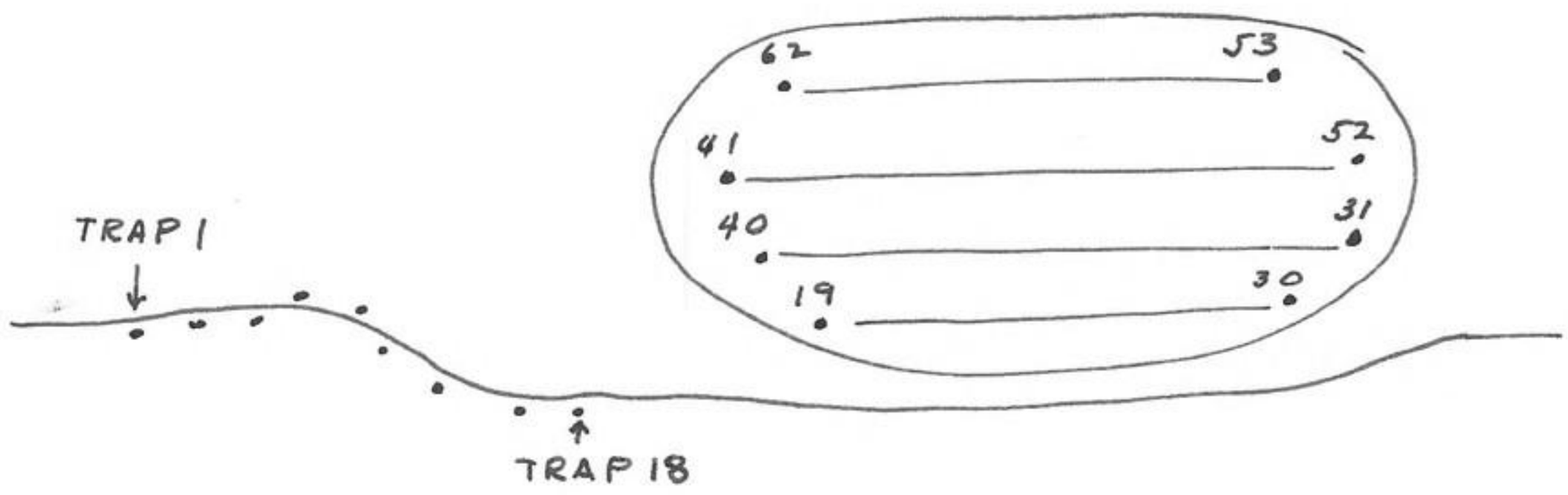
JOURNAL 1964

JAMES W. BEE

4100 mi. N and 100 ft W Clinton (Center of town), Douglas Co., Kansas.

Jan. 1, 1964

Inspected trapline set last night in sedge marsh (Carex lacustris Willd) north of Clinton at base of hill at south side of Wakarusa valley. Temp. 27° F at 9:00 A.M.



Traps set in pairs at each station and approx. 10 feet apart, (each set). Collected plant of marsh and identified as Carex lacustris Willd, no 640101-101. Traps 63 to 100 on E side of road did not yield any mammals nor sprung trap, an area that in previous year supported many Microtus ochrogaster (see notes of the previous trapping, 1963) The burnt area E of Carex marsh above and between the marsh and road supported the following birds feeding on the ground or among trees.. 25 chickadees, 80 tree sparrows on ground, 1 downy, 1 flicker, 8 cardinals, 5 song sparrows and 3 Harris sparrows.

Continued E to bridge over Wakarusa River (just N of sec 14, R 18 E and T 13 S., approx 1 mi. N E Clinton). Inspected river from bridge to a point approx 7/10 mi down stream to high cliffs at S edge of river. Ice on river and snow to show mammal tracks. Tracks noted in snow or birds active along edge of river are as follows: 2 coyotes, 2 foxes, 1 skunk, 1 muskrat, 1 raccoon, Peromyscus (several), 150 tree sparrows, 60 juncos both Oregon & slate colored, 12 Harris sparrows, 20 chickadees, 1 downy woodpecker, 8 cardinals, 2 red-bellied woodpeckers, 2 red-tail hawks, cottontail rabbit tracks 1 set per 150 feet and not as common as elsewhere in the Wakarusa valley area. There was a concentration of 13 sets of Peromyscus tracks on ice in an area of 30 linear feet at S end of wooded area. Coyote and fox tracks all along river ice except near bridge. Beaver dam across river at point where river nearest highest cliffs. Water open here below dam for about 80 feet. Congregation of birds here also. Beaver sealed in with solid water of river)

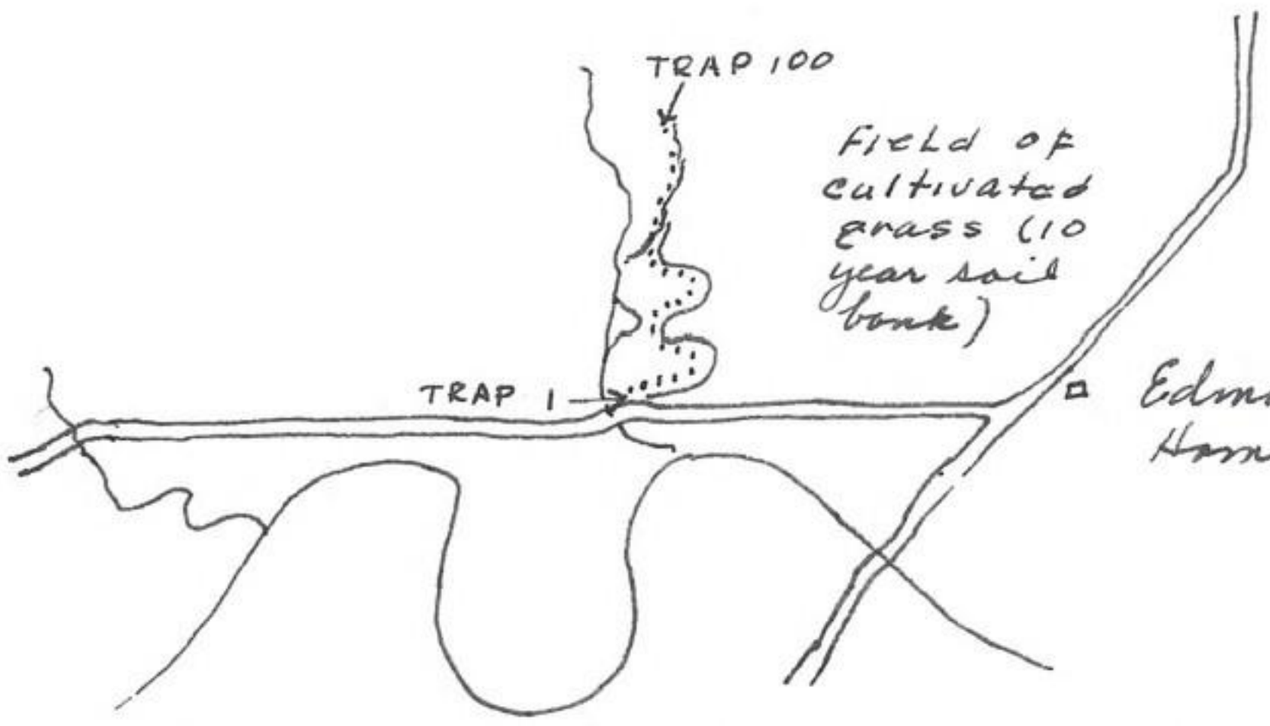
Mammals collected from trap line set last night:

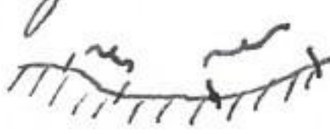
640101-2 Reithrodontomys megalotis 148-70-17-12-13gms ♀ ut normal
640101-4 " " 129-63-16-12-9gms ♀ ut normal
640101-5 Sigmodon hispidus 212-91-29-15-61gms ♀ ut normal
640101-8 Reithrodontomys megalotis 146-66-16.5-12-14gms ♀ ut normal
sk.only 640101-13 Microtus ochrogaster 158-36-20-12-46gms ♀ ut. normal
640101-14 " " 157-36-20-12-49gms ♂ testes 7mm
dest. 640101-15 Reithrodontomys megalotis 127-55-16-12-11gms ♀. ut. normal.
640101-16 " " 136-65-16-12-10gms. ♂ testes 3mm
640101-17 Peromyscus maniculatus 133-52-18-12-15gms ♀ ut normal
640101-18 Reithrodontomys megalotis 140-70-17-12-10gms ♀ ut normal
640101-19 " " 146-68-17-12-10gms ♀ ut normal
640101-25 Peromyscus leucopus 165-71-22.5-14-23gms ♂ testes 4.5mm
640101-28 Peromyscus leucopus [143]-[48]-22.5-14-22gms ♀ ut normal
640101-29 Reithrodontomys megalotis 131-63-17.5-11-9gms ♂ testes 3mm
640101-39 " " 124-55-16-12-9gms ♀ ut normal
640101-60 Reithrodontomys megalotis 131-62-16.5-11-9gms ♀ ut normal

1 3/20 mi. N and 2 13/20 mi. E Clinton, Douglas Co., Kansas

Jan 2, 1964

Set 100 traps in field west of Edmonds home. This area is E of the north end of the proposed Clinton Reservoir Dam and outside of the reservoir area but is adjacent and info. may be used as comparative material when water occupies Wakarusa Valley.



The main field is of Lepidgo and is this year in its 10th year of soil bank. For the years preceding this the field was used to forage pigs. The grass had been cut periodically but never plowed. The trapping area was W of field in natural swale which was developed as lateral erosion when creek was at this heighth. It is too rough for cutting so is allowed to grow to natural vegetation. The most runways are at base and side of swale  , fewer on flat field above.

1 3/20 mi. N and 2 13/20 mi. E Clinton, Douglas Co., Kansas

Jan 3, 1964

Picked up traps (8:30 A.M.), set last evening. The traplins information was follows

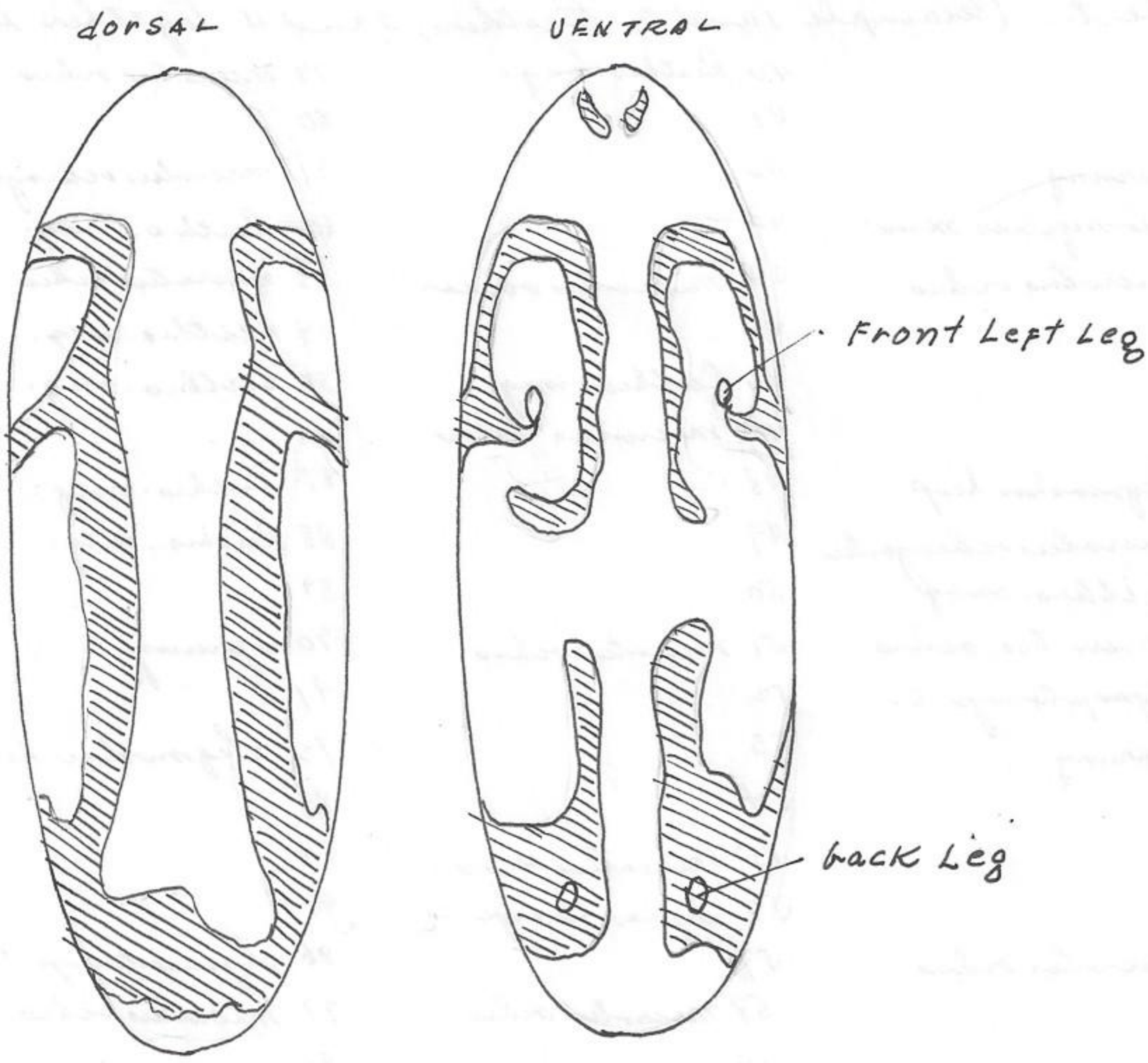
mammals from trapline. 2 traps on same runway every 20 feet. (example 1 and 2 together, 3 and 4 together etc.)

1
2
3 sprung
4 Peromyscus man.
5 Microtus ochro
6
7
8
9 Sigmodon hisp
10 Microtus ochrogaster
11 Reithro. meg
12 Microtus ochro
13 Synaptomys c.
14 sprung
15
16
17
18 Microtus ochro
19
20
21 Microtus ochro
22 " "
23 " "
24 sprung
25 sprung
26 Microtus ochro
27
28 Microtus ochro
29 sprung
30 Microtus ochro
31 Microtus ochro
32 Microtus ochro
33 sprung
34
35
36
37 Microtus ochro
38
39
40 Reithro. meg.
41
42
43
44 Microtus ochro
45
46 Reithro. meg.
47 Microtus ochro
48
49
50
51 Microtus ochro
52
53
54
55 Microtus ochro.
56 Synaptomys c
57
58 Microtus ochro
59
60
61 Microtus ochro
62 Microtus ochro
63 " "
64
65
66
67 Microtus ochro
68
69
70 Microtus ochro
71 " "
72 Microtus ochro
73
74
75
76
77
78 Reithro meg.
79 Microtus ochro
80
81 Microtus ochrogaster
82 Reithro. meg.
83 Microtus ochro
84 Reithro. meg.
85 Reithro. meg.
86
87 Reithro. meg.
88 Reithro. meg.
89
90 sprung
91
92 Sigmodon hisp
93
94
95
96 Synaptomys c.
97 Microtus ochro
98 " "
99 Reithrodontomys megalotis
100

Summary:

30	Microtus ochrogaster
1	Peromyscus maniculatus
2	Sigmodon hispidus
10	Reithrodontomys megalotis
3	Synaptomys cooperi
46	total

ANTERIOR



Synaptomys cooperi no. 640103-13

condition of pelage change. Hatch in black skin reverted with flesh side out. The new hair on back comes in in definite arcuate form.

Preparation of mammals captured this A.M:

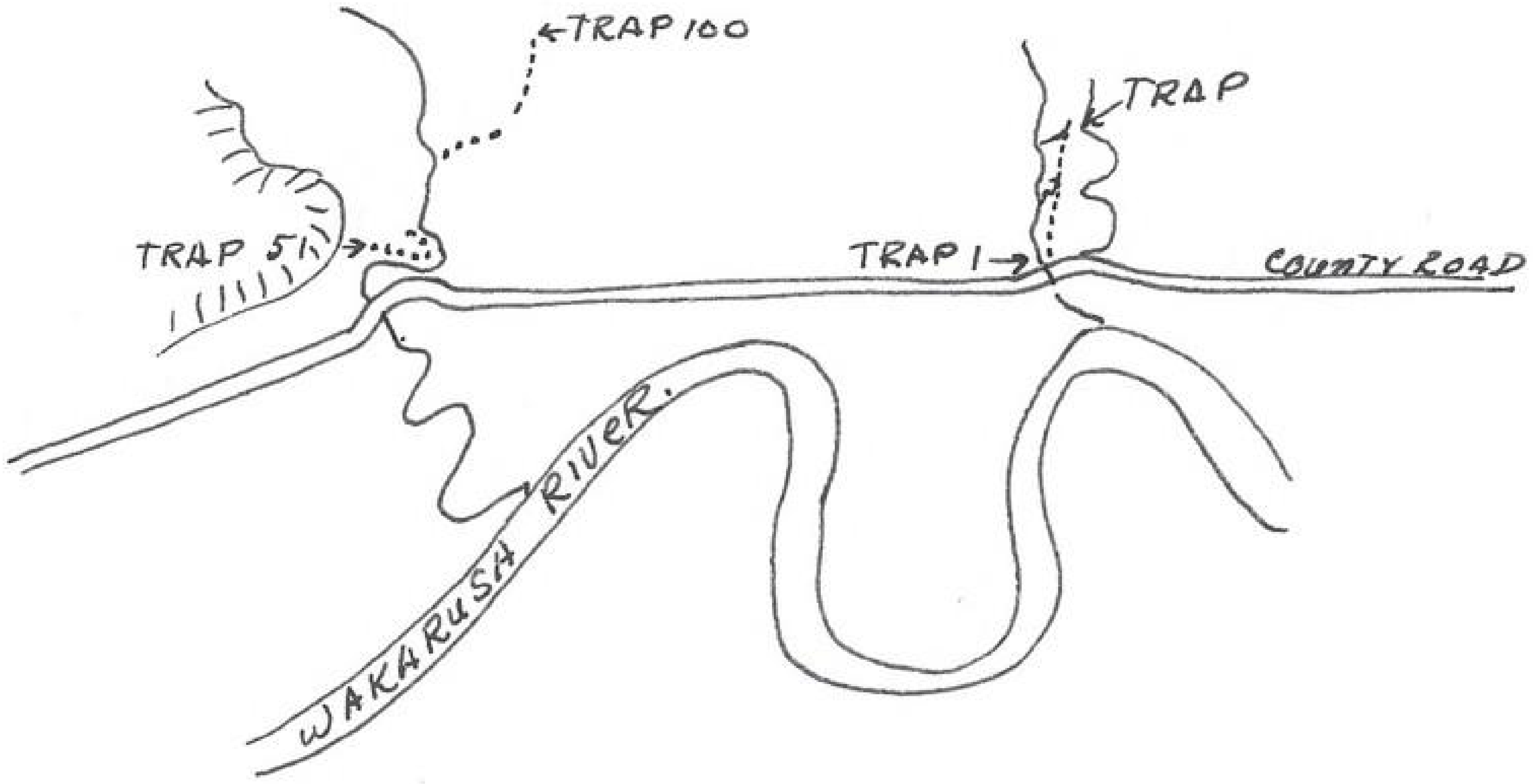
640103-4	Peromyscus maniculatus	[131-]-[46]-19-12-17 gms ♂ testes 4.5 mm
640103-5	microtus ochrogaster	145-33-21-11-36 gms ♂ testes 8 mm
640103-9	Sigmodon hispidus (over Synaptomys Cooperi)	220-87-31-17-66 gms ♀ ut normal
640103-10	microtus ochrogaster	155-38-19-11-40 gms ♀ ut normal
640103-11	Reithrodontomys megalotes	128-61-16-12-9 gms ♂ testes 2 mm
640103-12	microtus ochrogaster	118-28-18-10-20 gms ♂ testes 3 mm
<u>640103-13</u>	Synaptomys Cooperi	126-21-19-10 gms ♂ (over ♀) testes 6 mm (see opposite page)
640103-18	microtus ochrogaster	118-29-19-10-21 gms ♀ ut normal
640103-21	" "	146-30-18-10-36 gms ♂ testes 10 mm
640103-22	" "	124-30-20-10-23 gms ♂ testes 4.5 mm
640103-23	" "	94-21-16.5-8-9 gms ♀ ut. normal
640103-26	" "	91-22-16-8-8 gms ♀ ut normal
640103-28	" "	146-34-20-11-43 gms ♀ ut normal
640103-30	" "	120-29-18-10-21 gms ♀ ut normal
640103-31	" "	149-32-19-11-40 gms ♂ testes 12 mm
640103-32	" "	159-40-21-12-46 gms ♂ testes 11 mm
640103-37	" "	120-30-19-10-19 gms ♀ ut normal
640103-40	Reithrodontomys megalotis	138-63-17-12-10 gms ♀ ut normal
640103-44	microtus ochrogaster	145-44-19-11-40 gms ♀ ut. normal
640103-46	Reithrodontomys megalotis	127-62-17-12-9 gms ♂ testes 2 mm
640103-47	microtus ochrogaster	146-34-20-10-11-37 gms ♂ testes 10 mm
640103-51	microtus ochrogaster	150-35-20-11-40 gms ♀ ut normal
640103-55	" "	147-38-19-12-36 gms ♀ uterus normal
sk only <u>640103-56</u>	Synaptomys Cooperi	89-16-17-6-13 gms ♀ ut normal
640103-58	microtus ochrogaster	126-28-19-10-26 gms ♀ ut normal
640103-61	" "	106-25-17-9-13 gms ♀ ut normal
640103-62	" "	109-24-17.5-9-15 gms ♀ ut. normal
640103-63	" "	153-34-20-11-45 gms ♂ testes 10 mm
640103-67	" "	122-29-19-11-24 gms ♂ testes 7 mm
640103-70	" "	128-30-19-9-27 gms ♂ testes 4.5 mm
640103-71	" "	124-30-20-11-21 gms ♂ (over ♀) testes 5 mm
SK.ONLY <u>640103-72</u>	" "	155-32-20-11-46 gms ♂ (over ♀) testes 12 mm
640103-78	Reithrodontomys megalotes	154-70-17-12-15 gms ♀ ut normal
640103-79	microtus ochrogaster	150-35-20-11-45 gms ♀ ut. normal
640103-81	" "	148-33-20.5-10-42 gms ♂ testes 9 mm
640103-82	Reithrodontomys megalotes	132-64-17-12-8 gms ♀ ut normal
640103-83	microtus ochrogaster	138-32-20-11-31 gms ♂ (over ♀) testes 13 mm
640103-84	Reithrodontomys megalotes	147-72-17.5-13-10 gms ♂ testes 3 mm (3 over 4)
640103-85	" "	125-56-18.5-12-9 gms ♂ testes 3 mm
640103-87	" "	130-62-17.5-11-9 gms ♂ testis 3 mm
640103-88	" "	126-58-17-12-9 gms ♀ ut normal

640103-92 Sigmodon hispidus 192-80-28-15-54 gms ♀ ut normal
640103-96 Synaptomys cooperi 129-21-19-9- 38 gms ♂, testis 5.5mm
640103-97 Microtus ochrogaster 147-36-19.5-10-42 gms ♂ testis 9 mm
640103-98 " " 108-22-17-9-14 gms ♀ ut normal
640103-99 Reithrodontomys megalotis 128-61-17-11-9 gms ♂ testes 3mm

1 3/20 mi. N and 2 13/20 miles E Clinton (center of town), Douglas Co., Kansas.

Jan, 3, 1964

Set 50 traps in same area as Jan 2 but in a line about 100 feet to the west. Temp 47°F. Another line of 50 traps ~~were~~ was set in a field (edge of field similar to Edmond set) some .4/10 mi. W of trap 1 of the Jan 2 set.



The second locality of traps 50-100 is at. 1 3/20 mi. N and 2 4/20 mi. E Clinton (Center of town), Douglas Co., Kansas. This site is along elevated erosional oxbow in areas where it is difficult to cultivate and soils have been allow to grow to high grasses. The field to E of here is growing grass and was burned and plowed last year. This field supported microtines to capacity and after burning showed a complete obligation of the field by these mice (Microtus) It was a field that had been in soil bank and had not be plowed for the last 10 years.

Jan, 4, 1964

Picked up traps set last night. Temp 29°F at 8:00 A.M when checking mammals. Last night was able to thrust trap stake in soil but this morning the metal stakes were frozen in soil.

