8	151 (168-125)	37 (45-28)	19.7 (20.5-17)	12.2 (15-11)	43.8 (55-26	8.5 (11-4)
	♀ 13	142 (168-125)	35 (45-28)	19.5 (20.5-19)	12.3 (13-10)	35.3 (60-24)	.15 (3-1)
B	♂ 8	144 (168-111)	37 (45-22)	19.5 (21.5-16)	11.0 (13-9)	37.6 (60-40)	8.7 (15-5)
	♀ 13	144 (168-110)	36.4 (44-26)	19.3 (20.5-17)	10.7 (12-9)	36.0 (54-16)	.08 (1-1)
C	♂ 2	159 (164-153)	41.5 (21-20)	20.5 (21-20)	11 (11-11)	48 (51-45)	9 (11-7)
	♀ 2	142 (156-129)	36 (38-34)	19.5 (19.5-19.5)	11 (11-11)	39.5 (49-30)	0 (0-0)
D	♂ 9	148 (170-108)	38.4 (48-26)	19.5 (21-17.5)	10.9 (13-7)	39.9 (56-14)	7.5 (14-3)
	♀ 11	140.8 (168-106	35.3 (46-25)	21.4 (31-18)	10.9 (12-8)	33.3 (54-14)	0 (0-0)

Average of sexes of aggregate area

♂	150	38.4	19.8	11.2	42.3	8.4
♀	142	35.9	19.9	11.2	36.1	0
sexes combined	146	37.1	19.85	11.2	39.2	

Peromyscus maniculatus

Research area	Sex and no.	Length	tail	foot	ear	wt.	testis or em
A	♂ 5	139 (156-111)	43.5 (68-16)	18.3 (19.5-18)	13 (14-11)	16.8 (20-14)	7 (9-5)
	♀ 4	134 (155-110)	56.2 (65-45)	18.3 (19-18)	12.5 (14-11)	15.2 (22-11)	.2 (1-1)
B	♂ 11	137 (150-118)	54.2 (70-28)	18.2 (19.5-17)	12.2 (15-11)	15.5 (20-11)	9 (7-4)
	♀ 8	129 (141-110)	53.4 (64-44)	19 (19-17)	12.1 (14-12)	12.5 (15-10)	0 (0-0)
C	♂ 5	131 (141-118)	57 (70-46)	18.2 (19-17)	11.8 (13-11)	13.4 (17-10)	5 (6-4)
	♀ 6	132 (150-120)	52 (65-46)	17.7 (18.5-17)	12.5 (14-10)	17.2 (19-11)	0 (0-0)
D	♂ 4	138 (152-122)	63 (75-48)	18.8 (19-18)	13 (14-12)	16.2 (18-15	6.2 (7-5)
	♀ 4	117 (134-103	47.5 (58-34	17.5 (18-17)	12.5 (13-12)	10.8 (14-7)	0 (0-0)

Average of sexes of aggregate area

♂	153	54.4	18.4	12.4	15.4	6.8
♀	128	52.2	18.1	12.4	13.9	
sexes combined	140	53.3	18.2	12.4	14.6	

Reithrodontomys

Research Area		Sex No.	Length	tail	Foot	ear	weight	testis embryos
A	♂	1	120 (120-120)	55 (55-55)	16 (16-16)	12 (12-12)	10 (10-10)	—
	♀	3	122 (130-118)	56.3 (63-51)	16.5 (17-16)	11.6 (13-11)	8 (10-6)	0 (0-0)
B	♂	3	123 (128-121)	58 (60-50)	16.4 (17-16)	11.7 (12-11)	8.3 (9-8)	0 (0-0)
	♀	5	122 (125-118)	54.6 (60-51)	16.7 (17-16)	11.2 (12-11)	8.8 (11-8)	0 (0-0)
C	♂	2	120 (120-120)	55 (55-55)	16 (16-16)	11 (11-11)	7 (7-5)	0 (0-0)
	♀	0	118 (122-113)	54.6 (57-52)	15.8 (16-15)	10.6 (11-10)	7.3 (8-6)	0 (0-0)
D	♂	1	125 (125-125)	55 (55-55)	16 (16-16)	11 (11-11)	8 (8-8)	0 (0-0)
	♀	3K						

Average of sexes of aggregate area.