640104-6

mammals captured on trap line set last night inspected this A.M at 8:00 A.M. Temp 29°F

Edmund Field

1
2
3 microtus ochro
4
5
6
7
8
9
10 sprung
11 sprung
12
13
14
15
16
17
18 microtus ochro
19 Sigmodon hispidus
20 Peromyscus leucopus
21
22
23 Sigmodon hispidus
24 Sigmodon hispidus
25
26
27 Sigmodon hispidus
28
29
30 microtus ochrogaster
31 Sigmodon hispidus
32 sprung
33
34 sprung
35
36 sprung
37 microtus ochro
38 Peromyscus man

39 Peromyscus man
40 sprung
41 Sigmodon hispidus
42 Reithro. meg.
43 Sigmodon hispidus
44 sprung
45
46
47
48
49
50
51
52
53 sprung
54 sprung
55 Sigmodon hispidus
56
57
58 microtus ochrogaster
59
60
61
62
63 microtus ochrogaster
64
65 microtus ochrogaster
66
67 microtus ochro
68 microtus ochro
69
70 microtus ochro
71
72 microtus ochrogaster.
73 sprung
74
75 microtus ochro
76

77 microtus ochro
78 microtus ochro
79
80
81
82
83 microtus ochro
84
85
86
87
88
89
90 sprung
91
92
93
94
95
96
97
98
99
100.

Summary:

8 Sigmodon hispidus
15 Microtus ochrogaster
1 Peromyscus leucopus
2 Peromyscus maniculatus
1 Reithrodontomys megalotis
27

11 sprung

Preparation of mammals caught this A.M from trap line set last night.

	640104-3	microtus ochrogaster	147-34-20-11-36gms ♀ ut normal
	640104-18	" "	139-33-20-10-33gms ♂ testes 6 mm
SK.ONLY	640104-19	Sigmodon hispidus	237-101-33-18-90 gms ♂ testes 6 mm
	640104-20	Peromyscus leucopus	176-82-22.5-16-25gms ♀ ut normal
	640104-23	Sigmodon hispidus	172-70-26-15-38 gms ♂ testes 5 mm
	640104-24	" "	186-74-27-15-40gms ♂ testes 5 mm
	640104-27	" "	[187]-[65]-28-17-60gms ♂ testes 5 mm
	640104-30	microtus ochrogaster	118-30-19-9-24 gms ♀ ut normal
	640104-31	Sigmodon hispidus	220-85-31-15-71 gms ♂ testes 2.5 mm
	640104-37	microtus ochrogaster	120-27-19-10-24gms ♂ testes 6 mm
	640104-38	Peromyscus maniculatus	133-51-17-13-18 gms ♂ testes 3 mm
	640104-39	" "	138-58-19-14-17gms ♀ ut normal
	640104-41	Sigmodon hispidus	112-102-29-15-73gms ♀ ut. normal
	640104-42	Reithrodontomys megalotis	125-58-16.5-11-8gms ♂ testis 3 mm
	640104-43	Sigmodon hispidus	230-90-30-16-92gms ♂ testes 5 mm
	640104-55	" "	225-95-29-17-70gms ♀ ut. normal
	640104-58	microtus ochrogaster	92-20-16.5-8-11 gms ♀ ut normal
	640104-63	" "	131-32-19-11-31gms ♂ testes 7 mm
	640104-65	" "	91-21-17-9-9gms ♀ ut normal
	640104-67	" "	98-22-16-8-11gms ♀ ut normal
	640104-68	" "	131-28-21-11-29gms ♂ testes 6 mm
	640104-70	" "	148-34-20-12-33gms ♂ testes 12 mm
	640104-72	" "	137-32-18.5-11-31gms ♀ ut-normal
	640104-75	" "	151-35-20-11-41gms ♂ testes 11 mm
	640104-77	" "	138-31-20-11-35gms ♂ testes 8 mm
dest.	640104-78	" "	112-28-17-18gms ♀ ut normal
	640104-83	" "	161-36-20-11-44gms ♂ testes 12 mm

Lawrence, Douglas Co., Utah

Jan 6, 1964

Trip to Utah via Continental Trailways bus. Left Lawrence 5:00 P.M. Kaw River above bridge at Lawrence in solid ice 2 foot opening at contact with bank. Water open below dam and in narrow channel beyond. Arrived Manhattan. 7:00 P.M;

Atwood, Kansas (3 miles E) (Continued)

Jan 7, 1964

At 3:15 A.M 6 deer, one of which was a buck ran across road. Bus driver reported aggregation of deer from Atwood west 12 miles.

another aggregation further west. arrived Denver 6:50 A.M. no snow in city. Jacliffe Oriental one block from bus station. Left Denver 8:55 A.M Golden eagle flying above cliffs at junction of Idaho Springs and Central City. Loveland Pass 11:15. Snow blown from slopes and exposed ground. There is not enough snow for skiing. Usually the slopes are completely sealed with snow. Vail Village Inn 12:40. 2 golden-eye ducks on Eagle River at Edward. They were in rapid moving water. 2:50 Glenwood Springs. 4:10 P.M golden eye duck at De Beque, Colorado. I have noted that at the upper limits of the drainage systems at 9,000 & up the rivers are frozen solid and open as narrow channels. The ice is stable and has not moved since frozen; while at lower limits of the drainage, the ice has moved and compacted at places, over-ridden other ice, thrusted shoreward and water carrying slush. The bends of the rivers are areas of compactness. Arrived Grand Junction 5:00 P.M & left 5:55 P.M. Left Green River 7:55 P.M and arrived Provo Utah at 11:00 P.M. Attended Lulu's (Culbertson) Evans funeral and left Provo thursday Jan 9, 1964 at 10:35 A.M by Continental Trailways and will return to Lawrence same route. The west facing slope of Buckley mountain should be check for erosional levels of canyons entering the valley. There appears to be 2 definite levels . On Mapleton mountain the flatirons are only shallowly eroded in contrast to the deeply eroded canyons on either side of them. Is this an expression of degree of headwater erosion. The SW slope of Mapleton Mountain beyond the mouth of Spanish Fork Canyon is long sloping without interruption and may be the original surface of the west face of Mapleton Mt. At Thistle there is an interesting erosional level. noted 2 small herds of deer on E side of American Fork Canyon between Thistle & mouth. At 11:25 noted a flock of about 1000 white bellied birds about size of horned larks at point in vicinity of railroad switchback below Soldier Summit. These flock was close in formation and flying & alighting on slope of juniper timbered country. Another flock of this same kind of bird was noted on east side of Loveland Pass at about 8000 or 9000 ft. among conifers and aspen. At 11:45 at Soldier Summit. I have noticed that snow drifts down canyon at mouth of American Fork Canyon and up canyon at head of canyon below Soldier Summit. at a mile or two beyond Soldier Summit were willows a brilliant yellowish red

Pasture land white w snow. This color is worthy of color photo-graph. Price River frozen w uplands but main channel collapsed w lowlands and water running. 2 deer w canyon, one a large buck. Arrived Price 12:30 P.M. (30 min stop). Price River with water flowing on top, beyond Price solid. Green River 2:05 P.M. First hawk at Lima Colorado (a sparrow hawk) since Provo. Grand Junction 4:20 left 5:00 P.M. One ♂ + 2 ♀♀ deer at 2 miles W of Rifle. 8:30 Vail Village Inn. 11:45 Denver, clear road all the way. Left Denver 1:30 P.M., Jan 10.

Jan 10, 1964

Norton, Kansas 7:45 A.M. Phillipsburg 8:30. No snow east of Rocky mountains but rivers frozen. Conducted hawk census from Phillipsburg to Glascow: Phillipsburg (east of) 2 marsh hawks; Woodstock, 1 sparrow hawk; Alton, sparrow hawk, red tail, 8 crows feeding on road kill skunk; Osborne sparrow hawk; redtail hawk; Cawker City, sparrow hawk; Glen Elder; Beloit, sparrow hawk; Glascow 1 redtail and 1 marsh hawk. This census included 1/10 mile on each side of road. ~~Arrived~~ Manhattan 1:00 P.M. Left 1:45. Birdlife from Phillipsburg to Manhattan scarce and estimate there being:

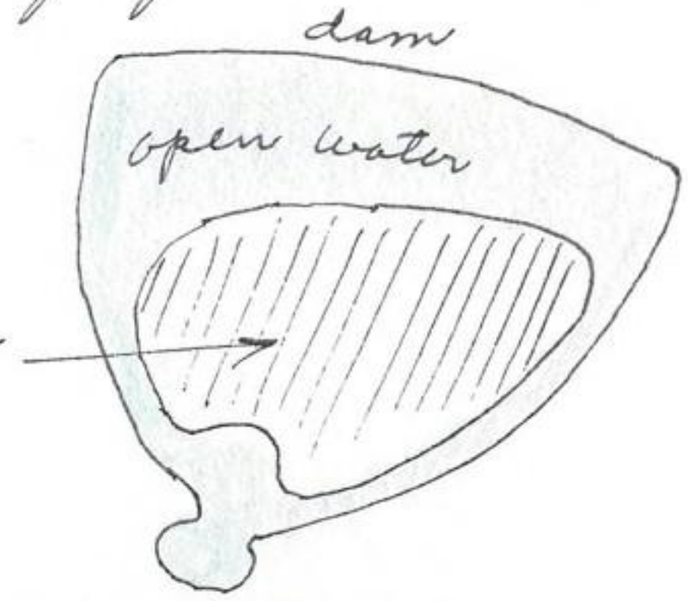
85 meadowlarks, 300 starling in group 5-30, 20 crows, 20 blackbirds, small birds rare, English sparrow around farms and Cities. The most common bird in western Kansas, beyond Cities is the starling.

Between Manhattan & Lawrence noted 4 redtails and 1 marsh hawk. Arrived Lawrence 3:30 P.M. My general opinion of western Kansas & eastern Colorado is that the cattle ~~have~~ overhead overgrazed the county to a point where there is inadequate protection for either bird or mammal. Except for the immediate vicinity of Provo Utah, the entire country is lacking in normal snow cover.

University of Kansas, Lawrence, Douglas Co., Kansas

Jan 31, 1964

Potters Lake on Campus has opened up for first time this year or since originally frozen at the beginning of the season. The lake has been solidly frozen all winter and only surface feature of snow & texture have changed.



640201-10

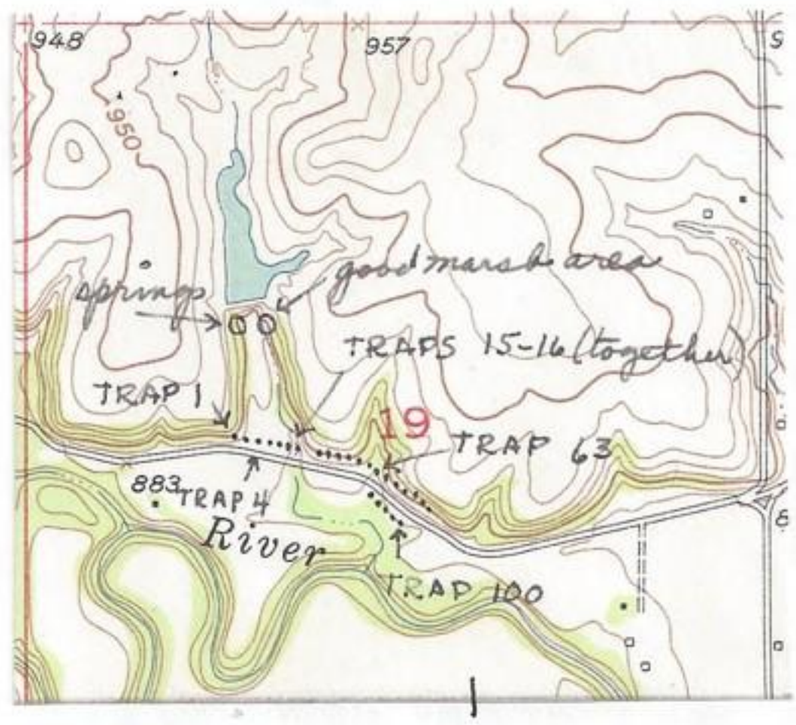
2200 ft S and 3 6/10 mi. W Clinton (center of town), Douglas Co., Kansas

Feb. 1, 1964

Set 100 traps along side of road (N side) (trap 1 of above locality) ↑ fence line from mouth of Canyon to a point 1000 ft to east. The wet marsh area at base of dam to N is too heavily trampled by stock to permit small mammals to inhabit the vegetation. 5 smaller birds roosting. At last inspection last year, the marsh was substantial with many runways, even on flat canyon floor between dam and road to south. Traps set about sundown, temp 55°F. Great horned owl called from Wakarusa River. River 50% open water

Feb 2, 1964

8:00 A.M. Collected mammals from traps set last night. Vegetation mainly high grasses uneffected by grazing but may have been burned at one time, especially traps on S side of road. The traps along fence at mouth of Canyon may have ~~been~~ caught mammals that were displaced from marsh and spring at base of dam by overgrazing and trampling. Other traps were strictly fence line sets with road on one side and grazed slopes beyond fence line. The following mammals taken from trapline (numbers after dash indicate trap number)



SK. ONLY	640202-4	Synaptomys cooperi	128-21-19.5-10-35 gms ♀ ut normal
	640202-12	Microtus ochrogaster	156-37-20-12-39 gms ♀ ut. enlarged
SK-ONLY	640202-15	Synaptomys cooperi	120-21-19-9-33 gms ♂ testes 4.5 mm
"	640202-16	Synaptomys cooperi	122-20-19-9-30 gms ♀ ut enlarged
SK. ONLY	640202-27	Perognathus leucopus	185-84-22.5-16-29 gms ♀ ut normal
SK. ONLY	640202-28	" "	155-62-21-15-22 gms ♀ uts. normal
"	640202-63	Synaptomys cooperi	126-21-20-10-34 gms ♂ testes 6 mm

Traps no 15 and 16 together in some runway. Trap 63 in native Andropogon in fence corner that had not been disturbed for many years. At the head of this canyon were growths of Andropogon high enough to give support to several microtine runways. Seven traps were sprung and included trap numbers 1, 6, 20, 37, 60, 81, 82.

Enroute to trapping area this morning, made the following observations:

Starting from N end of proposed Clinton Reservoir Dam at mileage 59.0.

59.5 single flock of 63 meadowlarks

60.2 at crossroads, 6 horned larks.

60.5 horned lark

60.6 bridge over Wakarusa River, 2 cardinals, juncos, Harris sparrows, 1 crow.

61.2 horned lark

61.5 shrubs, trees on side of valley to S old & dying.

62.0 bridge over Wakarusa, beaver dam completely across creek 200' up river from bridge. Water 50 per cent open. Continued to N. 1 crow.

68.0 to west, 4 crows, 2 cardinals, juncos.

64.1 bridge over river, ice 100% coverage.

64.3 3 cardinals

65.1 to S

65.2 8 bob-whites, most reservoirs dry. no snow visible.

65.9 Crossing Dry Creek

66.0 3 cardinals, 8 juncos.

66.6 2 cardinals, several juncos.

66.7 main road; 67.7 to W; 67.8 2 red tails to S; 68.3 road crossing, 69.0 trapping area. Area of lake on property of Harry Kennedy. On way to dam & reservoir noted 1 yellow-shafted flicker, 3 titmice, 1 redbellied woodpecker, 2 mourning doves, 3 chickadees, 3 kinglets. Picked up traps and continued W. 69.4 4 juncos; 69.6 4 crows; 70.5 crossroads, nav to S; 70.8 3 cardinals, Juncos; 71.6 bridge over Wakarusa River. 50% open water & clear; to E; 72.1 to N; 72.6 4 juncos; 72.7 to E; 73.5 horned larks 2; 83.7 horned lark; 74.0 bridge over Wakarusa 5% water open; 74.2 to N; 74.3 horned lark; 74.4 horned lark; 74.5 to E; 75.1 to N 18 bobwhites at turn; 76.0 main road & nav to E; 76.9 bridge over Wakarusa, 3 cardinals; 77.6 to N; 78.8 passing bridge to E now; 80.1 bridge over Wakarusa River, 4 cardinals, 30 juncos.

80.6 Crossroads, 2 horned larks.

81.9. North end of proposed Clinton Reservoir dam; 15 juncos and 2 cardinals here.

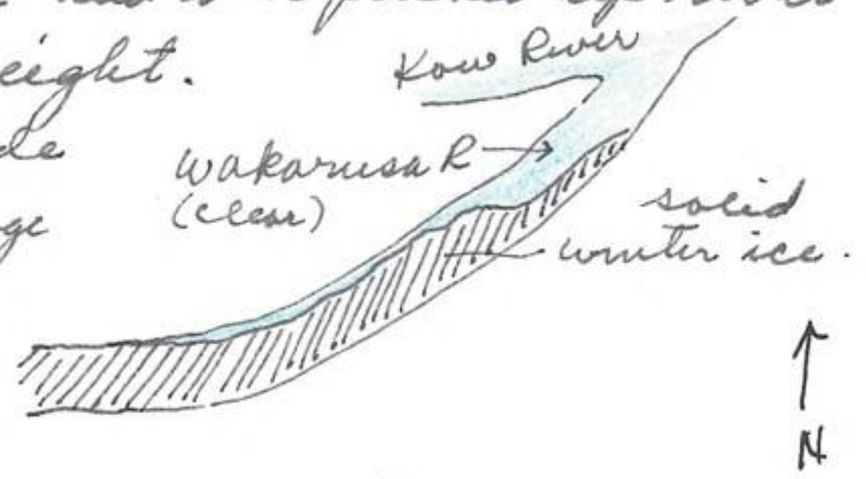
12

640202-12

Kaw River (Lawrence to Eudora), Douglas Co., Kansas

Feb. 2, 1964

Lon James and I made canoe trip on the Kaw River. Left 12:00 noon, wind from the NE to E, temp 48°F air, temp. water 2 inches below surface of water 40°F. 12:55 passing major creek from south just beyond utility lines crossing river. Two kingfishers left overhanging branches and flew about 200 feet down river, when approached they flew out over river and returned up river. 1:10 7 adult and two immature gulls rested on island sandbar on N side of river. The wing tips had considerable black as in the Franklin Gull. As they left, at about 150 feet, they flew first down river and then turned and flew up river overhead at which point a shot was fired at them. They continued to circle and gain elevation to the north just beyond the river. After gaining about 800 feet they flew west. measured a flatheaded catfish which was at side of river as 31 inches total length. The fish was in good condition. 1:40 channel to right and nearing first bend. Approx 200 horned larks and some lapland longspurs? on extensive sand bar to north just passed. These birds are always found on these sands and have a flight pattern from these sands to feed to the south & east. 1:50 Mud Creek from N. At island in middle of river on stretch beyond the bend, examined a runway of a mole. As far as I can remember, this island has been separated from the land on either side. 3:00 S end curve, now E to next bend. Up to now have seen 12 small remnants of ice along edge of river in protected places. 3:05 now on stretch to Eudora. 1 redtail circling on hills to N. Eudora bridge 4:00. Shore ice more numerous the farther down the river one goes. Mouth of Wakarusa River 4:15. At mouth of River the water was flowing up river from the Kaw. water open for about 200 feet, then old winter ice on east side and center to about 1/10 mile. Beyond the river was sealed with ice and canoe had to be pushed up river on ice strong enough to hold ones weight. Beaver bank holes (8) on west side of river at mouth. Noted several large winter kill fish in water or ice near mouth including carp, long-nosed gar, drum and several kinds of small minnows. Arrived at bridge over Wakarusa River N of Eudora 5:00 P.M. Heavy head on wind the entire trip and annoying for navigation.



13

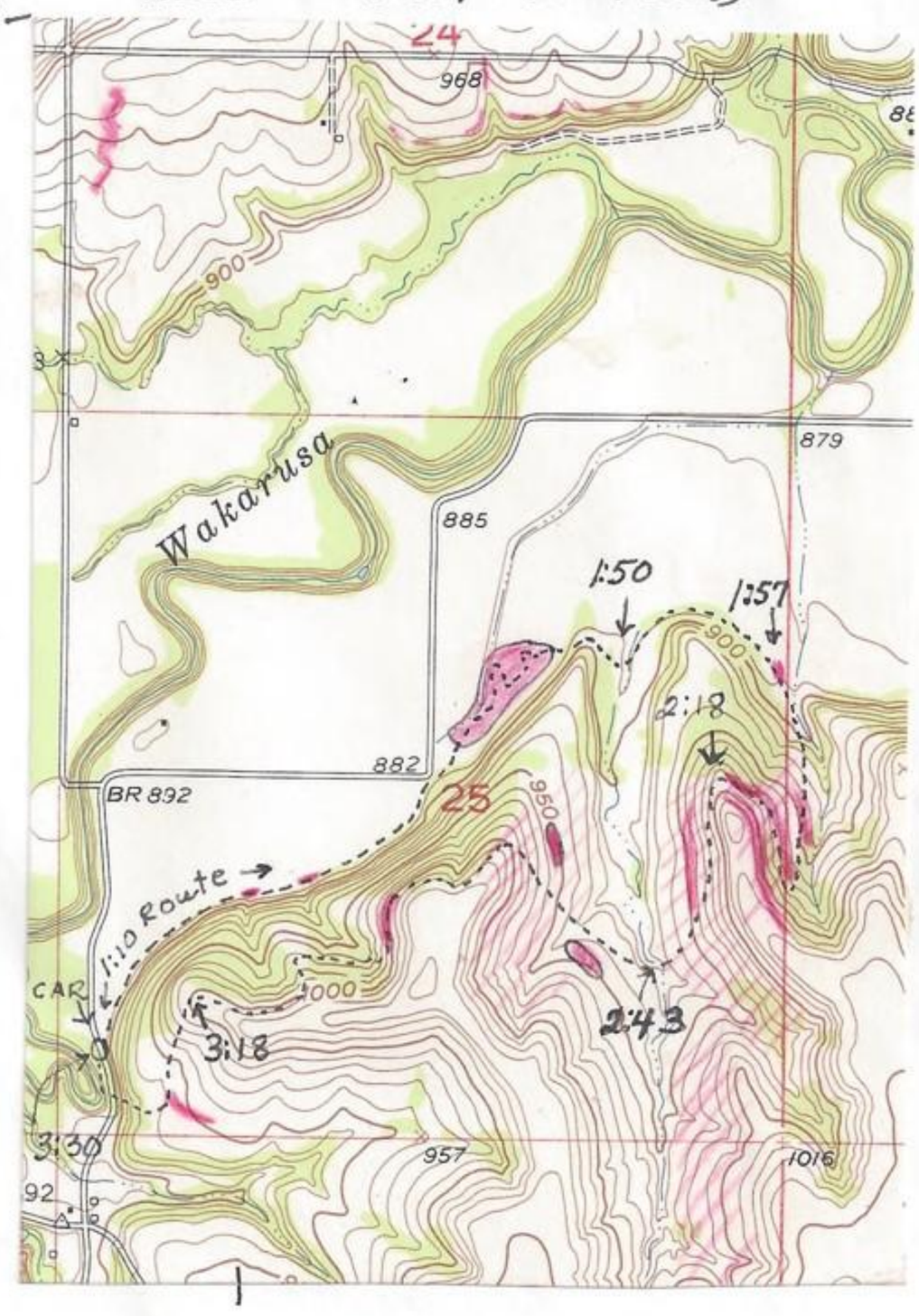
640215-13

Lawrence, Douglas Co., Kansas
Feb. 15, 1964

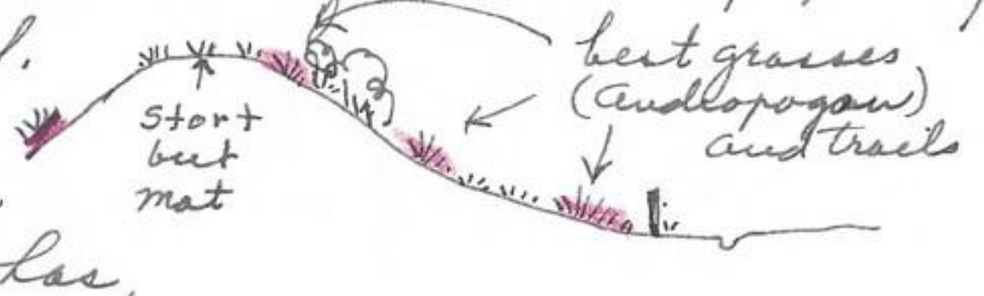
Snowed last night approx 1 inch (.3 moisture).

2 9/10 mi. E and 3/10 mi. N Richland, Douglas Co., Kansas
Feb. 16, 1964

Inspected area of hillside and edge of Wakarusa Valley east of Richland. This area is mainly in sec 25 (T 13 S and R 17 E) and in part of sec 24. The above locality is a marsh area just above the center of sec. 25. ↖ The area in general is (see Feb. 23, 1963 notes)
(hillside slopes) native Andropogan and grazed by cattle.
Enroute to this area made the following observations starting at the proposed site of the north end of Clinton dam at mileage 99.6 (12:00 noon, temp 33°F).
01.4. Bridge over Wakarusa River. 95% water (5% old ice of winter, water clear but slightly green. 50% new clear ice of recent freezing. Continued W in river valley road to road S to Clinton. 02.1 at turn of road 02.9 shrike. 03.1 1 black N of clinton. Continuing W. 03.6 starling; 03.9 sparrow hawk, 04.1 Juncos; 05.5 Wakarusa Bridge. 90% old ice in river; 1 crow and small birds along edge of river; 06.2 meadow lark; 07.0 8 meadowlarks; 07.3 60 juncos; 07.6 flicker, ponds with new ice; 07.9 80 starling at farm yard where cattle are raised; 08.9 sparrow hawk. at 09.6 road turns to S (have been on regular road to Richland). 09.1 8 meadow larks; 10.2 Crossroads; continuing S. Checked native grasses E of road at 10.3; good runways (indicated red on map). Rat in grasses supporting sumacs. 10.5 squirrel in fox tree at outer branches; 11.2 Bridge over Wakarusa River, water clear, 60° old ice, ripples open, new ice 20% (1:00 P.m); Continued S and parked car at 11.6 at base of hill of side of valley. Started E along base slope (1:10 P.m). Continued



to middle of sec 25. no good microtus community except two small patches which supported 1 set runways each. No birds or rabbits along route beet one set of coyote tracks; no springs. marsh area (see map) of extensive Microtus ochrogaster. This is the same marsh visited Feb 23, 1963 (see notes of that date). This marsh was burned and unless the microtus lived underground, were eliminated from the area at that time. Now the Microtus are back in good numbers throughout marsh. I was surprised to see such good sedge and grass cover. The microtus either repopulated from relict areas or from adjacent areas beyond limits of marsh and would indicate immigration. Will trap this area later. Continued E to point (1:45 P.M); 3 chickadees and 2 titmice; 1:48 2 cardinals and 8 juncos; 1:50 mouth canyon. no water in creek but aquatic plants, completely trampled by cattle. cottontail in creek. area heavily grazed, no mice habitats. 1:52 2 chickadees; 1:57 mouth second canyon; some trails in patchy sedges. Extensive weed patch NE of mouth of canyon of last year now plowed. Continued S up canyon on W side; half way up canyon a fence (E-W) has kept out excessive grazing. This W slope is excellent for microtus, especially where grasses are high and untrampled. The Andropogon is over entire area but mainly (high) in 3 levels as indicated on map. This areas has, at one time, been grazed extensively as indicated by closely cropped grasses between high stands of grasses. A newly formed pond in canyon does not hold water at this time. Made traverse to N and at point 2:18 noted 3 crows to S. Good Andropogon on both sides of this ridge, shorter on top but good cover lower on slopes. Snow on all slopes in protected spots (from Sat. snow). Continuing S to about 1/2 way up canyon; 2:37 flicker, 38 meadowlarks raccoon tracks in mud. Traversed west slope; patches of yellow slough grass (high) with good trails, could be Sylvatonys (indicated in red spots on map). Lower slopes more heavily grazed. Continued NW to point, thence west to fence line; beyond grasses cut as hay. One area (see map) of uncut Andropogon between cut field supported microtus trails. Continued to last point arriving at 3:18 Cut slopes with good mat and stabilize soils. This may be a good way to keep deciduous elements from slopes, however, proper grazing could accomplish this ~~as exactly~~ also as and, in addition allow secondary habitats of small bushes and rank growth. Just beyond points flushed 12 bobwhite at edge of cut field. at base of field



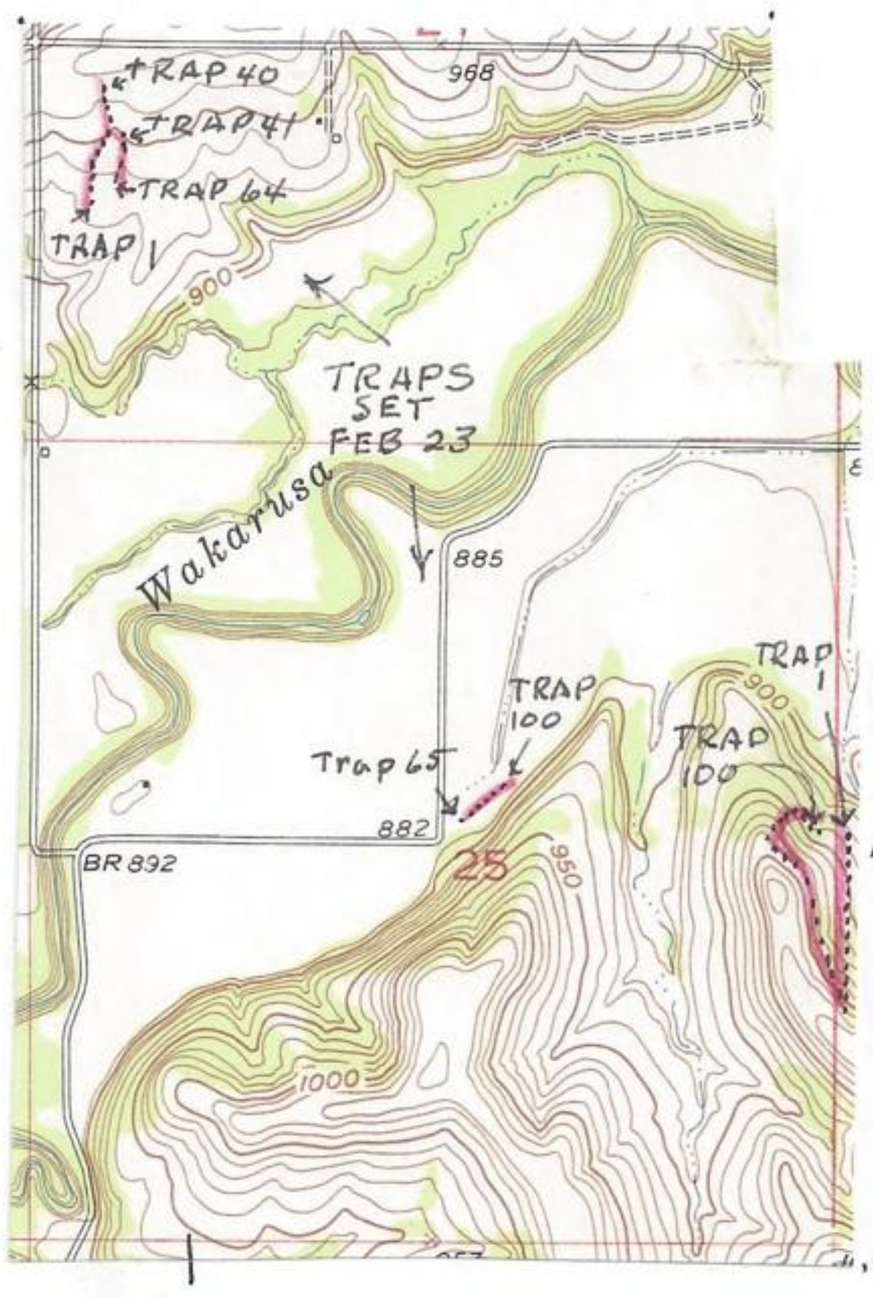
where native Andropogan grows rank and uncut, noted several runways along edge of Contour. One redtail sailed to E and called. Arrived car 3:30 P.M. Temp 40°F, 2 chickadees, 1 downy woodpecker. It is planned to trap these areas for Synaptomys at a later date. as representing original communities of these mammals. or as refugia when marshy areas are preempted..

Continued South car to 11.7 and turned around and travelled N. Bridge over Wakarusa 12.3; 12.8 2 cardinals, 8 juncos; 13.4 Crossroad, now to E; good Andropogan to S but cut; 14.3 3 meadowlarks; 14.5 4 juncos; 14.7 2 cardinals & 4 juncos; 14.8 mouth of lake to N, 1 bluebird and 1 jay; 15.6 corned, now to N; 16.7 corner & now to E on regular Clinton road; 18.2 Wakarusa bridge, 3 cardinals, 12 juncos; 20.0 1 meadowlarks; 20.5 1 black N of Clinton, now to N; 21.1 bluebird; 21.3 2 juncos; 21.6 now at corner & to E along valley road; 22.3 bridge over Wakarusa; 24.1 N end of proposed Clinton dam (4:05 P.M).

One of the outstanding features of field observations was lack of birds in either deciduous or open prairie slopes. Cool wind may have been a factor. Skies nearly clear of clouds.

3 9/10 mi W and 14/10 mi. S Clinton (center of town), Douglas Co., Kansas.

Feb. 21, 1964



Set 100 traps in native Andropogan on west slope of canyon on cattle grazing land. This area has never been cultivated but has been heavily grozed from time to time Areas between patches of Andropogan grozed close to ground in previous years. This grass has been fenced and is rotated with other areas which are more completed grazed of all vegetation. Traps set about 1/2 hr before sundown to dark. Temp 32° F and new thin ice on Wakarusa River.

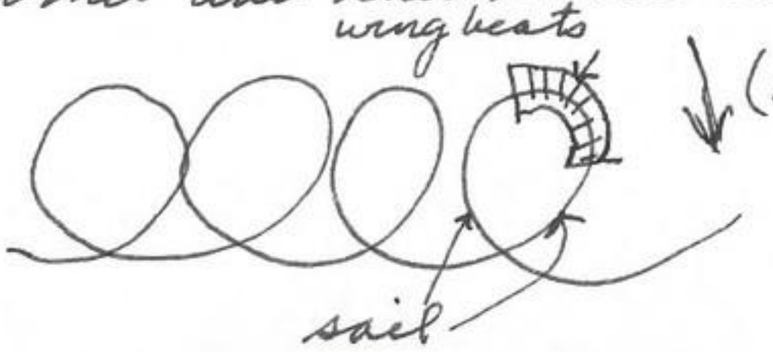
640222-16

3 9/10 mi. W and 1 4/10 mi S Clinton (center of town), Douglas Co., Kansas

Feb. 22, 1964

Picked up traps set last night. Enroute made following observation. Started at north end of proposed Clinton dam (at house on side of hill) at mileage 10.9. (Temp at 8:30 A.M 18°F.) no horned larks at crossroads S of Petersons. 12.7 bridge over Wakarusa, old ice gone, new thin clear ice and covering appros. 90 per cent of river. Continuing W on valley road. 13.2 2 crows; 13.4 red-tail hawk in tree above sedge marsh in trees at base of hill to S, 14.0 road passing by, bridge over Wakarusa. now W to wood area along Wakarusa on S side river, 2 cardinals and 8 juncos. at old camp site along Wakarusa about half way thru woods noted river ~~ice~~ ice (old of winter) completely covering river; 15.1 now on Clinton road and travelling W. 19.9 Wakarusa Bridge, old winter ice gone except on edge of creek, new ice clear and thin; 16.7 at crossroads & now to S; 16.8 examined old grass & sedge stand, now just burned to soil, on W side road. Only 3 sets runways in area of about 200 x 50 feet and mainly linear on edge nearest road. In bases of old grass or sedge stands, now tubers only, were nest of mammals, cup shaped

home stands were 3 feet across. These cups may have been used as nests without usual maulation of nest material. 17.7 ~~H.T~~ corned and now toward W. Grasses and sedges along fence burned in places, runways present. Birds have been rare along way. There is definitely degrees of activity of birds according to kind of day and time. 18.2 now to S and then at end of road to W. At 18.8 noted a Coopers hawk flying south along cottonwoods and other trees lining edge of river. It alighted in tree at 10 feet above ground and remained for about 3 minutes when it lift and flew almost straight up into the sky above the tops of the highest trees. It continued to circle and gain elevation to about 300 or more feet and then trended N out of sight in repeated circles. At the point on the arc of the circles where wind was from on, the hawk beat its wings for about 10 times until beyond the force of the wind and then sailed with the wind for 3/4 the distance of the arc.



18.8 Bridge over Wakarusa. new thin ice 100 coverage.

continued W. at 19.7 to S toward side of valley, 2 horned larks just beyond turn. End road at 19.7, just N of windmill. Picked up traps. All mammals recently caught and indicates activity late this morning (between probably 7:00 and 9:00 A.M. no traps sprung. no birds in area. Most of traps set in runways, now abandoned. Traps set every 20ft except some in which the intervals were twice 20 in those cases where unfavorable sites were intercepted along the trapline. Returned to car and return to main valley road at 20.2, now to W. Continued at angles to position at bridge over Wakarusa at 21.7, thence S to crossroads at 22.4, thence W toward Richland; at 23.4 2 meadowlarks; 23.8 8 juncos, 2 cardinals; 24.1 2 meadowlarks; 24.3 6 juncos, 2 cardinals; 24.5 redtail; 24.7 2 bluebirds; 25.0 redtail, 4 juncos; 25.2 2 redtails soaring to S, 18 juncos, now to Richland, thence W R.R tracks at 26.6. Redtail to W; drove W and returned to Richland at 27.4, thence N to bridge at 27.8. Winter ice above bridge, clear ice below. 28.8 main E-W road now to E. 29.8 checked ridge of native Andropogon but cut or grazed too closely. 30.5 meadowlark; 30.9 2 redtails circling over cut feeds; 31.5 four corners on sleep hill and now to S; redtail circling over cut field to E; 32.6 bridge over Wakarusa. and to S to 33.2 checked strip of native grass on hillside to E but only 2 runways. Returned to bridge at 33.5, thence E (time now 1:30 P.M, temp in shade 37°F) continued E. at 35.1 2 horn larks; 35.9 bridge, new ice still of river; 36.2 2 horned larks, 37.2 2 horned larks; 37.8 1 meadowlark and 1 horned lark (all along valley road). At 38.0 now E on regular Clinton road; 38.9 Wakarusa bridge, new ice still on river. 39.6 now N toward forest road; 40.7 passing E by bridge; 41.0 shrike in tree; 4:20 bridge, 43.7 N end of proposed Clinton Dam.

Preparation of mammals capture this morning on trapline

640222-15	Microtus ochrogaster		135-29-20.5-11-36 gms ♀ 2x1 emb 17 mm
640222-28	"	"	140-38-19-11-42 gms. ♂ testes 11 mm
640222-29	"	"	142-32-19-11-37 gms. ♂ testes 11 mm
640222-47	Synaptomys	Cooperi	125-19-20-10-41 gms. ♀ ut. normal
640222-58	Microtus ochrogaster		132-31-20-10-31 gms ♂ testes 10 mm
640222-69	"	"	144-35-20-9-29 gms ♀ ut normal
SKU 640222-87	Synaptomys	cooperi	123-20-19-10-34 gms ♂ testis 5 mm

Specimen 640222-47 had a fecal pellet 1/2 evacuated. It was light straw colored, not green as is usual with Synaptomys. The feet of some microtus (no 28) were reddish as if partly frozen.

4 8/10 mi. W and 1/2 mi. S Clinton (center of town), Douglas Co., Kansas.

Feb 23, 1964

Set traps 1 to 64 in swale of native andropogan surrounded by cut fields of some kind of grass. Field contoured. Traps 65 to 100 at 4 7/20 mi. W and 1 4/10 mi. S Clinton (center of town), Douglas Co., Kansas. in marsh area (see notes of Feb 23, 1963 of same area.) all traps set in pairs.

Feb. 24, 1964

Examined traps set last night in the two above localeties. Enroute to trapping areas made the following observations starting at ~~#~~ S end of dam of proposed Clinton Dam. Temp 24°F 8:30 A.M and clear skies. 65.4 starting point, 1 redtail, 1 crow; 65.9 1 meadowlark, 66.7 Rock Creek bridge; 67.2 horned lark; 67.8 crow; 69.3 Clinton, 2 cardinals; 70.6 cardinal; 71.8 bridge over Wakarusa, new ice 80%, 3 cardinals, 6 Harris sparrows, 18 juncos; 72.6 to S; 73.5 to W; 74.1 to S, 1 flicker; 74.2 horned larks; 74.3 2 horn larks; 74.5 to W; 74.7 bridge over Wakarusa, 90% new ice, 1 crow; 75.2 horned lark; 75.9 Angling to SW; 76.2 appro 50 juncos, 3 Harris sparrows; 76.5 90° bend at burnt marsh, picked up traps 65-100. It is amazing that both Synaptomys & Microtus ochrogaster were inhabiting this area when last year on ~~Feb 3~~ Feb 23, this ~~too~~ marsh had been burned to the roots and all mammals destroyed (see notes of that date) From general distribution would say that all marsh was reinhabited. Continued west to bridge at 77.1 and thence N to 78.0 at the trapping area (second one). Collected mammals here. The Synaptomys (trap 31) was in dense andropogan and other grass on end of contour level. Trails were continuous beneath grasses and several tickers at base of stocks were eaten. Continued N to 78.2 Crossroads, thence E. 79.3 6 juncos; 79.4 2 cardinals; 79.7 Mouth Lake canyon; 79.9 6 juncos; 80.4 crossroad, to E; 80.6 18 meadowlarks; 81.0 6 crows, now to N; 81.9 crossing main road & continuing to N; 82.8 meadowlark; 83.6 now to E; 84.6 bridge over creek, 100 new ice; 84.7 horned lark; 85.0 2 meadowlarks; 85.7 bridge over creek; 86.5 2 cardinals, 20 juncos; 87.4 Spast Petersons; 88.2 top Rattlesnake Point; 88.7 2 horned larks; 90.0 N end of proposed Clinton dam. Returned to Lawrence. The number of mammals captured was probably do to the added daytime period before sundown of last night (traps set at 4:00 P.M) and the favorable conditions of the trapping areas.

mammals trapping last night and collected from trapline this A.M. Feb. 24, 1964.

1 not visited
2 sprung
3 M. ochro
4 M. ochro
5 M. ochro
6 M. ochro
7 sprung
8 sprung
9 Synaptomys cooperi
10 Microtus ochro.
11 not visited
12 not visited
13 M. ochro
14 sprung
15 microtus ochro
16 sprung
17 M. ochro
18 M. ochro
19 M. ochro
20 M. ochrogaster
21 Leithro meg
22 M. ochro
23 not visited
24 not visited
25 not visited
26 not visited
27 M. ochro
28 not visited
29 M. ochro
30 not visited
31 Synaptomys Cooperi
32 not visited
33 not visited
34 sprung
35 not visited
36 M. ochrogaster
37 not visited
38 not visited
39 not visited
40 not visited
41 sprung
42 not visited
43 not visited
44 M. ochro
45 sprung
46 not visited
47 M. ochro
48 not visited
49 not visited
50 not visited
51 M. ochro
52 sprung
53 Peromyscus maniculatus
54 sprung
55 not visited
56 not visited
57 not visited
58 sprung
59 M. ochro
60 Sigmodon
61 sprung
62 sprung
63 sprung
64 sprung
65 sprung
66 not visited
67 Leithro meg
68 M. ochro
69 sprung
70 sprung
71 M. ochro
72 not visited
73 M. ochro
74 M ochro
75 sprung
76 M. ochro
77 M. ochro
78 sprung
79 not visited
80 sprung
81 sprung
82 sprung
83 not visited
84 not visited
85 sprung
86 Synaptomys cooperi
87 sprung
88 sprung
89 M. ochro
90 sprung
91 sprung
92 not visited
93 M. ochro
94 sprung
95 sprung
96 sprung
97 M. ochro
98 not visited
99 not visited.
100 M. ochro

Summary

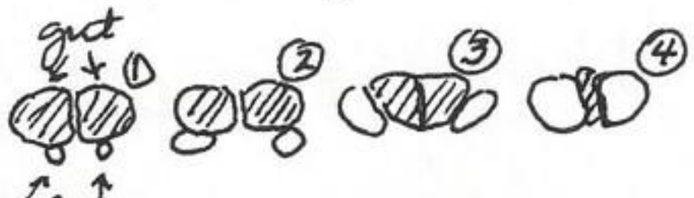
29 Microtus ochrogaster
3 Synaptomys Cooperi
1 Peromyscus maniculatus
2 Leithrodontomys megalotis
1 Sigmodon hispidus
36 total
31 traps sprung
33 traps not visited.

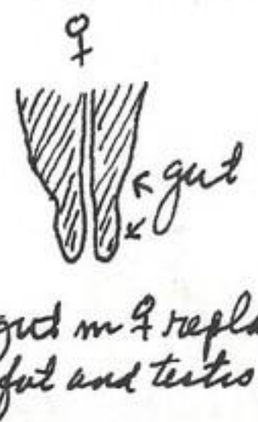
Traps set in pairs in same runway appro 2 feet apart. (nos 1 and 2, 3 and 4, 75 and 76 etc are pairs of traps)

Preparation of mammals.

SKU	640224-3	Microtus ochrogaster		164-41-21-11-43 gms ♂ testes 14 mm
	640224-4	"	"	145-35-20-11-37 gms ♀ 2x1 emb. 23 mm
	640224-5	"	"	152-36-19-11-43 gms ♀ ut normal
	640224-6	"	"	144-33-18,5-11-37 gms ♀ 2x1 emb 28 mm
Sk. only	640224-9	Synaptomys cooperi		133-22-20,5-11-43 gms ♂ testes 5.5 mm
	640224-10	Microtus ochrogaster		123-30-18-10-25 gms ♀ ut normal
	640224-13	"	"	144-36-19-10-40 gms ♂ testes 13 mm
	640224-15	"	"	154-36-20-11-48 gms ♂ testis 13 mm
	640224-17	"	"	145-35-19,5-10-35 gms ♂ testes 10 mm
	640224-18	"	"	145-35-19-11-40 gms ♂ testes 12 mm
	640224-19	"	"	131-31-19.5-10-27 gms ♂ testes 8 mm
	440224-20	"	"	145-34-19.5-10-46 gms ♂ testes 10 mm
	640224-21	Reithrodontomys megalotis		128-61-17-12-8 gms ♀ ut normal
	640224-22	Microtus ochrogaster		145-33-19-11-41 gms ♀ 2x2 emb. 18 mm
	640224-27	"	"	161-41-20.5-11-47 gms ♀ 3x2 emb 6 mm
	640224-29	"	"	148-35-20-11-43 gms ♂ testes 12 mm
	640224-31	Synaptomys cooperi		131-21-20-10-43 gms ♀ 1x2 emb 3 mm ♂ ~~testes 6 mm~~
	640224-36	Microtus ochrogaster		145-36-19-10-38 gms ♀ 2x1 emb. 18 mm
	640224-44	"	"	159-39-19.5-11-48 gms ♀ ut normal
	640224-47	"	"	142-33-19.5-11-33 gms ♂ testes 8 mm
	640224-51	"	"	144-32-19-10-40 gms ♂ testes 10 mm
	640224-53	Peromyscus maniculatus		133-48-17-14-17 gms ♀ testes 5 mm
	640224-59	Microtus ochrogaster		141-32-20-11-44 gms ♂ Testes 12 mm
	640224-60	Sigmodon hispidus		237-100-31-18-70 gms ♂ testis 10 mm
	640224-67	Reithrodontomys megalotis		120-56-17.5-12-7 gms ♀ ut normal
	640224-68	Microtus ochrogaster		[105]-[0]-18.5-9-28 gms ♂ testes 8 mm
	640224-71	"	"	151-37-19-10-32 gms ♂ testes 12 mm
	640224-73	"	"	[100]-[0]-19-10-21 gms ♀ ut. normal
	640224-74	"	"	156-36-20-11-45 gms ♀ ut. normal
	640224-76	"	"	138-31-19-10-31 gms ♂ testes 12 mm
	640224-77	"	"	115-28-19-9-15 gms ♀ ut. normal
	640224-86	Synaptomys cooperi		143-23-20-11-55 gms ♀ ut. normal vagina closed
	640224-89	Microtus ochrogaster		155-37-21-11-53 gms. ♂ testes 14 mm
	640224-93	"	"	128-29-18.5-10-27 gms ♀ ut normal
	640224-97	"	"	148-56-20-11-37 gms ♂ testes 11 mm
	640224-100	"	"	144-31-19-11-40 gms ♀ vag. closed. 1x1 emb 20 mm

In frozen specimens the posterior abdomen appears thus:





gut in ♀ replaces fat and testis.

Univ. Kansas, Douglas Co., Kansas

Feb. 27, 1964

New ice covers Potter Lake on campus. In a hole dug for apart noted soils damp down to at least 20 inches. Top surface dry.

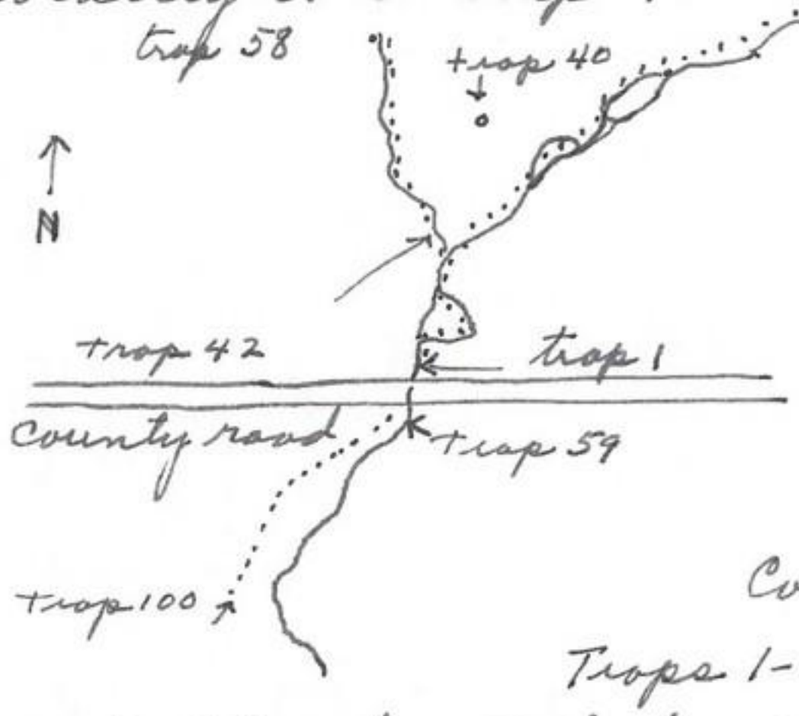
Feb 28, 1964

50% of ice left Potters Lake by 4:00 P.M.