♂	122	55	16.4	11.4	8.8	2.5
♀	120	55.1	16.3	11.1	8.0	
Sexes combined	121	55.15	16.35	11.25	8.4	

Peromyscus leucopus

Research areas								
A	♂	5	170 (192-140)	76 (90-67)	21.5 (22.3-21)	15.2 (16-15)	19.2 (28-12)	—
	♀	2	177 (193-161)	81 (91-71)	21.7 (22.5-21)	15.5 (16-15)	23.2 (28-19	—
B	♂	0	0	0	0	0	0	0
C								
D	♀	0	0	0	0	0	0	0

Averages of sexes of aggregate area.

♂	170	76	21.5	15.2	19.2	—
♀	177	81	21.7	15.5	23.2	—
total sexes	174	78	21.6	15.35	21	-

Pitymys nemoralis

Research area								
D	♀	1	142 (142-142)	30 (30-30)	19 (19-19)	9 (9-9)	40 (40-40)	0 (0-0)
Sexes combined			142	30	19	9	40	

Mus musculus

Research area								
C	♀	1	140 (140-140)	70 (70-70)	17 (17-17)	13 (13-13)	10 (10-10)	0 (0-0)
Sexes combined			140	70	17	13	10	

The average length of testes are: microtus 8.4 (15-3); Synaptomys 5.5 (7.5-4); Peromyscus maniculatus 6.8 (9-4); Reithrodontomys 2.5 (2.5).

number of females possessing embryos and average length: microtus 3 (5 mm); Peromyscus m. 1 (4.5 m

481228-226

9/10 mi. S and 2 1/2 mi. W Lawrence (P.O); Douglas Co., Kansas

Dec. 28, 1948

visted study area of Dec 16 and reclaimed all traps which were covered on Dec 23 with snow, but now exposed. There were only a few mammals in these traps but they were so far gone no record was kept.

Lawrence, Douglas Co., Kansas

December 30, 1948

Dr. Chas G. Sibley, Dr. Henry S Fitch, M D Arvey and I made Christmas bird census today. Area covered was within 7 1/2 miles radius of the Post Office in Lawrence and consisted of 70 per cent open farmland, 10% roadside fence rows; 10% deciduous woodland; 5% river, 3% or less marsh, 2% urban. Several main focal points were checked including Haskell Bottoms, canyon east of Pleasant Grove, area west of Pleasant Grove, Lake View, Robinson Farm. Observed the following

Anas p. platyrhynchas 6
Anas acula tzitzihoa 1
Glaucionetta clangula americana 14
Accipter striatus 1
Buteo jamaicensis borealis 19 (5 melanistic)
Buteo lagopus s. johannis 1
Circus cyaneus 13
Falco sparverius 7
Colinus virginianus 18
Zenaidura marginella 2
Bubo virginianus 2
Colaptes auratus 63
Sphyrapicus varius 8
Melanerpes erythrocephalus 1
Dendrocopus villosus 2
" pubescens 10
Otocoris alpestris 8
Cyanocitta cristatus 6
Corvus brachyrhynchos 99
Parus atricapillus 90
Baeolophus bicolor 6
Certhia familiaris 1
Thryothorus ludovicianus
Turdus migratorius

Sálea sealea 22
Lanius ludovicesnus 1
Sturnus vulgaris 508 (flocks of 400-50-108)
Passer domesticus 82
Sturnella magna 48
Agelaius phoeniceus 4
Richmondena cardinalis 59
Carpodacus purpureus 1
Spinus tristis
Pipilo maculatus 3
Junco hyemalis 148
Zonotrichia querula 39
" leucophrys 9
Melospiza melodia 29

Total species 39, 1782 individuals. Temp 12°F to 30°F by noon. no wind. Snow on ground in sheltered places and on north exposures. Fresh water of creeks & ponds frozen except the Kansas River.