2 2/10 mi N and 2/10 mi. E Clinton (center town), Douglas Co., Kansas

Feb. 28, 1963

Set 100 traps approx 4/10 mi. ENE of Coleman house. The above locality is at trap 40 at base of slope. Traps place 20' apart



This area has been grazed but suffecent native grasses along water courses (now dry) for meadmice. 3 cottontail rabbits along trapping route. Traps set between 4:00 P.M and 6:00 P.M.

Feb 29

Collected mammals from above trapline. Traps 1-39 and 42-58 in runways previously used probably when soils damp, ~~no~~ runways not in use. Narrow edges of vegetation above less meadmice than more extensive veg bordering vegetation. Synaptomys in trap 40 in patch native Andropogon not associated with drainage. Traps sprung 4, 10, 11, 28, 46, 55, 57, 74, 75, 86, 93, 94, 98.

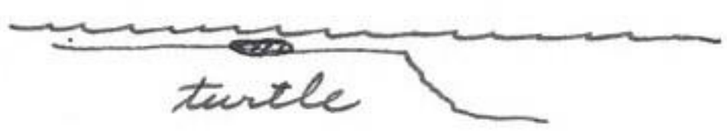
Preparation of mammals from above trap line.

640229-1	Reithrodontomys megalotis	126-58-17-12	♂	9 gms	test 4.5 mm
640229-2	Microtus ochrogaster.	158-37-20-11	♀	52 gms	0X2 emb 15 mm
640229-3	"	"	143-30-185-11	♀	48 gms, 2X1 emb 23 mm
640229-6	"	"	160-41-20-11	♂	46 gms, test 11 mm
640229-13	"	"	140-32-19-11		41 gms ♂ testes 13
SK. ONLY 640229-14	Reithrodontomys megalotis		121-58-17-12		8 gms ♂ abnorm
640229-26	Microtus ochrogaster		134-28-18-19	♀	37 gms ab normal
SKU 640229-40	Synaptomys cooperi		131-24-20-10		40 gms ♂ testes 7 mm
SK ONLY 640229-47	Peromyscus maniculatus		171-79-21-14		26 gms ♂ test 7
SKU 640229-54	Synaptomys cooperi		124-24-19.5-9		30 gms ♂ testes 7 mm
640229-59	Microtus ochrogaster		142-33-19-11		40 gms ♂ testes 13 mm
640229-60	"	"	143-30-11-12	♂	39 gms testis 12 mm
640229-71	"	"	157-36-20 12	♀	42 gms 2X1 emb 22 mm
640229-81	"	"	141-32-11-11	♂	36 gms testes 10 mm
640229-90	"	"	134-28-18-12	♀	28 gms ab normal

Kaw River (Lecompton Bridge to Lawrence Bridge) Douglas and Jefferson Counties, Kansas

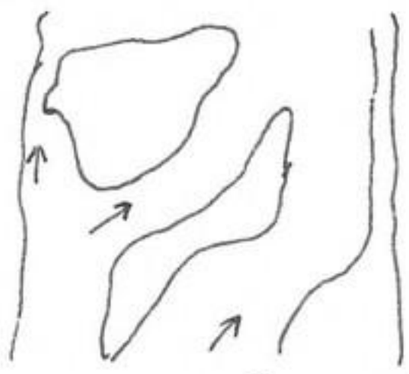
March 1, 1964

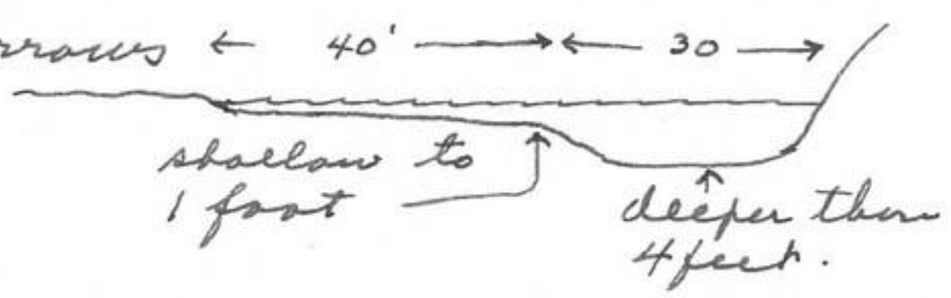
Son James and I made canoe trip on Kaw River. Left Lecompton Bridge 10:45 A.M. Day clear, slight breeze from SW, air temp. in shade 41°F, water temp 2 inches below surface in shade 40°F. Atmospheric conditions perfect for canoeing and comfort. This in contrast to yesterday when winds blew at 40 miles per hour. It frequently happens that the day following a day of high winds which subside during the night is calm and favorable for canoeing. These days are infrequent. Then the day following the calm day is again windy and undesirable for canoeing as far as wind is concerned. 40% to 60% of river channel at Lecompton is strewn sandbars, leaving definite channels of flowing water. This condition occurs in late fall and winter. Water relatively clear and can see bottom at 1½ feet. The river is quiet except for birds singing in cottonwoods along bank and in field beyond. There is a noticeable increase in vocal activity. In trees on N side just beyond bridge for 3/10 mile down stream can hear chickadees, 2 cardinals, 4 crows, several meadowlarks, 1 flicker, and 1 song sparrow. I will not keep a complete record of birds this trip. 10:57 turtle on sand bar, submerged, about 10 feet from edge. It was in 5 inches of water and when disturbed moved down stream to edge of submerged sandbar and disappeared in deeper water. The turtle moved slowly. This turtle was approx 9 inches wide and look like Trionyx muticus, smooth soft shelled turtle.



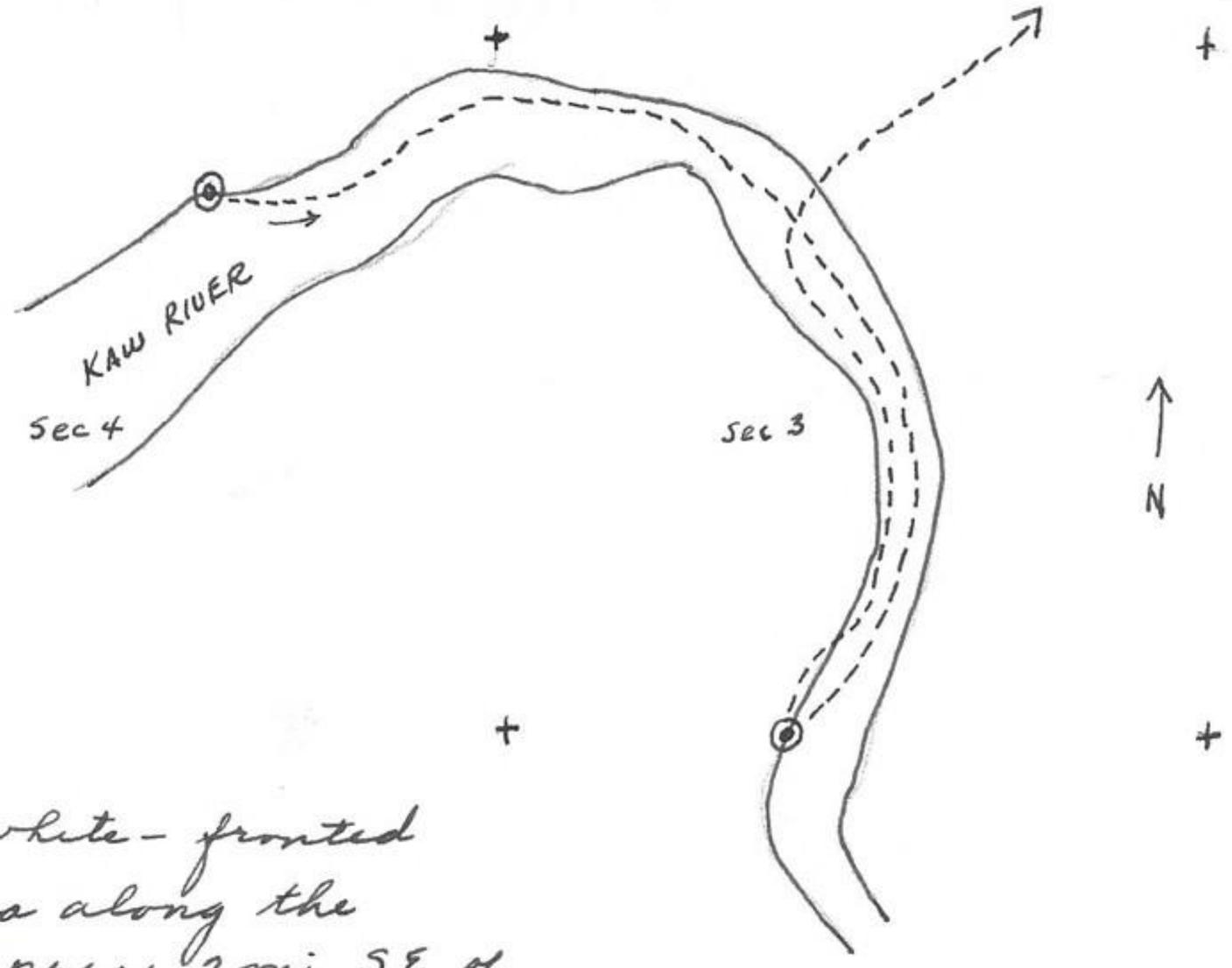
2 killdeer on sand beyond. 11:00 10 crows chasing a redtail above cottonwood trees to N. The hawk flew straight away and with unusual speed for about 2/10 mile with crows in close pursuit. It alighted in a tree by another redtail which also ended the chase by the crows. The second redtail then left the tree and flew west along the cottonwood trees in the same course as taken by the redtail being chased. The crows, which the redtail (2nd one) flew by, did not molest the hawk. The redtails called several times. 12:07 18 mallards left middle of river and flew down stream, then, after gaining elevation flew up stream. 11:16 excellent beaver house on N side river.

The entire bank is lined with bank trails (slides), cut trees, excavated holes in bank. 2 mallards left river and flew down stream. Another group of birds singing from sides of river. These groups are localized with intervening areas without birds. The dominant birds (calls) are meadowlarks, flickers, chickadees, and red-bellied woodpeckers. The flicker calls are more numerous than at other times of the year. Red-bellied woodpeckers are generally distributed. Juncos along banks and an occasional song sparrow. 1 butterfly (about 1½ inches in wingspread) 11:35 now on south side river. good beaver house, activity all along bank but not as extensive as on N side of river. While canoeing one moves from the south side of the river to the N side of the river according to the way the channel is formed and as a result the beaver houses and activity are only recorded from the side of the river we happen to be cruising. The river channel is somewhat braided and there will be several channels but ordinarily there is one main channel that is deep enough for passage of canoe. 11:38 two juncos feeding on beaver house. 11:48 2 redtails circling + calling. 12:01 Kingfishers. Birds are localized in distribution. 2 Titmice calling, song sparrow giving warning call. 12:05 at arch bridge (Railway), banks of S side of river covered with Equisetum (horse tail for 200 ft or so. 12:08 good beaver house on bank, 2 killdeer called. Few ice slivers on bank in protected places. 12:26 river narrows to 70 feet. A net could be placed on river at this point a entire movement of fish could be analyzed. 12:30 muskrat swimming across river from N to S. It swam to one which was on side of river on bank. Horned larks on sand bars to N. 12:40 8 crows, one drinking at river. Flicker drumming and sound echoing down river! 12:53 11 mallards. 12:58 3 killdeer, 12:59 30 mallards flying 500 ft high to west. They continued along river course. I have noted no frogs on river so far but cannot understand why they are not on the banks on the sunny side of river. Protected banks still cool.





640301-24



7 flight of three white-fronted geese from an area along the Wakarusa River approx 2 mi. SE of Williamstown, Jefferson Co., at 2/10 mi. S and 4/10 mi. W of NE corner sec 4, R19E, T12S in Jefferson Co., to 4/10 mi. E of SW corner sec 3, R 19E, T12S, Douglas Co., They left the Kaw river at NE end of bend and flying about 200 feet high continued NE. These geese were first noted at 1:18 P.M resting in water at NE end of sand island. This island which was vegetated with willow and tamarisk approx 8 feet high and offered predators (foxes) a chance to jump directly down upon the backs of these birds resting against the base of the abrupt slope. As we approach these birds (300 feet) they swam 15 feet to end of island and walked out onto land (sand bar) and when within approx 200 feet they gave 3 canadian goose like calls and flew down river at about height of high cottonwood trees along edge of river. As they flew directly away their wing beats were never synchronized but appearing like this. ✳ They flew down river out of sight around the bend. 1:26 P.M near bend of river on S side counted 80 bank swallow nests 1:38 now at bend and travelling SE. Good beaver activity and bank hole on N side. 1:50 The 3 white-fronted geese noted at 1:18 were on sand bar and standing (20 feet from edge of water) approx 200 feet beyond were 11 mallards resting and sleeping on water at edge of river. These mallards probably attracted the geese

This area of broad, eftensive sands was in contrast to the prevrous position of these geese against the abrupt bank and vegetation. The mallards left first and then the geese left abant 1 minute later. As prevously nated, they called once or twice as the left the sand bar. They gradually gained about 300 feet altitude and at the bend of river left to the N.E. The geese seem to have longer legs than pictured in several sources of ornthological literature infact they seemed to me to be almost twice as long as pictured in the ducks and geese of north America. The coloration in the field is much darker than pictured. At least two of the geese had white frontal areas above the bill (at base). Legs were noticeably yellow. 2 redtailed hawks circled over trees on N side of river - 2:10 opposite east end of bow lake (Lake View) just east of middle see 10. Beaver activity along north side of bank. 2:30 beaver activity on N side, 2 newly excavated holes in sandy bank and newly cut trees directly above the holes This area look like a new territory just established. 2:55 Kansas Power and Light staton to S. River in last mile has been changed considerably in last 10 years or so. The water from here to Lawrence is mainly slow moving, broad and more lakelike. There is considerable noise from this plant. 2:59 under power lines that cross river. Temp water 2 inches below surface in shade of canoe 45°F. Air temp in shade 59°F. The lakelike nature of the river may account for the increase temp. of the water since the morning temp of 40°F. 3:06 G.H. owl gliding to three high cottonwood trees on N. side. 3 crows concerned with this owl and calling. 3:15 kingfisher calling and flying up river about 300 ft elevation, rather high for a kingfisher. 3:20 beaver activity all along bank S side. 3:25 now E to Lawrence. 3:30 approx 3 dozen bank swallow nests in N bank. 3:35 Turnpike bridge, beaver house of sticks approx 250 feet to W of bridge on N side. 3:46 old beaver house photographed this winter on N side has been excavated and tromped by man. At 150 feet down stream on N side, another large house has been constructed on the bank. The house is about same size as old one but does not have mud on top of upper limbs placed on top of bank. The small branches of green tamarack of old house (winter food) had been eaten and only largle limbs of trees remained.

Old stabilized sand-bars grown to small cottonwood trees are favorite places for beaver. Crossed Lawrence bridge at 4:00 P.M.

8/10 mi. W and 7/10 mi. N Clinton, Douglas Co., Kansas

March 7, 1964

While driving along road through wooded section along Wakarusa River noted a striped skunk, Mephitis mephitis avia feeding along side of road that passed through the deciduous forest. There were short grasses and weeds along the side of the road and the animal was feeding in this short vegetation at the time the car was stopped appx. 35 feet away. The skunk did not see or hear the car and continued to feed by repeatedly thrusting its head and nose into the vegetation for 5 or 6 seconds and then moving on to another area 4 or 5 inches beyond. It appears that it was forcefully employing its nose as a 'rooting' organ. It fed for about 2 minutes and then the car horned was sounded and the skunk stopped and faced us for about 8 seconds and then walked to the road 7 feet away and inspected us again. It then ran awkwardly down the road for 10 feet and stopped, turned around and stood upright on all 4 legs in defense attitude, then turned around and ran 200 feet down the road to a culvert. During its journey down the road the tail was carried upright for the first 50' and then straight out for the last 150. At the culvert it stopped but instead of going into the underroad protection, turned around and moved up the slope through the deciduous trees, again rather awkwardly and slowly over the irregular leaf covered ground. There was hail (small) falling at the time of the observation.

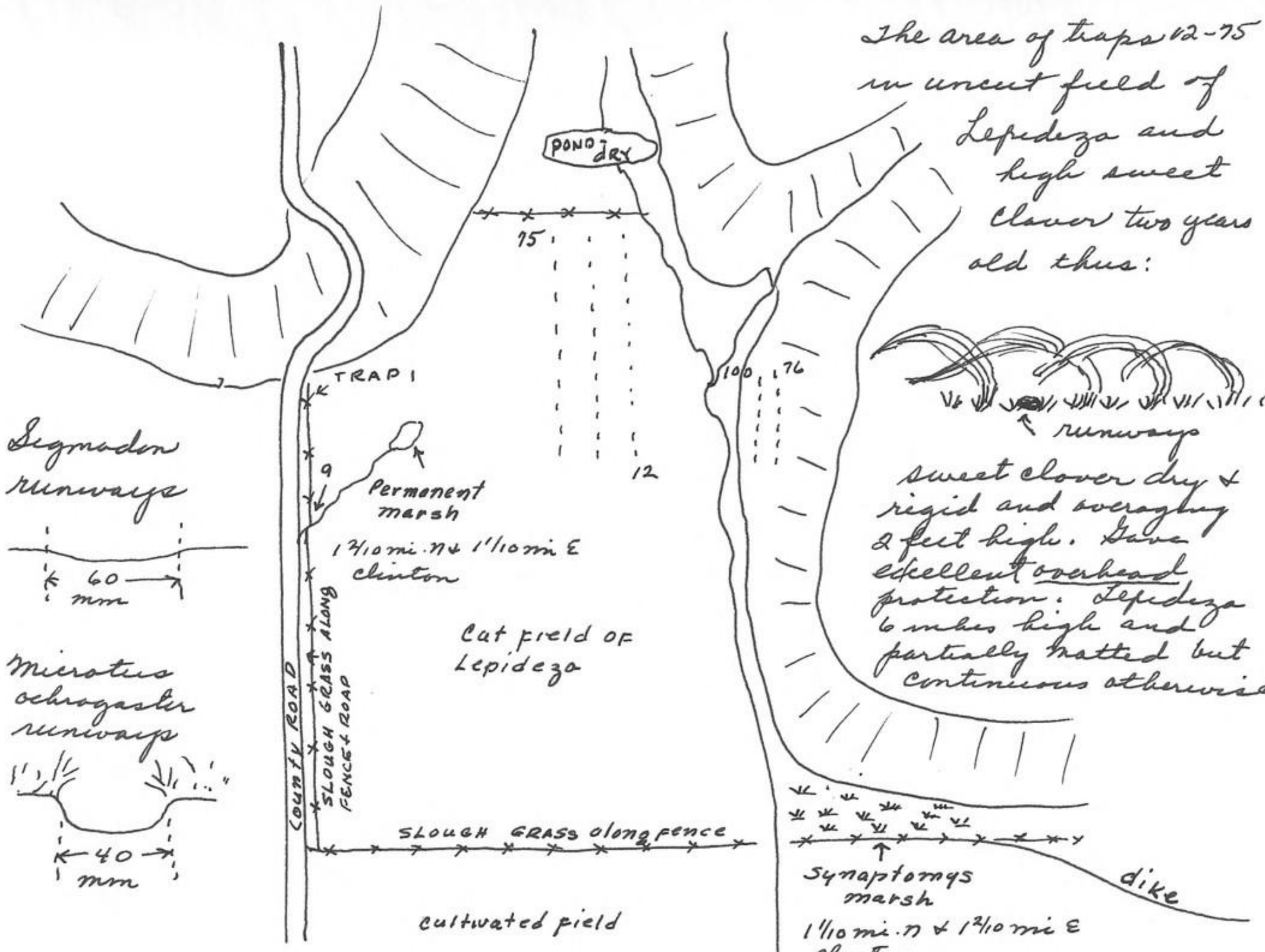
At another locality in the Wakarusa River valley, noted 46 geese (mainly blue but some snow) flying NW at about 500' high and calling. Wakarusa River completely open. 2 horned larks at crossroads S of Peterson's in usual place. In the Wakarusa River Valley between Richland and proposed dam site noted 2 large flocks of juncos (80 to 120) each. These large flocks are not common.

1 2/10 mi. N and 1 3/20 mi. E Clinton (center of town), Douglas Co., Kansas.

March 13, 1964

Set 100 traps in the above area which is a feed on the Robert Peterson property. The feed is at the mouth of a canyon.

640313-27



The area of traps 12-75 in uncut field of Lepideza and high sweet clover two years old thus:

sweet clover dry & rigid and averaging 2 feet high. Gave excellent overhead protection. Lepideza 6 inches high and partially matted but continuous otherwise

The field, according to Peterson is seldom dry enough to grow crops but is generally damp from water draining from canyon. The last 2 years have been dry and permanent marsh which rarely goes dry is dry this year. The slough grass along field and much of field was burned last spring but microtines are back again in the good stand of slough grass. Activity in field cut recently shows that microtines have invaded area of burnt field after adequate vegetation regenerated. The area of traps 12-75 is completely utilized by Microtus ochrogaster and Sigmodon hispidus. Well developed trails are under the protection of the dead sweet clover stems; an excellent example of the factor of overhead protection. The Lepideza alone did not offer adequate protection but the combination of Lepideza & sweet clover did. Considerable sign of fox (grey & red) and skunk scratching & excavating these rodents.

Microtus ochrogaster had own trail systems and were caught in them, some were taken in the larger Sigmodon trails. I believe that Sigmodon enlarge and keep open (overhead) the M. ochrogaster trails.

1 2/10 mi N and 13/20 mi. E Clinton (center of town), Douglas Co., Kansas

March 14, 1964

Inspected trap line set last night. (continues on next page)

640314-28

Inspection of trapline this A.M at 8:30. Rained slightly last night. Temp about 40°F and Cool breze. most mammals caught before rain in cotrast to trapping a week or so agas when all mammals were caught after sun up Traps 20' apart.

1 sprung
2 M. ochro
3 M ochro
4 Pero. monia
5 M. ochro
6 M. ochro
7 Sigmodon hisp
8 M. ochro
9 not visited
10 sprung
11 M. ochro
12 sprung
13 M. ochro
14 not visited
15 sprung
16 Sigmodon hisp
17 sprung
18 not visited
19 sprung
20 not visited
21 M. ochro
22 sprung
23 Sigmodon hisp
24 sprung
25 Sigmodon hisp
26 sprung
27 sprung
28 M. ochro
29 sprung
30 not visited
31 not visited
32 M. ochro
33 sprung
34 M. ochro
35 Sigmodon hisp
36 sprung
37 M. ochro
38 not visited
39 sprung
40 Sigmodon
41 Microtus ochro
42 sprung
43 sprung
44 sprung
45 M. ochro
46 Sigmodon hisp
47 sprung
48 sprung
49 M. ochro
50 sprung
51 Sigmodon h
52 sprung
53 Sigmodon hisp
54 M. ochro
55 Sigmodon hisp
56 sprung
57 Sigmodon hisp
58 M. ochro
59 sprung
60 not visited
61 not visited
62 M. ochro
63 sprung
64 M. ochro
65 sprung
66 sprung
67 M. ochro
68 Sigmodon hisp
69 sprung
70 sprung
71 M. ochro
72 not visited
73 sprung
74 not visited
75 M. ochro
76 not visited
77 sprung
78 sprung
79 sprung
80 Sigmodon hisp
81 sprung
82 sprung
83 sprung
84 sprung
85 Sigmodon hisp.
86 sprung
87 sprung
88 Pero. leucopus
89 M ochro - eaten
90 sprung
91 sprung
92 not visited
93 M. ochro
94 sprung
95 not visited
96 M. ochro
97 sprung
98 sprung
99 Sigmodon hisp
100 sprung

Summary

25 Microtus ochrogaster
15 Sigmodon hispidus
1 Peromyscus maniculatus
1 Peromyscus leucopus
42 total
14 traps not visited
44 traps sprung.

Large Sigmodon are completely overrunning feed as indicated by sprung traps. The orange cloth used as marker on top of a metal stake 9 inches high were chewed and pulled from stake.

Preparation of mammal collected this A.M.

640314-2	Microtus ochrogaster	157-38-20-11-40gms ♀ ut normal
640314-3	" "	146-31-19-10-37gms ♀ ut. normal
640314-4	Peromyscus maniculatus	138-54-19-13-14gms ♀ ut normal
640314-5	Microtus ochrogaster	148-34-21-11-34gms ♀ 1X2 emb. 6 mm
640314-6	" "	132-28-19.5-10-25gms ♀ ut normal
640314-7	Sigmodon hispidus	225-91-32-17-85gms ♂ testes 13 mm
640314-8	Microtus ochrogaster	166-40-21-11-52gms ♀ ut normal
640314-11	" "	165-35-20-11-53gms ♂ testes 11 mm
640314-13	" "	[136]-[28]-20-10-38gms ♂ testes 12 mm
640314-16	Sigmodon hispidus	236-98-30-17-70gms ♀ ut normal
640314-21	Microtus ochrogaster	139-33-20-10-30gms ♂ testes 4 mm
640314-23	Sigmodon hispidus	210-87-30-15-55gms ♀ ut. normal
640314-25	" "	295-118-34-20-130gms ♀ ut normal
640314-28	Microtus ochrogaster	147-33-19-10-38gms ♀ ut normal
640314-32	" "	157-36-20-10-48gms ♀ ut normal
640314-34	" "	102-24-16-8-12gms ♂ 2 x 2 emb. 9 mm
640314-35	Sigmodon hispidus	218-89-31-15-64gms ♂ testes 10 mm
5. only 640314-37	Microtus ochrogaster	162-35-20-11-45gms ♀ 2X0 emb. 12 mm
640314-40	Sigmodon hispidus	212-82-29-15-57gms ♂ testes 10 mm
640314-41	Microtus ochrogaster	147-33.20-10-43gms ♀ ut normal
640314-45	" "	143-33-19-11-38gms ♀ ut normal
640314-46	Sigmodon hispidus	245-100-32-17-82gms ♀ ut normal
640314-49	Microtus ochrogaster	152-33-19.5-10-40gms ♀ ut normal
640314-51	Sigmodon hispidus	235-98-31-16-70gms ♀ ut normal
640314-53	" "	221-87.30-18-70gms ♀ ut normal
640314-54	Microtus ochrogaster	148-33-20-10-40gms ♂ testes 13 mm
640314-55	Sigmodon hispidus	225-92-31-16-65gms ♀ ut. normal
640314-57	" "	229-93-32-17-91gms ♂ testes 8 mm
640314-58	Microtus ochrogaster	139-32.19.5-10-30gms ♂ testes 6 mm
640314-62	" "	149-34-20.5-11-46gms ♀ ut. normal
640314-64	" "	156-35-20-11-50gms 1X1 emb 22 mm
640314-67	" "	142-35-19-10-29gms ♂ 3X1 emb. 5 mm
640314-68	Sigmodon hispidus	235-91-31-16-77gms ♂ testes 10 mm
640314-71	Microtus ochrogaster	151-36-20-10-40gms ♂ testes 10 mm
S. only 640314-75	" "	146-33-20-10-33gms ♂, testes 11 mm
640314-80	Sigmodon hispidus	182-71-28-16-50gms ♀ ut normal
640314-85	" "	228-91-32-17-84gms ♂ testes 14 mm
640314-88	Peromyscus leucopus	185-85-22.5-16-33gms ♀ ut. normal
SK's only 640314-89	Microtus ochrogaster	142-31-18.5-9-25gms ♀ 3X1 emb. 18 mm
640314-93	" "	153-36-20-10-42gms ♂ testes 14 mm
640314-96	" "	147-31-19-10-40gms ♂ testes 12 mm
640314-99	Sigmodon hispidus	[173]-[57]-28-16-64gms. ♀ ut normal

Lawrence, Douglas Co., Kansas

March 17, 1964

This evening 8:00 P.M many blue and snow geese passed n over Univ of Kansas Campus. They were heard throughout the night. At about 9:00 P.M noted at least 2,000 in 5 wedge shaped groups.

March 19, 1964

Starting last night, has rained all day and at 10:00 P.M is still raining, not heavily but consistently. Soils soaking up most of the rain. Noted this evening at 5:00 P.M the first flock (150) of grackles and blackbirds flying over Lawrence (1620 Tennessee St). Last week noted a small flock of redwing blackbirds.

March 26, 1964

Randall Errol Brown, graduate student in Zoology at K.U. reported trapping 3 Synaptomys Cooperi on Rockefeller tract on museum Natural History Reservation N E of town. Animals from prairie of Andropogon. On march 23, one of the two females gave birth to 3 young. Last 3 or 4 days have been cold and snowy. Ground on this date, march 26, is lightly covered with snow and ice, the base is a granular ice. Temp this A.M (8:00) approx. 18° F. Potters Lake on Campus has been open except a fringe of new ice. A Fox squirrel at 1620 Tennessee, preceding stormy cold weather, had placed several black walnuts in lawn beneath nesting box in mulberry tree. The squirrel has been seen entering this box several times since about March 12th. The starling that fed below the box (on feeder 3' below box and 12 feet above ground) have not attempted to use the box although last year they raised two families in the same nesting box.

Potters Lake, Univ. Kansas, Lawrence, Douglas Co., Kansas

March 26, 1964

at 8:00 A.M
Noted American Coot feeding in center of lake. 50% of time under water. At 5:00 P.M this bird was still feeding on lake at about the same rate noted above. At no time was this bird more than 10 feet from its original position noted this A.M. Usually it dove within a 3 foot radius in almost the center of the lake.

March 27, 1964

at 8:00 and 9:00 A.M noted above Am. Coot in lake. Ice gone from lake. Air temp 33° F. The coot is cruising throughout the lake and is feeding less in contrast to its persistent & local feeding

31

640327-31
→ returned to the identical

of yesterday. Shortly after 9:00 A.M it spot where it fed yesterday. I am wondering if there is a dead animal that this bird is feeding on (at bottom of lake). At 4:00 P.M. this bird was still on the lake and foraging throughout the lake. This evening noted several flocks of grackles and redwings pass over east end of campus. Thes is a major change in seasonal migration of these birds.

Univ. Kansas, Lawrence, Kansas

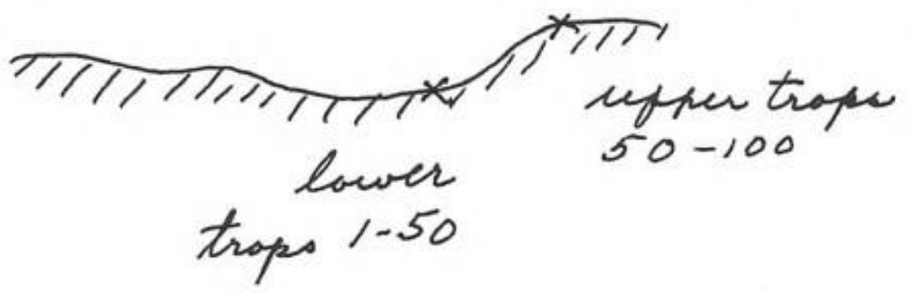
April 1, 1964

noted 3 cedar waxwing on campus (Chancellors residence) on ~~sch~~ Sophora Japonicum, a oriental tree and in elm trees adjacent yesterday evening at 5:00 P.M. These were the first birds by this species seen this winter and spring on campus. This morning at 8:00 A.M noted 16 birds in the same tree, Sphora japonicum. John Hill reported that thousands of snow & blue geese flew N over general area of north Lawrence (Logan Morgan Lumber Co). They were high and did not stop at Lawrence. At sand pits NE of Lawrence, noted nearly all kinds of duck, yellowlegs & sandpipers.

1 3/20 mi. N and 2 3/20 mi. E Clinton, Douglas County, Kansas

April 2, 1964

Set 100 traps in same area as Jan 2, 1964. Set traps near bottom of drainage, 1/2 on upper slope. Area in Lespideza grass of 10 years growth. Weeds in lower drainage proper but not in trapping area. The entire surface of the ground is covered with vegetation, mainly matted and runways difficult to see. Started trap line 4:30, ended at sundown. Temp today has been in the 70's F.



1 3/20 mi. N and 2 1 3/20 mi. E Clinton, Douglas Co., Kansas.

April 3, 1964

Picked up traps. day cooler than yesterday but still fairly warm, 50°F.

The most remarkable feature of catch is the dominance of microtus ochrogaster (only kind of mammal captured). This in contrast to Peterson feed which is dominated by Sigmodon and at least a few Peromyscus. This area differs only in amount of overhead protection, present on the Peterson farm and lacking here. The feed to East has been cut (a week or so ago) but I do not believe it has pushed the microtine population over into the lower drainage system. Old mounds which have been excavated previously by fox or skunk & nest dislodged, support microtus, some however, do not. Phoebe in area, Increased bird activity along creek, & skunk odor along road between Lawrence and here. Juncos still in area

Preparation of mammals from trap-line (odd-even numbers are pairs)

	640403-1	Microtus ochrogaster.		138-32-18.5-11-28 gms ♀
	640403-4	"	"	~~138~~ 142 - 32 - ~~18.5~~ 19 - 11 - 38 gms ♀
	640403-8	"	"	156-36-19-12-46 gms ♀
	640403-14	"	"	165-38-20-12-48 gms ♂
	640403-19	"	"	141-32-20-12-36 gms ♂
	640403-20	"	"	152-37-20-11-44 gms ♀
	640403-21	"	"	150-31-20-12-36 gms ♀
	640403-24	"	"	136-31-18.5-11-30 gms ♂
	640403-25	"	"	148-36-19-12-38 gms ♂ check sex
	640403-29	"	"	152-33-20-11-38 gms ♂
	640403-31	"	"	136-33-19-11-36 gms ♀
	640403-33	"	"	160-37-19-12-40 gms ♂
	640403-36	"	"	139-29-18-10-38 gms ♀
	640403-38	"	"	143-33-20-11-39 gms ♀
	640403-40	"	"	138-32-19-11-34 gms ♀
	640403-41	"	"	147-34-20-11-36 gms ♂
	640403-44	"	"	152-34-20-11-43 gms ♂
	640403-50	"	"	136-31-19-10-29 gms ♂
	640403-52	"	"	147-31-18-11-36 gms ♂
	640403-54	"	"	146-31-19-11-38 gms ♀
	640403-58	"	"	147-32-19-11-36 gms ♀
	640403-62	"	"	125-28-18-11-24 gms ♂
	640403-63	"	"	141-31-19-11-36 gms ♂
	640403-66	"	"	142-36-20-11-38 ♀
	640403-69	"	"	99-21-16-9-10 gms ♂
	640403-71	"	"	125-28-18.5-10-25 gms ♀
SKULL	640403-72	"	"	138-28-19-11-32 gms ♀ 3x1 emb. 8 mm.
	640403-73	"	"	139-30-18.5-11-36 gms ♂
SKULL (dest.)	640403-74	"	"	91-19-16-9-10 gms ♂
	640403-77	"	"	
	640403-78	"	"	152-37-20-12-41 gms ♂
(SKULL) ↘	640403-81	"	"	136-32-19-11-33 gms ♀
	640403-82	"	"	134-31-19-11-31 gms ♂
	640403-83	"	"	144-33-19-11-35 gms ♂ check sex
	640403-86	"	"	90-19-15.5-9-10 gms ♀
	640403-87	"	"	143-33-19.5-11-35 gms ♀
	640403-91	"	"	145-30-19-12-33 gms ♂
	640403-93	"	"	98-24-17-8-12 gms ♂
	640403-98	"	"	132-37-~~20~~ 18.5 - ~~12~~ 11 - ~~29~~ 29 gms ~~♂~~ ♀
	640403-100	"	"	162-41-20-12-49 gms ♂

33

Traps sprung on this line are nos: 6, 13, 28, 640403-33 ↘37 47 48 64 65 76, 84, 95, 99. Microtus 640403-91 had the middle right hind foot missing from natural causes. Noted a starling to raise and vibrate wings when offering call like the sound made by a killdeer. A Great Horned owl called on hillside appx. 2/10 mi. W. a red-tail favored an area NW of field where a large nest was located in an elm tree.

April 5, 1964 (same locality as above).

640405-8 Pilat black snake
640405-8a " " "
640405-9 " " "
640405-10 Pilat black snake.

Lawrence, Douglas Co., Kansas

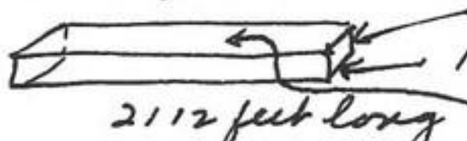
April 6, 1964

On Campus of K.U. noted a soil formation resulting from washing of soil from surface of walk cement. Trucks had tracked dirt, and the last two days of rain had developed a ripple pattern just as one would find on the floor of a lake or river. This would suggest that ripple marks in geological formations could have been produced from blown sands and dirt on a none ~~species~~ marine or waterless surface. The formation was not the result of tire marks.

Lawrence, Douglas Co., Kansas (1620 Tennessee Street)

April 6, 1964

at about 1/2 hr before sunset a flock of grackles flew E over my residence (apprx 20 feet above trees). The flight was continuous for apprx 4/10 mi. and the average width of flock was 40 feet. The birds were in close formation and I judge them to be about 3 or 4 feet apart (indiv. duals). On this bases I would estimate apprx. 18,000 birds



The flock was predominantly grackles but a few red-wings were present. Across the street at the Maupin-McCaskey residence there have been about 6 birds (grackles) establishing territories since about a week or so ago.

Lawrence, Douglas Co., Kansas

April 7, 1964

Chimney swift and purple martin in area. noted for first time this spring.

1 1/10 mi. N and 1 2/10 mi. E Clinton, Douglas Co., Kansas

April 8, 1964

Set 100 traps (in pairs) at Sagittaria marsh on Peterson Property (see march 13 for map) and in native grasses on slope to east. Traps at base of hill. Set traps between 5-6:30 P.M. Temp. in 30's

34

640409-34

April 9, 1964

mammals from trap set last night. Collected between 8:00-9:00 A.M. Temp 46°F

640409-4 Microtus ochrogaster 129-31-18.5-10-26gms ♂

640409-8 " " 167-42-20.5-12-53gms ♂

sk. only 640409-13 and photos 4 " " 133-32-19-11-30gms ♂, testes 9mm.

640409-14 Synaptomys Cooperi 140-25-20-10-49gms ♂

sk only 640409-18 Microtus ochrogaster 152-36-21-12-40gms ♀, ut. enlarged

640409-24 Synaptomys Cooperi. 127-26-19-10-42gms ♂

sk only 640409-30 Microtus ochrogaster 156-36-20-11-45gms ♂, testes 12mm

sk. only 640409-35 " " 146-33-19-11-39gms ♂, testes 14mm

640409-36 Microtus ochrogaster 156-33-19-12-52gms ♀ 2x1 emb 15mm

640409-44 Synaptomys cooperi. 126-20-20-10.5-37gms ♂

SKU 640409-46 Microtus ochrogaster [136]-[19]-19.5-11-43gms ♂, testes 13mm

640409-51 " " 140-31-18.5-10-38gms ♀

640409-54 " " 146-31-20-11-35gms ♀

sk. only 640409-59 " " 147-33-18-10 *43gms ♀, 1x1 emb 12mm

640409-60 Synaptomys cooperi 126-21-19-10-41gms ♂

640409-61 Microtus ochrogaster 152-36-19-11-51gms ♀, 1x1 emb 15mm

m only. 640409-62 Sigmodon hispidus 210-85-28-16-62gms ♀ V. closed. ut normal

640409-67 Microtus ochrogaster 148-31-19-11-44gms ♂

640409-68 " " 150-36-19-11-42gms ♀

640409-75 " " 163-40-20-11-50gms ♂

640409-82 " " 160-36-20-11-50gms ♂, testes 15mm

640409-91 " " 146-36-19-11-33gms ♀

640409-94 Synaptomys cooperi 120-18-20-10-40gms ♀

The Synaptomys 44 and a microtus ochrogaster at same trap site. Traps 73 and 77 were sprung. There was no cannibalism on this line and only two traps sprung. There was also a very definite lack of Sigmodon in contrast to field 1 (to west) trapped on march 13. Most of the traps were placed under mat-type grasses including Andropogon, stonghgrass and several other species. The line extended appro 1000 feet from Synaptomys marsh to the east. Traps at base of hill. Noted 1 cottontail rabbit in grass shelter and three very conspicuous trails (rabbits?) leading from deciduous forests above to fields (cultivated) below. Noted 1 redtail hawk and 1 turkey vulture in area. Reset 1 (same position) the above traps and baited. Will leave until 5:00 P.M and examine again to see degree of daytime activity (day clear, temp 64°F max). Will leave traps set tonight and will compare activity. all traps in some position (traps in pairs in same runway and are, for example 1 and 2, 3 and 4, 39 and 40 etc.). Photo 640409-102 and 640409-103 of trapping area east of the Synaptomys Marsh.

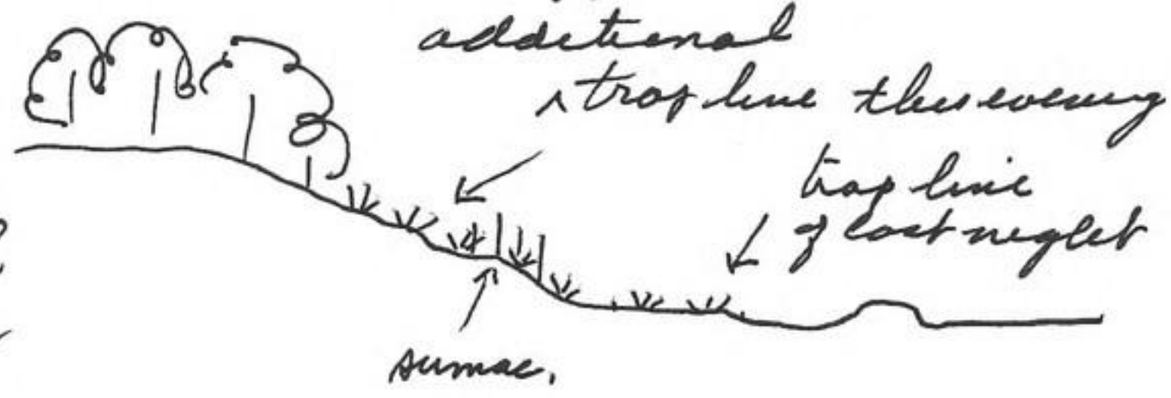
35

640409-35

Trapline examined at 5:00 P.M. Temp 63°F. Some line as this morning.

	640409-104	microtus ochrogaster	125-29-18.5-10-24 gms ♀
	640409-143	Microtus ochrogaster	152-37-19.5-11-42 gms ♂
	640409-144	microtus ochrogaster	160-36-19.5-12-55 gms ♀
	640409-152	microtus ochrogaster	134-28-19.5-11-38 gms ♀ V. imp.
	640409-158	" "	146-37-19.5-11-37 gms ♂
(dead.)	640409-160	microtus ochrogaster	145-36-19.5-11-35 gms ♂
	640409-176	" "	166-44-20-10-46 gms ♀ V. imp.
	640409-180	Sigmodon hispidus	280-92-31-17-72 gms ♂
	640409-184	microtus ochrogaster	157-40-20-11-52 gms ♀ V. closed.

numbers are trap numbers, for example no 152 is trap 52, no 176 is trap 76. With tomorrow catch from this line can determine kinds of animals from some trap position. For example a microtus ochrogaster 640409-13 and a Synaptomys 640409-14 were from same trap position (traps 8 inches apart in same runway. The evening between 6 and 7:00 P.M. set 100 traps in same area as above but on upper slope nearer deciduous forests. There is more sumac in this set than the set of last night although only sparsely arrange along line of traps. The lateness of the evening did not permit a careful and selective setting of traps in runways. At a point about 1/10 mi. W of Rattlesnake Point (Peterson property, point where road is graded to top of hill) not 9 turkey vultures. They did not like to leave the area and circled just above the trees. Some were resting in trees. They finally left and circled high in close order of flight. (4:30 P.M.). This morning took 2 color photos (640409-185 & 640409-186) of the trapping area on Edmonds farm (see Jan 2, 1964 for locality). Photo from road and shooting NNE.). Native grass (cut) on knoll in background; cut Lespedeza to right and uncut Lespedeza in drainage area where traps were set. This morning met Ed. Bond of Kansas Fish & Game. He is to be transferred to Perry and will control new lake and 2 counties instead of the 4 he now manages. In field just W of Synaptomys March (see march 13 for map) the grasses have been burned (since March 13) and all microtines are gone. The burning was complete



because of the dry condition of the vegetation this year. New green grass is starting. It is remarkable how all traces of microtine activity (trails, holes etc) have been recently eradicated. A small mammal (skunk?) has been digging shallow holes in this field. The holes are about 2 inches deep and 2 inches wide and, in the best areas are appro. 4 inches apart. The entire field has been effected but the digging is most numerous in localized areas. Some holes are deep. It appears as if the animals was searching for insects (grubs etc) or testing the soils for possible microtine nests, the former most likely. I could see no evidence of microtines moving to peripheral areas when field was burned. Where these animals go is a mystery as I have never found the bodies burned or the animals killed by the fire, yet the following year, they are back in the area. This afternoon checked the Boy Scout Camp site on the Peterson property. Trampling by horses & cattle had reduced or eliminated microtines from areas that previously had supported great numbers. The field of native grasses N of the camp and the one which was so productive last year, had been mowed and no life present. Other field of one years growth from plowed condition did not produce favorable plant community for microtines.

1 1/10 mi. N and 1 2/10 mi. E Clinton, Douglas Co., Kansas

April 10, 1964

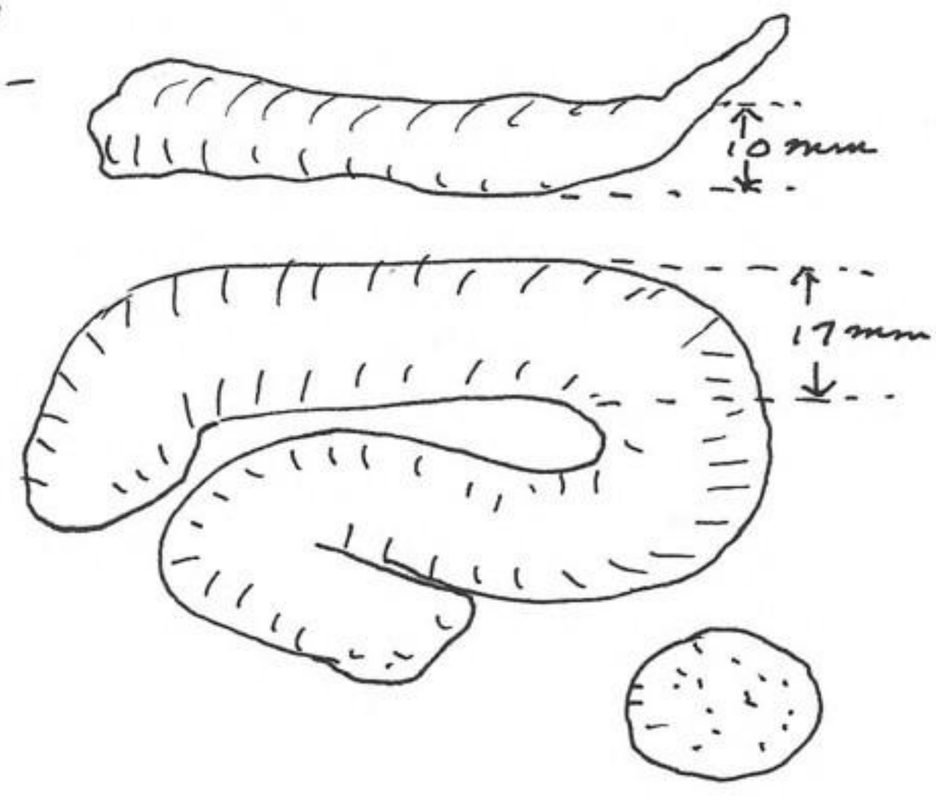
Checked trap line that has been in same position since April 8 and the trap line set last night on upper slope of hill.

Preparation of 1 mammals from above trap lines (1-100 same line as April 8 and 9 and 101-200 from second trap line set last night

sk. only	640410-28	Microtus ochrogaster	162-35-19-11-60 gms ♀ V. imp, 2x2 encl 11 mm
	640410-51	Peromyscus maniculatus	143-55-19-13-21 gms. ♀ V. imp.
	640410-60	Microtus ochrogaster	106-26-17.5-9-5 gms ♂
	640410-78	Synaptomys cooperi.	123-19-19-10-32 gms ♂ testes 6 mm gland 9x5 mm
	640410-105	" "	107-17-19-9-20 gms ♀ Uteres normal.
	640410-121	Microtus ochrogaster	145-36-18.5-11-45 gms ♀ V. imp.
	640410-134	Sigmodon hispidus.	235-92-31-17-86 gms ♂
SKU	640410-148	Synaptomys cooperi.	124-20-18.5-10-38 gms ♂ testes 6 mm hip gland 12x3.5
	640410-149	Sigmodon hispidus	234-91-30-17-77 gms ♂

	640410-152	Microtus ochrogaster		158-36-20-10-46gms ♂
	640410-172	"	"	151-38-20-11-46gms ♀ v imp.
sk. only	640410-175	"	"	150-30-20-11-54gms ♀ v. imp. ut normal
	640410-177	"	"	164-43-21-11-41gms ♂
	640410-178	"	"	111-26-18-9-21gms ♀
sk. only	640410-185	"	"	148-32-19-11-39gms ♀ v. imp. 1X1 emb 3 mm
	640410-191	"	"	102-25-16-9-15gms ♀
sk. only	640410-196	"	"	150-33-20-11-42gms ♂ testes 11 mm

Nos 177 and 178 were from same hole, respresenting a male adult and a ♀ juvenile. In feed west of trapping, (directly west of the Synoptomys marsh, noted large areas of the feed which had been inspected by the striped skunk for insects. The surface of the ground, which had been burned 2 or 3 weeks ago and now supported a new growth of Lepedeza grass (1/2 to 3 inches high). The skunk had dug shallow holes from mere surface scratches to holes as deep as 5 inches, most of the holes were about 2 inches deep and dug from one position, pueling the dirt in one direction. Many of the holes had single grass stems and roots exposed as if the insects were associated with the grasses. These deggings were a growth of grass slightly different from the usual Lepedeza. The most concentrated deggings were of the order of 12-15 holes per 1 square foot. Some areas, as large as 12 X 12 feet, supported the concentration of degging. Other areas averaged 3 per sq. yard. One is impressed by the importance of the skunks degging in bringing new soil to the surface and covering old seeds for germination; plus the fact that a tremendous quantity of insects are consumed. Scat was distributed at apptox 1 per every 40 or 50 feet. They assumed the following shape: Diameter ranged from 8 to 17 mm and relatively uniform in diameter for the full length. The scat were of the following insects.



One scat was entirely of the fur + bones of Microtus ochrogaster

One turkey vulture flew over stopping area, as did a red-tailed hawk. A lark sparrow was noted in area. 4 horned larks were in usual area along main valley road S of Peterson field. On way out of area noted 1 red-tail hawk at N end of proposed Clinton Dam. Phoebes noted at bridge sites.

Lawrence, Douglas Co., Kansas

April 11, 1964

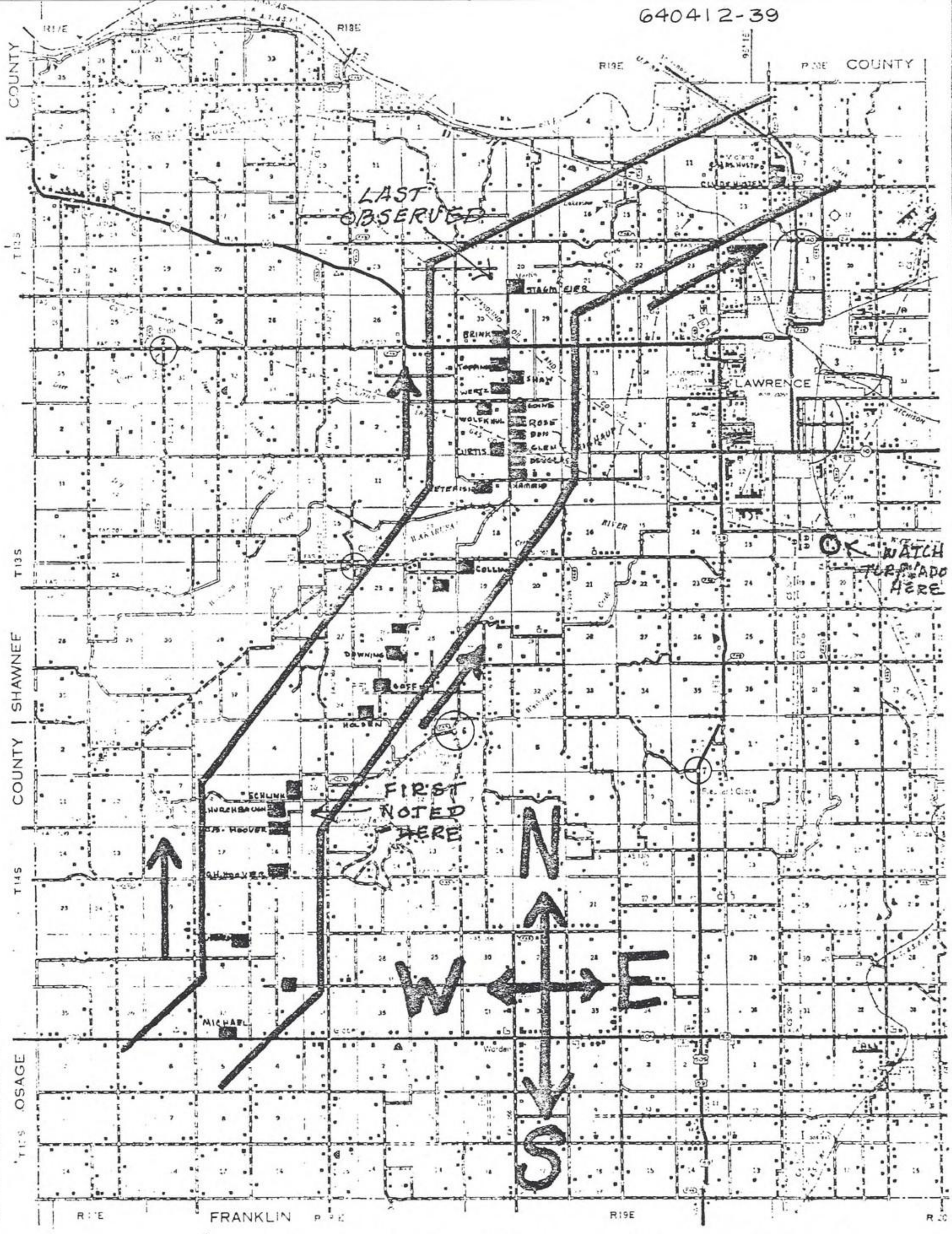
Recorded the source of the small bulb thermometer used for small animals and reptiles: E.W. Schultheis Corp, B12 - B-14 Wyckoff Ave, Brooklyn 27, New York. Thermometer 0/50c 1/5 small bulb, approx $6.50 each.

Lawrence, Douglas Co., Kansas

April 12, 1964

Lawrence Bee invited the family to test his new boat on Kansas River above bridge. Lawrence, Anne, and Mary Pauline & Annette Christine & myself made maiden voyage. Boat capable of 50 M.P.H. Eddy Bond, Fish & Game warden required Lawrence to get registration numbers on boat. At 11:30 a purple Martin contacting surface of water. One duck fly by. At 3:20 P.M picked up James Robert up at Haskell Bridge over Wakarusa River. He & Mark Roberts coned from bridge on highway 59 TO. At a point approx. 1/2 mi. N on Haskell Avenue from Wakarusa Bridge we noted the tornado at about the position of the Schlimm farm NW of Lone Star Lake and witnessed the movement from here to the Stagmeier home NW of Lawrence. Rain obscured ~~the~~ vision beyond this point. A perfect view was made possible from our vantage point in the Haskell Bottoms where the open field permitted an uninterrupted view of the tornado. The advancing storm cloud was abrupt and produced rain & hail; the trailing cloud feathered into a relatively clear sky, not blue, ~~by~~ but higher cloud masses. The cloud mass was a rather small and discrete unit. Lighting was good and laterally the tornado was free of rain or other low cloud formations. A perfect view was ~~so~~ permitted as this tornado passed along the western horizon. Made the following observations of this cloud mass, beginning at about 3:30 P.M. This tornado cloud was characterized by a dark ~~cloud~~

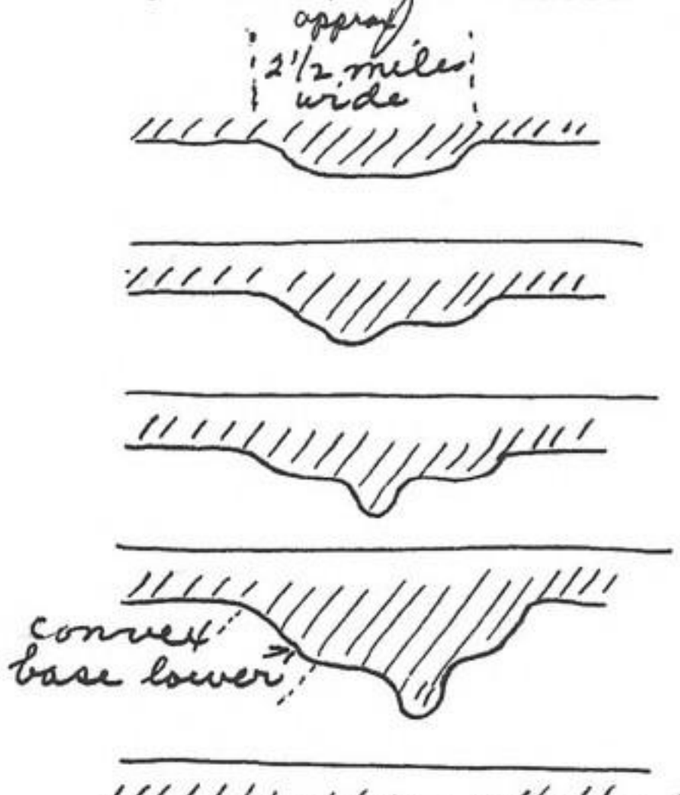
640412-39



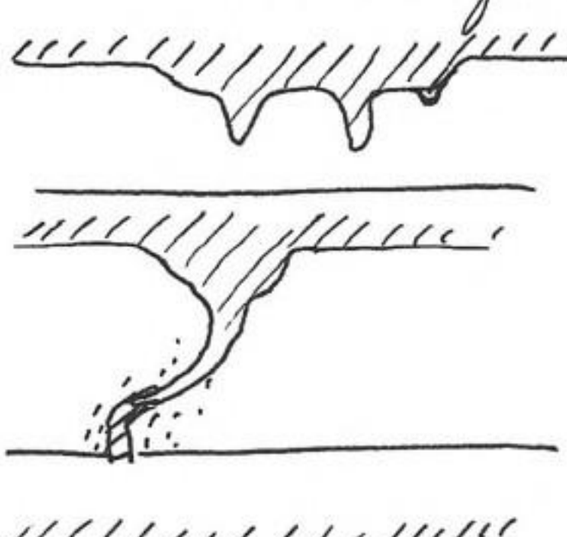
Track of tornado april 12, 1964 from Lawrence Daily Journal-World dated April 13. Our position as noted south of Lawrence

cloud mass with a convex hanging portion below the main cloud mass thus:

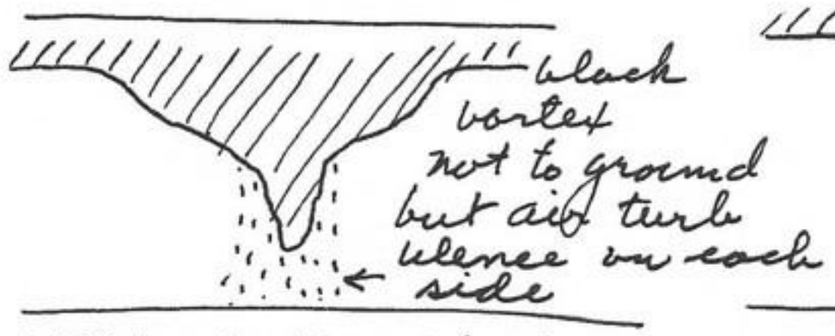
From this hanging droplike surface, the funnel or vortex formed in the following manner:

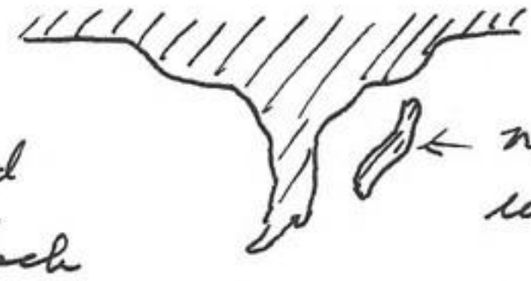


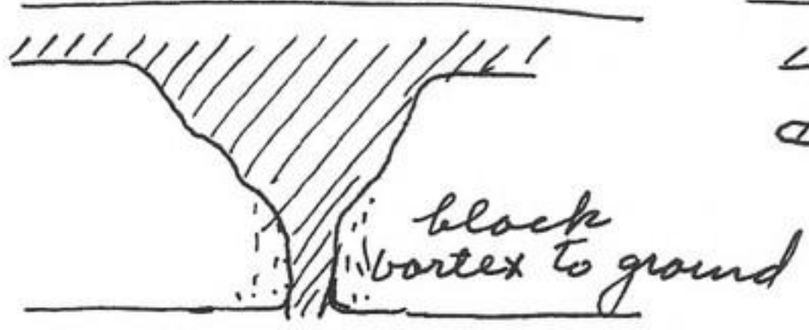
Variations were numerous and some are as follows:



vortex black and same color as cloud from which it originated.







The width of the convex base is, in my estimation, about 2 1/2 miles wide and the air turbulence (not black vortex) about 3/10 mi in diameter. The vortex made contact with the ground at about 3 times but not of the concentrated vortex as is usually associated with tornados. The light air turbulence surrounded the vorted and contacting the ground when the vortex was between 1/2 way from cloud to ground. also the vortex and on contact with ground. Noted on three occasions a secondary vortex form almost instantaneously (in as few as 3 seconds) and without contact with the basal cloud above or the main vortex. At 6 miles away we were not able to see particulate matter picked up from the ground nor could we hear the sound of the tornado. As soon as possible I would plan to check this area, especially in the Clinton area, for damage to natural populations of animals & birds and of the vegetation & trees. Crows should come into the area and feed on the dead animals to disclose their positions.

640413-41

Lawrence, Douglas Co., Kansas

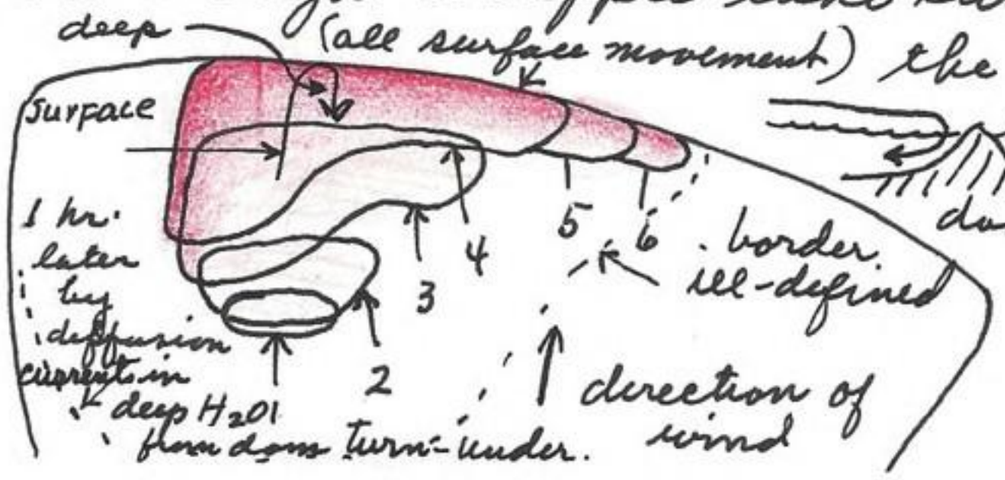
April 12, 1964

Larry Bancroft related the following information: Caught 4 Blarina in one pit trap (can) in on night at Ottawa, Kansas about one week ago. A Blarina will come to a moth which is vibrating its wings but will not come to meat held 2 inches away. The vibration may be a factor. Two Micrutus achrogaster in same pen react differently. ♀ dominant and remains in nest, ♂ more active and is subdominant to ♀ at feeding area.

Potters Lake, Univ. Kansas Campus, Lawrence, Kansas

April 15, 1964

Someone placed a green dye in lake at 4:30 P.M. The sequence of movement of water in 15 minutes was as follows (wind from S and enough to ripple lake surface. The movement was to the north to dike, thence east along edge of dike, clearing on the south side as the dye moved north. It did not move to west except a few feet from orignal site. Greatest concentration is outlined in red after 15 minutes



The botanists on the hill say that the flowering plants are about 2 week later than normal.

April 16, 1964

at 8:00 A.M Potters lake was completely and uniformely green from dye place in lake at 4:30 P.M yesterday. Shallow areas at entrance to lake and along W side were not as intense a green as the rest of the lake because of depth of water and not concentration of dye. Movement of dye is controlled by wind and surface movement of water and as indicated yesterday the surface waters are completly changes. as indicated in water cleared in area where dye was first introduced into the lake. The complete coloring of the lake is caused by diffusion of dye at lower depths beyond the zone of surface movement of waters ~~and~~ by circulation of overturned surface water in the lake. at dam Wind from same direction during entire period of observation. Turtles and water beetles have been observed on lake this A.M so the dye is not poisonous.

April 17, 1964

most of above dye has precipitated from waters of Potter Lake

1 3/10 mi. N and 3 2/10 mi. W Lawrence (P.O), Douglas Co., Kansas

April 17, 1964

Son James Robert and mike Roberts collected the following snakes from above locality:

42

640417-42

640417-1	Diadophis punctatus		640417-26	Diadophis punctatus	
640417-2	"	"	640417-27	"	"
640417-3	"	"	640417-28	"	"
640417-4	"	"	640417-29	"	"
640417-5	"	"	640417-30	"	"
640417-6	"	"	640417-31	"	"
640417-7	"	"	640417-32	Carphophis amoena	
640417-8	"	"	640417-33	"	"
640417-9	"	"	640417-34	"	"
640417-10	"	"	640417-35	"	"
640417-11	"	"	640417-36	Coluber constrictor	
640417-12	"	"			
640417-13	"	"			
640417-14	"	"			
640417-15	"	"			
640417-16	"	"			
640417-17	"	"			
640417-18	"	"			
640417-19	"	"			
640417-20	"	"			
640417-21	"	"			
640417-22	"	"			
640417-23	"	"			
640417-24	"	"			
640417-25	"	"			

Lawrence, Douglas Co., Kansas

April 18, 1964

Photos 640418-1 to 640418-10 of James Robert Bee. The occasion was the parade for K.U. Relays. Band the Lawrence High School.

6/10 mi. W and 7/10 mi. N Lawrence (P.O.), Douglas Co., Kansas

April 19, 1964

Son James Robert collected a Natrix sipedon, common water snake, no 640419-1. It measured 293 mm body, 100 tail, 19 gms wt.

Lawrence, Douglas Co., Kansas

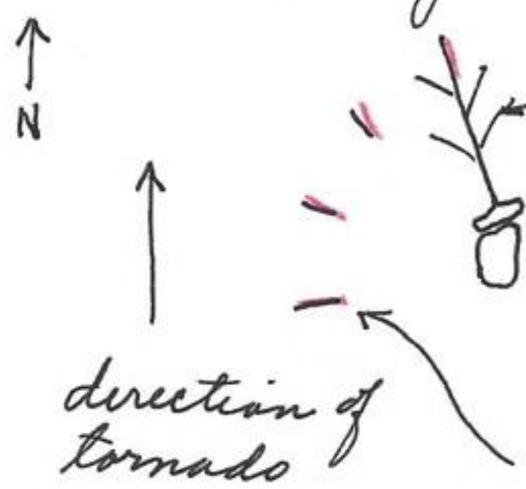
April 22

noted a ♂ & ♀ Cardinal on lawn. They exchanged either food or building material by mouth.

1 1/2 mi. E Clinton, Douglas Co., Kansas

April 25, 1964

Checked results of tornado damage in Clinton area. Enroute at 3/10 mi. N of the SE Corner sec 31, T 12S, R. 19E, photographed trees blown over by the tornado. Photo 640425-1 of close tree in field. The tree fell to ground in a WSW direction and then rolled N ~~several times~~ 1/2 times to its present position. All trees in area showed this pattern of rolling N from its original position to the west.

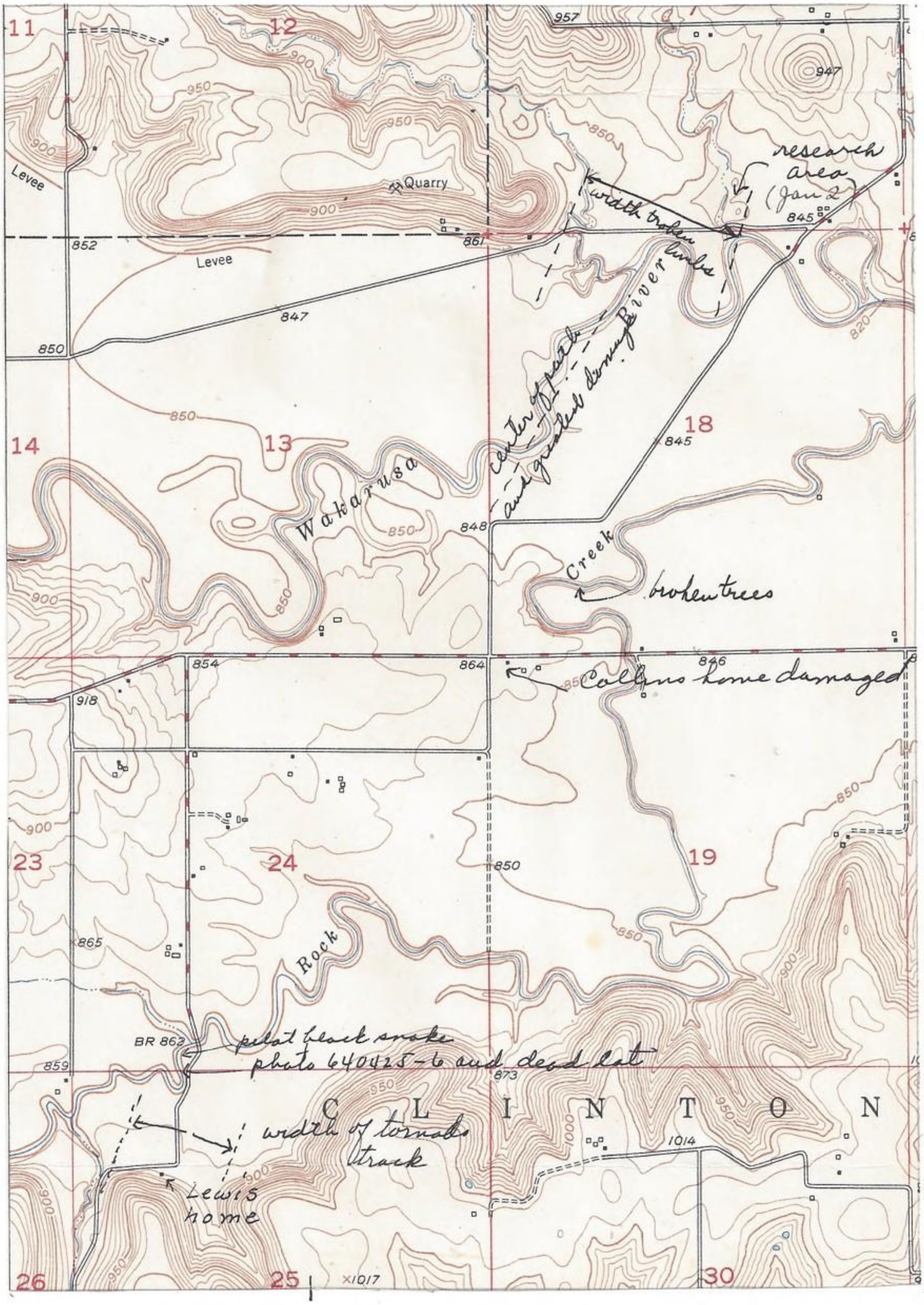


position tree fell and consecutive rolls to N.

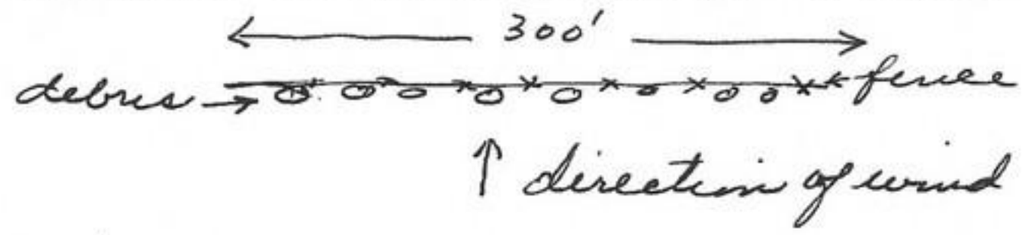
43

640425-43

Photo 640425-2 of tree uprooted and rolled from its original western position to its present position to the north and along the line of the movement of the tornado. Photo 640425-3 of first tree examined showing second tree in background. The deep seated pools of water are clear and provide new habitats for frogs and aquatic insects. Blown grasses and sedges indicate that the final direction



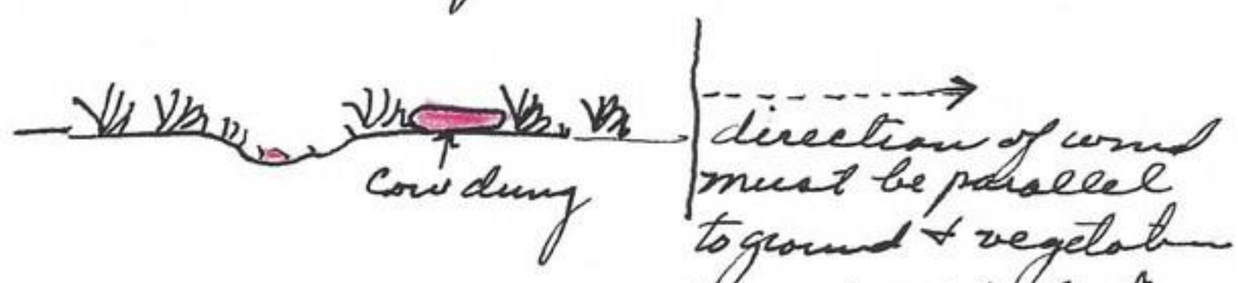
direction of the wind (or it could have been the initial wind, was to the north. High trees seem to be affected by winds of a different direction than ground or surface winds which are in the direction of the general movement of the tornado. For instance debris collects on fence lines that are at 90° to the direction of the tornado. The area of debris, in several instances was as much as 200-300 feet. Rock ledges or rock fences were plastered with debris (water soaked grasses, weeds, and other vegetation in the direction of the tornado.



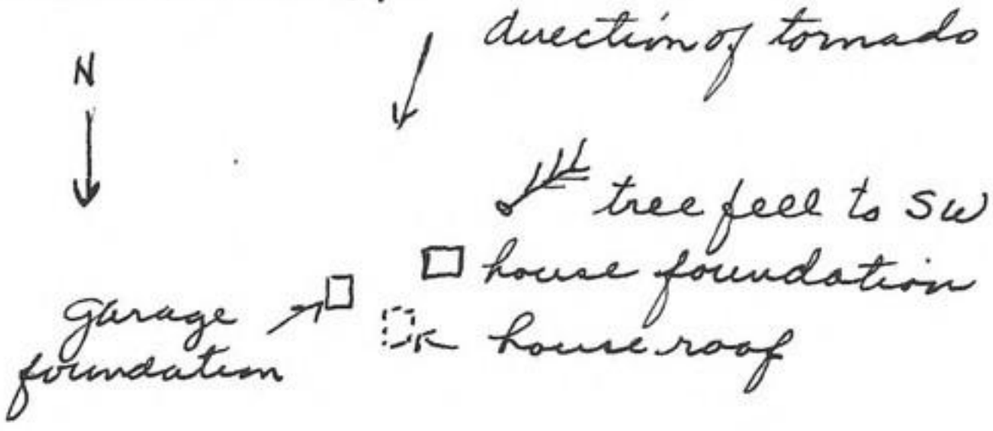
Trees, however, generally fall at right angles to the direction of tornado.

In the field where the large trees were uprooted, noted that cow dung on ground in short grasses were not disturbed and small branches and debris in shallow depressions were also in original position.

Some rocks of rock fences were blown 3 or 4 feet beyond fence in direction of tornado.



Continued south to Lewis residence (see map) and photographed the remains of this two story house, 640425-4 and 440425-5.



This home was completely demolished and lumber scattered in all direction. An 84 year old occupant was injured and found outside of house. The tree fell in usual direction but the roof of the house was blown from house in direction of the tornado. The metal roof of garage was 200-300 feet away and in some direction from the garage as the direction of the tree. This house is on the n side of the valley slope and at the base or valley level. Hill of this nature do not minimize the force of a tornado. In other words, the lee side of a hill gives no protection from a tornado. On the basis of the Lewis residence would say that the east side of a

and the way trees react to the winds

basement would give better protection than a SW corner which is usually the direction from which most tornado arrive. The circular movement of the tornado, however, is from the E. At a point approx. 2/10 mi. N & a little E of Lewis residence photographed tree damage along Rock Creek. Down trees fill the creek and temporary ~~dams~~ dams result. 640425-6. Both entire trees and large limbs in upper story of trees were downed. Lumber, furniture & roofing material, especially wall-board in piece of about 8 inch diameter were in area. Photo 640425-7 of cat, killed by tornado; all bones of legs seemed to be broken but fur & hide intact. In this area along most destructive path of tornado, found three pilot black snakes about 400 feet apart. Collected two, number 640405-8 and 640405-8a. Bird life more numerous in areas immediately adjacent to track than in direct track proper. The difference was in amount of limbs with leaves, being fewer in the affected area. Checked area about 1/2 mile N of Collins residence from where Wakarusa River enters west edge of sec. 18 to a point about 1/2 mile beyond along river. The river was along main line of damage with center of greatest damage about 150 feet wide. Took several photographs along river in this area:

640425-9 of green ash showing splintering effect when main trunk was broken near ground (tree pointing NNE).

640425-10 along river. Trees in river bed generally toward river.

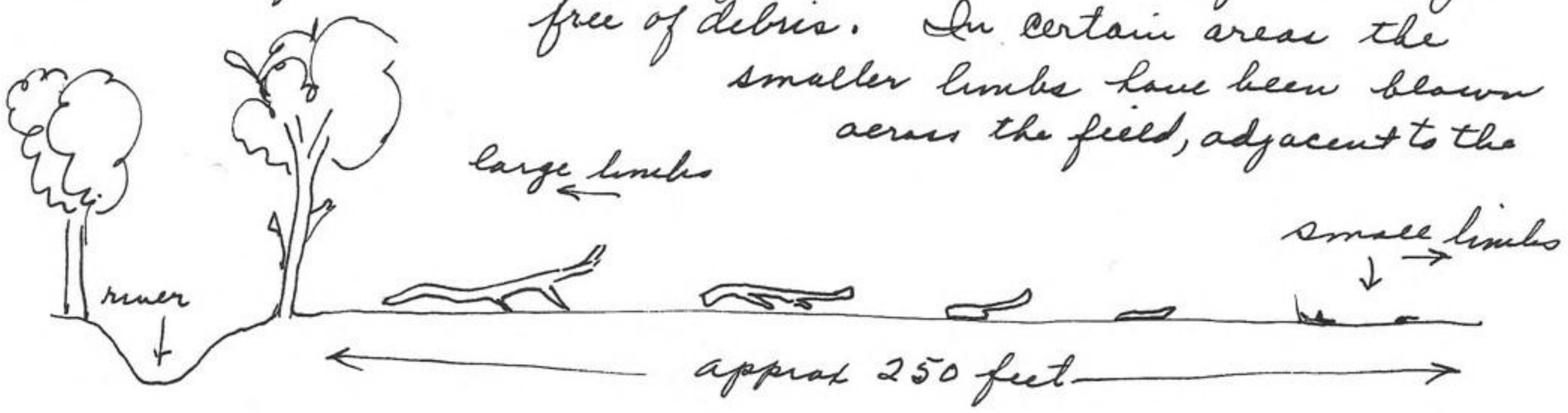
640525-11 Large tree stripped of bark from base to top of tree.

640525-12 bent limbs of trees

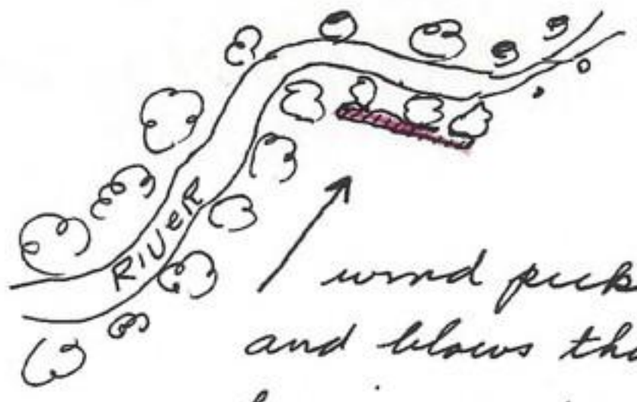
640525-13 twisted tree and breaking point. Tree in direction of tornado.

640525-14 piece of corrugated roofing bent upon impact with small tree. Other pieces of tin wrapped around trees and impossible to extricate. Most of them about 6 feet from ground.

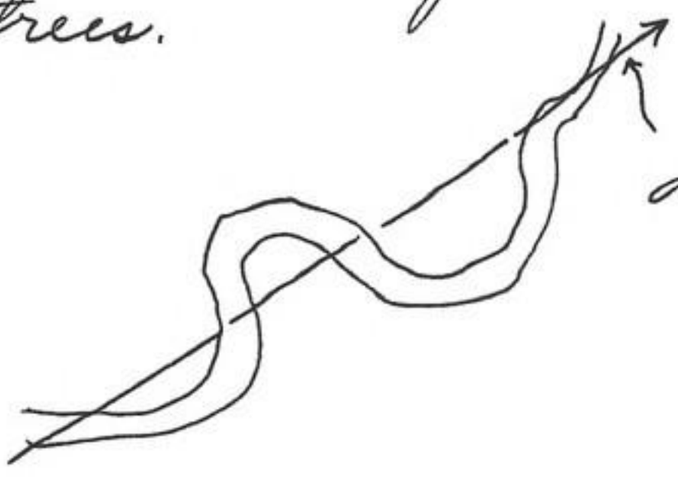
640525-15. Sky line of broken trees & limbs and dark clouds beyond. The limbs from trees along river edge were blown (in direction of tornado) ~~from~~ into adjacent fields, the distance in proportion to the size of limb. Areas beyond the outer limit of limbs generally free of debris. In certain areas the smaller limbs have been blown across the field, adjacent to the



trees along the creek, thus: The path of destruction of the tornado follows a course, irrespective of influence of trees, entrenched river course or open area between two bordering lines of trees.



wind picks up limbs and blows them against a barrier as if a bulldozer (8 feet high) had piled them against the barrier trees



direction of path

In this area observed more birds adjacent to path of tornado than in path of destruction. noted 2 Harris sparrows (migration of) which seems late for these birds. At research area the eastern edge of tornado passed thru the trapping area. Some vegetation was down and in direction of tornado but as far as I could tell had not affected the migratine population. When rain is added to the path of the tornado, the vegetation reacts as if subjected to a flash flood, except that the water and vegetation is forced against gravity. This debris which is water soaked can come to rest on the side of a tree above its base, against a rock wall or any other type of barrier. Some mud is incorporated in the plastered debris. At a point approx. 3/4 mi. N Clinton, noted 1 scissor-tailed flycather and one turtle which had back burned black and surface corroded.

6/10 mi. W and 7/10 mi. N Lawrence (P.O.), Douglas Co., Kansas
April 25, 1964

Don James collected the following from above locality:

640425-18	Desdophis
640425-19	"
640425-20	"
640425-21	Carphophis
640525-22	narrow mouth frog.

There were 10 or 12 narrow mouth frogs under stones on the sidehill. James also reports many centipeds, some 3 1/2" long.

1613 Tennessee St, Lawrence, Douglas Co., Kansas
April 29, 1964

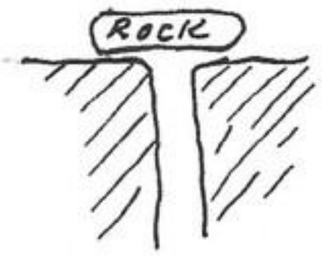
Collected the following reptile from above locality.
640429-1 Ophisaurus body length 180, tail 239, wt in grams 34. This lizard was taken dead on walk at the NE corner of the Maupin residence at 8:00 A.M. It had been seen the previous evening in same position. Gardeners had been raking the lawn and leaves from shrubbery and may have killed the lizard. One eye of the lizard was extending beyond the normal position as if it had been hit on the head, although no other signs of damage was observed. The Maupin Estate includes a hillside slope of deciduous trees and several other groups of dense shrubs and high trees as well as open grass & weed areas. Photo 640429-2 of this lizard with moss background.
640429-3 ibid.
640429-4 lizard on venter of box turtle.

5 1/2 mi. N and 1/2 mi. E Lawrence (P.O.), Jefferson Co., Kansas
May 2, 1964

Mary Pauline and I collected the following from area of old quarry at top of hill (to right).

640502-1	Heterodon punctatus 275 body, 49 tail, 10 gms.
640502-2	"
640502-3	"
640502-4	"
640502-5	"
640502-6	"
640502-7	"
640502-8	"
640502-9	"
640502-10	"
640502-11	"
640502-12	"
640502-13	"
640502-14	"
640502-15	"
640502-16	"
640502-17	"
640502-18	"
640502-19	"
640502-20	"
640502-21	"
640502-22	"

most of the deadopkis were from open exposure between bare rock surface of quarry and shrubs There were fewer among deciduous trees or on barren soils. many ant colonies with eggs under rocks. In one area, within 4 feet of each other noted holes in ground, approx. 2 1/2 inches in diameter, smooth and straight as if cut with an auger, and capped with a flat stone. Clearance between ground and stone not more than 1/2 inch. Soils disturbed around rocks as if used by some type of animals. I have never seen this size of hole used in combination with a rock cap. This area in previous years has supported several permanent cattail ponds and wet soils but this year the area was completely dry. There were no frogs or toads as found in previous years. Diurnal and eastern kingbird in area.



Univ. Kansas, Lawrence, Kansas

May 4, 1964

John Adams of the Hall Laboratory of Mammalian Genetics presented the following embryos of known age:

640504-1 mus musculus, strain C57BL/6, 11 days old. Pigment of eyes just beginning. all from same female, preserved in 10% formalin

May 5, 1964

640505-1 mus musculus, strain C57 BL/6, 12 days old embryos, all from same female.

640505-2 mus musculus, strain AKR/N, 14 ~~or 15 day old~~ embryos, (~~actually closer 15-16 days~~). Preserved in 10% formalin.

May 5, 1964

Noted fox squirrel at SE corner of Robinson Gym on campus with shoulders free of hair.  Potters Lake received second green dye this season. Noticed it too late for checking water movement.

May 6, 1964

640506-1 mus musculus, strain C57 BL/6, 13 day old embryos, all from same female. Preserved in 10% formalin. John Adams will supply complete series from 11 days to term.

640507-49

May 7, 1964

640507-1 mus musculus, strain # C57BL/6, 14 days old embryos all from same ♀.

Lawrence, Douglas Co., Kansas

May 8, 1964

In last week have noticed an increase of blue jay activity in groups of 4-8. They call continuously and move about from tree to tree as if searching for young and eggs of other birds. They form these grouping about this time every year.

Univ. Kansas, Lawrence, Douglas Co., Kansas

May 8, 1964

640508-1 Mus musculus. 15 days old embryo, all from same ♀. strain C57BL/6, preserved in 10% formalin.

Lone Star Lake, Douglas Co., Kansas

May 8, 1964

A Red king Snake was presented to me by a student at K.U. Its number is

640508-2 Lampropeltis doliata syspila.

This snake was decapitated (Approx 3/4 inch from anterior end) and the blood drained for hemoglobin test. For 25 minutes this snake moved about forward in regular gliding movement with cut end elevated 1/4 inch off the table. When touched (10 minutes) it reacted quickly and curled into closed circle. Several times it tied itself into a fold knot. After 25 minutes it stopped moving forward but would react to touch. At 30 minutes after decapitation there snake still reacted but was, for all purposes, dead. Movement forward, reaction to touch (defense reaction for protection) and upright position (to a lesser degree) are all controlled by reflex from the spinal cord. Tied head to body a preserved as specimen.

7 7/10 mi. N and 2 1/10 mi. E Lawrene (P.O.), Jefferson Co., Kansas

May 9, 1964

Collected the following herps from the above area:

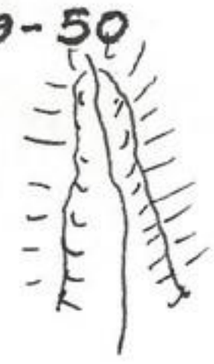
640509-1 Eumeces obsoletus, 118mm body, 130 tail, 42 gms wt.
640509-2 Lampropeltis doliata syspila, 232 body, 32 tail, 7 gms

640509-3 Carphophis 247 body, 53 tail, 10 gms
640509-4 Deadophis 301 body, 47 tail, 14 gms
640509-5 Eumeces
640509-6 "
640509-7 Narrow mouth frog
640509-8 Toad
640509-9 Deadophus.
640509-10 "
640509-11 "
640509-12 "
640509-13 "
640509-14 "
640509-15 "
640509-16 "
640509-17 "

50

all snakes & lizards within a linear area of appro 200 feet of the two sides of the headwater drainage of a stream where resistant rocks layers give characteristic topography. The toad and a Deddophus 640509-9 under same rock. Most of the Deadophus, Carphophus & Lampropeltis acted as if non-active. The Lampropeltis was under a rock

640509-50



The best areas for herps near trees & shrubs along drainage but neither in this plank community or beyond the immediate influence of trees & shrubs. Eumeces under rocks near piles of rock or near shrubs.

8 inches diameter and 2 inches thick. It was in same relation as used by Deadophis.

Noted one redtailed hawk carrying a snake which looked like a pilot black snake. Continued on to Tonganoxie Lake.

Tonganoxie Lake (State Leavenworth Lake), ~~Jefferson~~ Leavenworth Co., Kansas.

May 9, 1964

Photo 640509-18 Comp of son James & Ronald Nolan. They were left at lake last night and will be picked up tomorrow.

Photo 640509-19 son James & Nolan.

photo 640509-20 James and Nolans. They captured a thamnophis at lake. no. 640509-21.

Tonganoxie Lake, Leavenworth Co., Kansas

May 10, 1964

Left Lawrence to pick up son James & Nolan at Lake.

7 7/10 mi. N and 2 1/10 mi. E Lawrence (P.O.), Douglas Co., Kansas

May 10, 1964

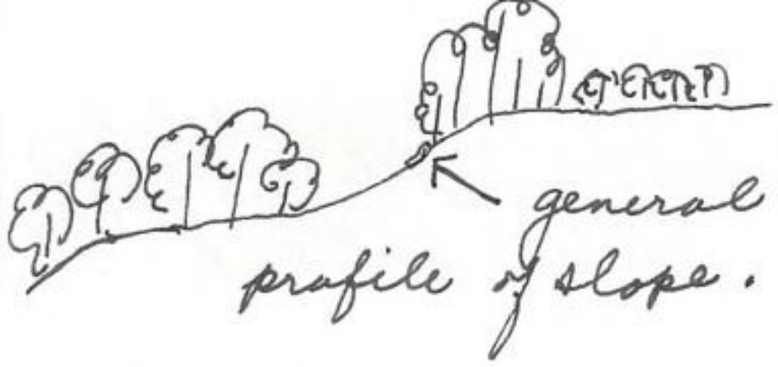
Collected the following herps from same area as May 9 but nearer water course.

640510-1	Deadophis punctatus
640510-2	" "
640510-3	" "
640510-4	" "
640510-5	" "
640510-6	Eumeces
640510-7	Lampropeltis calligaster
640510-8	natrix
640510-9	Bufo
640510-10	Carphophis amoena
640510-11	Thamnophis

6 3/10 mi W and 2 1/2 mi. S Lawrence (P.O.), Douglas Co., Kansas

May 17, 1964

Collected the following herps from the above locality.



The copperhead 640517-51 (→ was under rock) within the tree area but adjacent open area. Carphophis also in trees at edge under rocks. They seem to prefer shade edge more than Deadsphios. Examined many rocks in deciduous forest but without success.

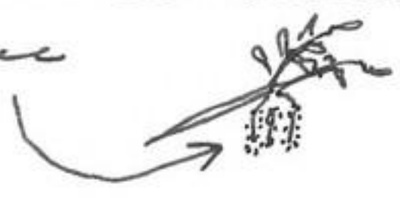
640517-1 Agkistrodon contortrix - body 426, tail 73, wt 77 gms
640517-2 Carphophis amoena - body 218, tail 42, wt 6 1/2 gms
640517-3 Carphophis amoena. body 240, tail 30, wt 7 1/2 gms
640517-4 Eumeces body 68, tail 85, wt 9 gms, gravid ♀
640517-5 "
640517-6 "
640517-7 "
640517-8 "

Enroute to Lawrence at 4 3/20 mi W and 2 1/2 mi. S Lawrence (P.O), noted a scissor-tail flycatcher at trees at farmhouse.

1620 Tennessee, Lawrence, Kansas

May 17, 1964

Watched 3 male fox squirrels in walnut (black) tree. They were feeding on new inflorescence from cluster or by



by either eating directly biting at base and then holding in hand eat the entire stem from base to tip. The feeding was on terminal branches and in precarious places. When wind blew to certain speed, the squirrels would retreat from outer branch and run to main support where branch did not whip as did the outer end of branch. After feeding for 10-15 minutes they would rest on limb (size body) with legs dangling, placing full weight of body on limb as if for digestion purposes. All three squirrels fed in same tree but there was considerable chasing by one - another. The bob-tail squirrel ♀ which has had nest in some tree for the last year (see notes of the first occurrence of this squirrel building nest) was noted but not in walnut tree. (later arrived & fed) The squirrels were not feeding in locust tree which was just reclining from full bloom. Noted squirrels to walk along intately lines (not over 3/8 inches in diameter) for as long as 30 or 40 feet. It is a common practice of one squirrel to pass another by one running under limb while the other on top of limb.

The characteristic feeding pose is thus:
The body is draped over a limb with hind foot holding on to limb. There must be some kind of muscular adaption to this pose. The pelage may also reflect limb contact.

1620 Tennessee St., Lawrence, Douglas 640518-52
May 18, 1964 Kansas

Fox squirrels leave feeding tree (inflorescence of black walnut) at the time of evening when the sun goes down and the sun rays leave the upper part of the tree. Two of the male squirrels, regularly leave and go to adjacent nesting trees about 60 feet away. The large female (bob-tailed) crosses to immediately adjacent tree and along with one male squirrel disappear into branches of main tree. No further activity takes place after this time. At about sundown or shortly after squirrels leave the feeding tree, the catbird begins to call and moves about the bushes and lower limbs of the tree, occasionally it will go to top of tree. At about this same time a pair of eastern kingbirds call from top of trees and fly out to catch insects. At one time, when one bird was in the top of the tree, it flew with rapidly vibrating wing strokes and with vigorous call notes as if in song, described a series of wavelike arcs with greatest amount of vocal delivery at the upward sweeps of each arc. The demonstration reminded me of the aerial song of the Lapland longspur in northern Alaska. The lights were fading and approaching twilight. At about sundown this same evening watched a blue jay fly directly toward a eastern kingbird which was perched in the uppermost branches (top) of a tree used for hunting insects. The jay alighted within 1 foot of the kingbird but the kingbird did not move or seem perturbed. Also at about this same time noted a grackle (bronze) to leave the top of a blackwalnut tree some 60 feet light and with partially closed winds, drop to ground below and alight within 1 foot of one of two robins feeding on the lawn. The robin jumped by continued feeding. Chimney swifts are feeding low & night hawk high in sky.

Campus, University of Kansas, Lawrence, Kansas
May 19, 1964

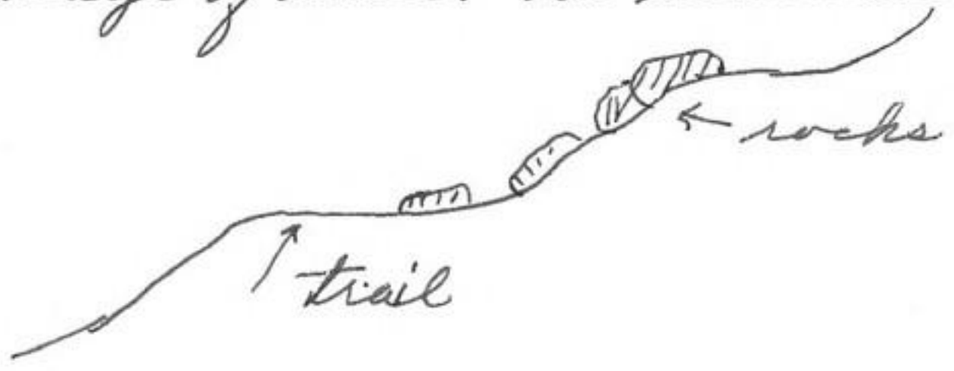
Noted fox squirrel at NW corner of Robinson Gymnasium. It lacked hair except on chest between front legs and on full length of tail. I have never seen a fox squirrel so affected with mange. As this squirrel ran across the lawn, a starling flew down and almost struck it on the back. One of the personnel of visual education informed me that nighthawks and purple martin will fly alone side of motor powered airplane (model remote control). One nighthawk collided with the plane.

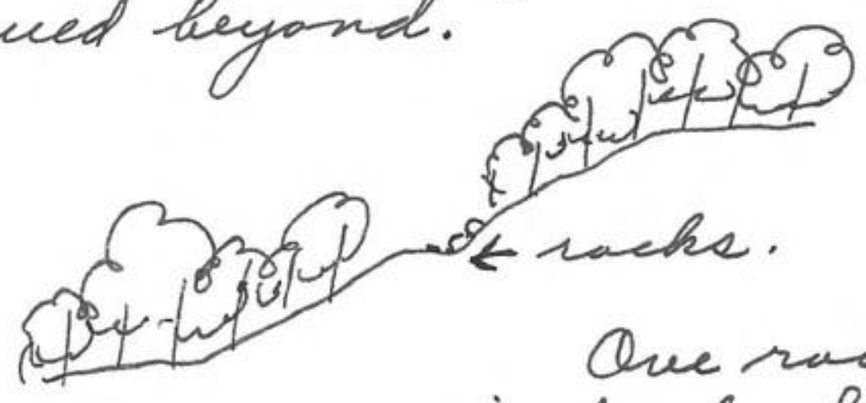
53

2 4/10 mi. S and 6 4/10 mi. W Lawrence 640523-53

May 23, 1964 (P.O.), Douglas Co., Kansas

Son James and I collected 20 lizards, Eumeces fasciculatus, from a rock wall 2 feet wide and 200 feet long. The old rock wall was at upper edge of trail on sidehill and represented racks to hold soils rather than for a wall. The trail ran diagonally across sidehill of deciduous trees. The trail and part of lower slope was open but dense deciduous forests continued beyond.





The lizards were generally destributed but two areas along fense supported as many as 5 in 10 linear feet. One rock held 2, all others single indviduals. 8 large centipeds were noted, one collected + preserved - no 640523-1. It measured mm and weighed gms. The following herps were collected (others presented to Naber at K.U.).

640523-2	Eumeces fasciatus.	640523-6a	Eumeces fasciatus
640523-3	Eumeces fasciatus	640523-6b	" "
640523-4	Eumeces fasciatus	640523-6c	" "
640523-5	Eumeces fasciatus	640523-6d	" "
640523-6	Eumeces fasciatus		

This south exposure slope also support a copperhead, taken a few days previously and a short distance to the S,

8/10 mi S and 5 3/10 mi. W Lawrence (P.O.), Douglas Co., Kansas

May 23, 1964

Checked area of exact center of ~~tornado~~ tornado track of last months (see notes previously) for presence of herps. From under rocks on side-hill collected the following:

640523-7	Eumeces fasciatus
640523-8	Eumeces obsoletus
640523-8a	Eumeces obsoletus
640523-9	Diadophis punctatus
640523-10	Carphophis amoena
640523-11	Coluber constrictor.

The blue racer of in grass below slope of rocks. On a continuous outcrop of rock on hillside (individual rocks most of area) Eumeces obsoletus is most frequently found where rocks are associated with trees than elsewhere, except where rocks are associated with piles of boulders. Diadophis & especially Carphophis prefer rocks at edge of trees.

The tornado had uprooted trees but some of the roots 640523-54
with the ground. Some rocks seemed to have been displaced were still in contact
by a foot or so. Debris was plastered against the base of trees,
including large pieces of roofing metal. One stick about 4 feet
long and 3/4 x 1 dimension had been driven into the soil between
rocks so securely that it was impossible to pull from the soil.

Lawrence, Douglas Co., Kansas
May 23, 1964

noted adult robin affected with insecticide poisoning. Head thrust
back and when it fell on its side would rotate in circles
with fluttering of wings. Claws clinched. Closed eyes occasionally.

Campus, Univ. Kansas, Lawrence, Dougla Co., Kansas
May 27, 1964

Cherries, on the Chancellors (sweet and soft) grounds, have been red since May 23
and are palatable to human taste. I have eaten 8 of these cherries
each day since they were just enlargements of the ovary on stem.
In previous years the birds (catbirds, starling, English Sparrow,
robins, have almost completely removed these cherries. This
year I have not seen, todate, a single bird feeding on this
fruit although the birds are common in the area. The
red color is attractive and conspicuous. Once birds recog-
this source of food, they will probably overrun the tree. I
will check to see at what stage in the development of the
cherries attract birds. noted a starling chase a blue jay.

May 30, 1964
Birds are not eating cherries mentioned above although red
and eatable.

2/10 mi. N and 2 1/10 mi. W Clinton, Douglas Co., Kansas
May 30, 1964

Collected the following from above locality. From sidehill
of rock outcropping. Many excellent rocks but only limited
number of herps. Narrow mouth frog on sidehill some 150'
from H2O.

640530-1	Leadophis punctatus
640530-2	" "
640530-3	" "
640530-4	Eumeces
~~640530-4a~~	"
640530-5	"
640530-6	Eumeces fasciatus
640530-7	microhyla olivacea
640530-8	microhyla olivacea
640530-9	spider (from under rock on open hillside!)

Cruised the Clinton area for 19 miles from N end of pro-
posed dam. Day cloudy and cool. In field from 10:30-2:00

640530-55

The trapping area at 13/20 mi. N & 2 13/20 W mi E Clinton has been plowed as has the rest of the field that has been in soil bank. The hillside of native grasses east of the Synaptamp marsh on Peterson property has also been burned. All grass consumed except bases of vegetation that forms massive roots. No mammals in relict or unburned areas indicating no lateral movement from burned area. 1 dead rabbit (cottontail). Trails of cottontails thru grass area preserve grasses. Trails present (meadows) but not excessively. A red-eyed, yellow winged cicada in area on trees adjacent burned area. Some carnivore digging of nests of meadow pipit post burning. The area extensively affected by skunk (see notes April 10) is still disturbed from original disturbance but now grown to 2 feet grasses and weeds. Noted 2 mockingbirds, 5 brown thrashes, 3 shrikes one of which was in same area as, also at Clinton turnoff from Wakarusa valley North of the town (about 2/10 mi N of the hill), 3 redtails, 1 turkey vulture plus the usual birds. Cherries from a tree (ripe, red and sweet) were not being eaten by birds.

Tennessee St
1620, Lawrence, Douglas Co., Kansas
June 2, 1964

Annette Christine graduated from Central Junior High School. Photos 640602-1 to 640602-10 of Annette and her graduation dress which she made. Annette P and James R also in some of the photographs. Nos 640602-11 and 12 of the two Annettes Photo 640602-13 of Mary Pauline on graduate into Cadette Girl Scouts

Selman's Cave, approx. 4 mi SW Freedom, Woodward Co., Oklahoma
June 2, 1964

Robin ~~Robert~~ Orahood, an undergraduate student in the zoology dept. at K.U. reported the following experience with bats in the above cave; On May 28 and 29 there were approx. 500,000 Mexican free-tailed bats in the cave. On May 30, there were over a million. On May 31 the number returned to those of May 28 and 29. During the migration? the ceiling was covered with these bats to a depth of 1 foot. Urine was falling like rain. There were so many in cave that they were continually stroking ones body. A bat held against the ceiling was pulled to capacity with over fifty bats. There was no difficulty in capturing bats by hand as they flew by. Out of about 250 returns to Lawrence, one was marked with an aluminum band. Three long-eared bats and 1 pallid bat were noted as was 1 little brown bat. The great predominance was Mexican free-tails. Owl, Merriams, Alabaster Caves in same area.

One bat released in hall at K.U. flew up and down the hall between 2 door barriers.

June 11, 1964 640611-56

The following bats were presented to me by Orahood from the above locality and Captured on that date. (June 2).

640611-1 mexican free-tailed bat. ~~96-34~~ 96-31-10.5-18-9 gms.

640611-2 " " " " ~~102-37~~ 101-38-10-17-9 gms

5 fleas were taken from this bat and are of the same field number. This bat had a Fish and wildlife service band no: 632-84854. Washington D.C. This band is entirely too large for this size animal. The fleas were in the ear of the bat.

640611-3 mexican free-tailed bat. ~~95-36~~ 95-35-10.5-17-9 gms

640611-5 " " " " ~~93-34~~ 93-34 10.5-17-10 gms

640611-6 little brown bat. wt 6 gms. destroyed.

These bats are being tested to check thyroid activity under hibernation conditions.

Campus, Univ. Kansas, Douglas Co., Kansas.

June 11, 1964

The cherry tree mentioned a few weeks earlier, is now without cherries! The following birds have been seen eating from this tree; blue jay, English sparrow, cat bird, brown thrasher. Birds were very slow in starting on these cherries.

at 1620 Tennessee I have noted that the starling feed young in nest longer than most diurnal birds are active. Feeding of worms to young continued until late twilight. This late feeding of an extra hour may account for the exceptionally high reproductive success of this bird.

1620 Tennessee St, Lawrence, Douglas Co. Kansas

June 14, 1964

Ruby-throated humming bird in male mulberry tree. These hummers are relatively uncommon in town, at least here. The starling are now at entrance of hole for feeding and resting. They pick at hole support and try to catch flies. Evacuation by turning around in hole and expelling outward. Fecal material ~~both~~ either liquid (white) or solid. This action is apparently instinctive. Both parents feeding young, the last few day, mainly angleworms because of excessive moisture and availability of worms. Period of feeding about every 3 or 4 minutes, sometimes less time interval.

Dover, Kansas (W of Topeka).

June 14, 1964

Took Mary Pauline to Scout Camp at Dover. Left 2:30 P.M at 4 1/2 miles west ~~turnpike~~ 1 on highway 4 470 highway intersection noted an Upland plover. Hummer at Dover.

Lawrence, Douglas Co., Kansas

June 15, 1964

noted one nestling blue-jay dead on pavement. The berries of the hackberry trees are falling to ground and are green.

57

640615-57

Selman's Cove, Woodward Co., Oklahoma (approx 4 mi. SW Freedom)

June 15, 1964

The following bats selectively collected June 2 were kept in refrig. for 13 days with water & food supplied. Bats killed June 15. Weights would not be those of natural population

SK. ONLY	640615-1	♀	Myotis	108-43-11-16-10 gms 300 wing spread 1 emb 9 mm .2 gms
"	640615-2	♀	Tadarida mexicana	94-33-10-17-9.5 gms 295 wsp, 1 emb 17 mm crown rump (1.4 gms weight emb)
"	640615-3	♀	" "	97-32-10-17-9.5 gms 295 wsp, 1 emb. 16 mm (.9 gm)
"	640615-4	♀	" "	95-32-10-17-10.5 gms 296 wsp. 1 emb 18 mm (1.7 gm)
"	640615-5	♀	" "	100-34-10-17-11 gms 310 wsp, 1 emb 19 mm (1.4 gm)
"	640615-6	♀	" "	96-33-10-17-9.5 gms 298 wsp, 1 emb 15 mm (1.3 gm)
"	640615-7	♀	" "	94-33-10-17-10.5 gms 301 wsp, 1 emb 17 mm (1.1 gm)
"	640615-8	♀	" "	96-33-10-18-11 gms 300 wsp, 1 emb 17 mm (1.2 gm)
"	640615-9	♀	" "	100-34-10-18-11 gms 306 wsp, 1 emb 18 mm (1.6 gm)
"	640615-10	♀	" "	96-35-10-18-10.5 gms 302 wsp, 1 emb 16 mm (1.0 gm)
	640615-11	♀	" "	95-32-10-18-11 gms 300 wsp, 1 emb 16 m (1.0 gm)
	640615-12	♂	" "	95-34-10-17-8 gms. 280 wsp. testes 3 mm
	640615-13	♂	" "	100-34-10-17-10 gms 311 wsp. testes 3.3 mm
	640615-14	♀	" "	95-32-10-17-11 gms 298 wsp. 1 emb. 16 (1.0 gm)
	640615-15	♀	" "	96-33-10-17-11 gms 301 wsp. 1 emb 16 (1.0 gm)
SK. ONLY	640615-16	♀	" "	100-34-11-19-11 gms 314 wsp, 1 emb 18 mm (1.4 gms)
"	640615-17	♀	" "	94-33-10-17-10 gms 301 wsp, 1 emb 18 m (1.2 gms)
"	640615-18	♀	" "	98-33-10-17-10 gms 306 wsp, 1 emb 18 mm (1.2 gms)
dest.	640615-18a	♀	" "	97-32-10-17-9.5 gms 298 wsp, 1 emb 18 mm (1.2 gm)
dest.	640615-18b	♀	" "	98-33-10-17-11 gms 298 wsp, 1 emb 18 m (1.2 gm)
SK ONLY	640615-19	♀	" "	95-33-10-18-10 gms 298 wsp, 1 emb. 18 mm (1.3 gm)
"	640615-20	♀	" "	101-36-10-18-10 gms 315 wsp, 1 emb 18 mm (1.3 gms)
"	640615-21	♀	" "	100-34-10-17-10.5 gms 318 wsp, 1 emb. 17 mm (1.1 gm)
"	640615-22	♀	" "	95-33-10-17-10.5 gms 300 wsp, 1 emb. 18 mm (1.6 gm)
"	640615-23	♀	" "	99-34-10-17-10.5 gms 297 wsp, 1 emb 17 mm (1.3 gm)
"	640615-24	♀	" "	93-33-10-17-10 gms 301 wsp, 1 emb 18 mm (1.2 gm)
"	640615-25	♀	" "	95-33-10-17-11 gms 304 wsp, 1 emb. 16 mm (1.0 gm)
"	640615-26	♀	" "	100-34-10-17-11 gms 314 wsp, 1 emb. 16 mm (.8 gm)
"	640615-27	♀	" "	97-33-10-18-11.5 gms 301 wsp, 1 emb 16 mm (1.0 gm)
"	640615-28	♀	" "	95-32-10-17-10 gms 296 wsp, 1 emb. 16 mm (1.1 gm)
"	640615-29	♀	" "	100-34-10-18-11.5 gms 309 wsp, 1 emb. 17 mm (1.0 gm)
"	640615-30	♀	" "	98-33-10-17-10 gms 308 wsp, testes 3 mm
"	640615-31	♂	" "	97-32-10-17-9.5 gms 297 wsp. testes 3.3 mm
"	640615-32	♀	" "	102-38-10-17-10 gms 311 wsp. 1 emb 17 mm (.8 gm)
"	640615-33	♀	" "	100-34-10-18-10.5 gms 312 wsp, 1 emb 17 mm (1.1 gm)
"	640615-34	♀	" "	99-34-10-17-11 gms 299 wsp, 1 emb 18 mm (1.2 gm)

58

640615-58

SKULL ONLY	640615-35 ♀	Tadarida mexicana	"	99-34-10-17-11 gms 301 wsp, 1 emb 19 mm (1.6 gm
"	640615-36 ♀	"	"	96-33-10-17-10 gms 290 wsp, 1 emb 16 mm (1.0 gm
"	640615-37 ♀	"	"	95-33-10-18-11 gms 300 wsp, 1 emb. 18 mm (1.5 gm)
	640615-38 ♀	"	"	101-34-10-18-11 gms 310 wsp, 1 emb. 17 mm (1.3 gm)
	640615-39 ♀	"	"	99-34-10-17-10 gms 297 wsp. 1 emb-19 mm (1.6 gm)
	640615-40 ♀	"	"	96-33-10-17-11.5 gms 302 wsp, emb 19 mm (1.5 gm)
	640615-41 ♀	"	"	97-33-10-17-10 gms 298 wsp, emb 17 mm (1.3 gm)
	640615-42 ♀	"	"	93-33-10-17-10 gms 293 wsp 1 emb 16 mm (1.0 gm)
	640615-43 ♀	"	"	96-33-9-17-9.5 gms 291 wsp. 1 emb 17 m (1.2 gm)
SK. ONLY	640615-44 ♀	"	"	93-33-10-17-9.5 gms 294 wsp, 1 emb 17 mm (1.2 gm
	640615-45 ♀	"	"	94-33-10-17-10 gms 298 wsp. 1 emb 17 mm (1.3 gm
SKULL ONLY	640615-46 ♀	"	"	96-33-10-16-10 gms 293 wsp, 1 emb 16 mm (.9 gm)
"	640615-47 ♀	"	"	99-35-10-17-10 gms 312 wsp, 1 emb 17 mm (1.3 gm)
"	640615-48 ♀	"	"	98-33-10-17-10 gms 297 wsp, 1 emb 15 mm (.9 gm)
"	640615-49 ♀	"	"	100-34-10-17-11 gms 310 wsp, 1 emb 16 mm (.9 gm)
"	640615-50 ♀	"	"	97-33-10-17-10 gms 302 wsp, 1 emb 17 mm (.9 gm)
"	640615-51 ♀	"	"	92-33-10-17-9.5 gms 308 wsp, emb absorbed
"	640615-52 ♀	"	"	94-32-10-17-11 gms 307 wsp, 1 emb 17 mm (1.3 gm)
"	640615-53 ♀	"	"	99-35-10-17-11 gms 311 wsp, 1 emb. 20 mm (1.7 gm)
"	640615-54 ♀	"	"	93-32-10-17-10 gms 290 wsp, 1 emb 17 mm (1.2 gm)
"	640615-55 ♀	"	"	99-33-10-17-9.5 gms 308 wsp, 1 emb 17 mm (1.0 gm)
"	640615-56 ♀	"	"	100-34-10-17-9.5 gms 306 wsp, 1 emb 14 mm (.8 gm)
"	640615-57 ♀	"	"	96-35-10-17-9.5 gms 300 wsp, 1 emb 15 mm (.9 gm)
"	640615-58 ♀	"	"	115-41-10-18-10 gms 323 wsp, 1 emb 10 mm (.25 gm)
"	640615-59 ♀	"	"	100-34-10-17-10.5 gms 312 wsp, 1 emb 18 mm (1.4 gm)
"	640615-60 ♀	"	"	95-32-10-17-10 gms 306 wsp, 1 emb 17 mm (1.0 gm)
"	640615-61 ♀	"	"	98-33-10-17-10 gms 308 wsp, 1 emb 17 mm (1.0 gm)
"	640615-62 ♀	"	"	104-37-10-17-11 gms 318 wsp, 1 emb. 17 mm (1.1 gm)
"	640615-63 ♀	"	"	98-33-10-17-10.5 gms 295 wsp, 1 emb 16 mm (.9 gm)
"	640615-64 ♀	"	"	96-32-10-17-11 gms 310 wsp, 1 emb 18 mm (1.4 gm)
"	640615-65 ♀	"	"	93-32-10-17-10 gms 303 wsp, 1 emb 20 mm (1.4 gm)
"	640615-66 ♀	"	"	97-32-10-17-10.5 gms 299 wsp, 1 emb 18 mm (1.4 gm)
"	640615-67 ♀	"	"	97-33-10-17-10 gms 302 wsp, 1 emb 15 mm (.9 gm)
"	640615-68 ♀	"	"	99-34-10-17-9.5 gms 305 wsp, 1 emb 16 mm (1.0 gm)
"	640615-69 ♀	"	"	94-33-10-17-10.5 gms 304 wsp, 1 emb 17 mm (1.5 gm)
"	640615-70 ♀	"	"	98-33-10-17-10 gms 299 wsp, 1 emb. 19 mm (1.5 gm)
"	640615-71 ♀	"	"	100-34-10-18-10 gms 312 wsp, 1 emb 18 mm (1.3 gm)
"	640615-72 ♀	"	"	99-35-10-17-8.5 gms 311 wsp, 1 emb. absorbed
"	640615-73 ♀	"	"	96-33-10-17-10 gms 303 wsp, 1 emb. 17 mm (.9 gm)
"	640615-74 ♀	"	"	74-25-10-17-10 gms 285 wsp, 1 emb 16 mm (1.1 emb)
"	640615-75 ♀	"	"	94-32-10-17-10.5 gms 305 wsp, 1 emb 20 mm (1.9 gm

640615-59

SK. ONLY	640615-76 ♀	Tadarida mexicana	"	97-33	-10-17-10 gms 303 wsp, 1 emb 17 mm (1.2 gm)
"	640615-77 ♂	"	"	96-33	-10-17-9 gms 302 wsp. testes 3.3 mm
	640615-78 ♂	"	"	95-34	-10-17-10 gms 311 wsp testes 3.4 mm
	640615-79 ♂	"	"	96-33	-10-17-9 gms 310 wsp testes 3.3 mm
	640615-80 ♀	"	"	92-32	-10-17-9.5 gms 304 wsp, 1 emb 17 mm (1.2 gms)
	640615-81 ♀	"	"	89-28	-10-17-10 gms 313 wsp, 1 emb 15 mm (.9 gm)
	640615-82 ♀	"	"	96-33	-10-16-10 gms 2 898 wsp, 1 emb 17 mm (1.2 gm)
	640615-83 ♀	"	"	94-33	-10-17-10 gms 304 wsp 1 emb 17 mm (1.3 gm)
	640615-84 ♀	"	"	96-32	-10-17-10 gms 302 wsp 1 emb 17 mm (1.2 gm)
	640615-85 ♀	"	"	100-36	-10-17-10 gms 301 wsp 1 emb 17 mm (1.4 gm)
SK. ONLY	640615-86 ♀	"	"	89-30	-10-17-11 gms 300 wsp. 1 emb 21 mm (1.7 gm)
"	640615-87 ♀	"	"	100-34	-10-17-11 gms 312 wsp. 1 emb 15 mm (.8 gm)
"	640615-88 ♀	"	"	103-36	-10-17-11 gms 315 wsp. 1 emb 20 mm (1.5 g

This cave is also located as 1 mi. N & 1 1/8 mi. W Alabaster Caverns State Park. Owned by Jim P. Selman.

On no occasion did the digestive tract occurr below (ventral) the embryo. Loops did occurr dorsal to the embryo, rarely laterally to the embryo. The wing spread is the best measurement for size of bat. as end of tail skin occasionally pulled beyond bony vertebrae and made total length inaccurate.

Lawrence, Douglas Co., Kansas

June 17, 1964

young starling at 1620 Tennessee Street left nest this date. For last 5 days they have been at entrance of nesting hole to receive food from parents. They were not seen in area after leaving nest. noted a blue jay attack and almost kill a young catbird. Another jay struck a fox squirrel several times in a tree.

Lawrence, Douglas Co., Kansas

June 22, 1964

Robin Orahood, student in zoology at K.U. returned from Oklahoma where he collected a hundred Tadarida mexicana. He made the following statement: 60 tons of guano (bat) have been removed from Merrihue Cave. The prevailing price is $50.00 a ton! The guano have been removed from entrance of cave except along sides of cave where large rocks interfer with excavation. At 2 mi E of Southard, Oklahoma at Southard Cave, approx 2000 Tadarida mexicana and a few pallid & long-eared bats, have been displaced by destruction of cave. Bulldozers removed top of cave which is pure gypsum. Orahood developed pneumonia as a result of an afternoon in cave. Urine droplets are always in the air. A tarantula 640622-1 was from near this cave.

60

Univ. Kansas, Lawrence, Kansas 640625-60

June 25, 1964

Mr. Ralph W Dicker of the K.U. Radio Broadcast Dept. presented the department with a horsehair worm (nematomorpha or Gordiacea). It was taken from a bucket of water which was on the stairway leading into the basement. A dead cricket was in the water and probably the host of the worm. Dr Leonard also presented a horsehair worm. This worm was taken from a cyst in the abdomen of a cricket.

3 9/10 mi. S and 4/10 mi. W Lawrence (P.O.), Douglas Co., Kansas

June 25, 1964

Picked up road kill on Louisiana avenue near bridge over Wakarusa. This animal measured:

SKU 640625-17 Citellus franklini 392-125-54_10-496 gms 3x2 ploc. scars

1 13/20 mi. E and 5 1/4 mi. S Lawrence (P.O.), Douglas Co., Kansas

June 25, 1964

Collected a scissortail flycatcher here:
640625-2 Scissortail flycatcher. (destroyed)
Two other pairs were noted in the same group of trees surrounding the farm house.

Trip from Lawrence to Dover, Kansas

June 26, 1964

Drove to Camp Daisy Hindman Scout Camp a few miles S of Dover, Shawnee Co., Kansas, to pick up mail Pauline who has been there since June 14. Followed 59 on highway 59 to Clinton road junction, thence west along the Clinton, Richland, Auburn, Dover road. Left Lawrence about 8:20 A.M. at Wakarusa bridge on high 59 at mileage 85.0 started census of mourning doves (complete) and other exceptional records. Observations correlated with mileage. 86.3-1; 88.2-1; 89.9-2; 90.1-1; 90.3 bridge over Rock Creek; 90.9-1; 91.3-1; 92.2-1; 92.5-1; 92.5-1; 92.6-1; 92.9 Clinton; 93.2-1; 95.8-1; 96.8-2 red-headed woodpeckers; 97.5-1; 98.0-1; 98.5-1; 98.6-2; 98.7-2; 98.8-road now turn S for a few miles thence W again; 3 turtles (average 100 mm long since Clinton); 300.4 scissortailed flycatcher; 00.8-2; 00.9-1 (Shawnee Co. Line); 01.2-1; 02.2-1; 02.2-1; 02.6 passing W at junction of road to Rickland; 02.9-1; 03.4-turkey vulture; 03.8-1; 04.6-1; 05.6-R.R. tracks; 05.7-1; 06.1-1; 06.6-1; 08-8-3; 09.1-1; 09.6-2; 09.8-2; 09.9-1; 09.9-1; 11.1-2; 11.5-2; 12.2 crossing W across highway 75; 12.7-1; 13.0 R.R. tracks; 13.6 2 road kill badgers, a ♂ and a ♀. This locality is 6.7 mi. E Auburn, Shawnee Co., Kansas or 1.4 mi W of highway 75 on road W to Auburn. These badgers are:

640626-1 ♀ Taxidea taxus 620-125-103-45-5 336 gms. (12 lbs). Uterus normal
The ovaries and uteri were preserved and are 640626-1a. SKU ONLY

Two adult ♂♂ and 2 adult ♀♀ ticks were preserved from this ♀ badger. Their number is 640626-1 to 640626-6! The skin of this animal had to be fleshed and required 3 hours work! This badger was still alive when picked up in the road 3 feet from the dead and slightly bloated ♂, which may have been killed the previous day or at night. The ♂ badger measured 600 mm total length and the skull was crushed. The female remained alive but unconscious until 3 hours after having been picked up from road.

Continued west and recorded mourning doves as usual; 14.7-1; 15.1-2 scissortail flycatchers; 16.0-1; 16.2-2;

16.2-1; 16.6-2; 16.7-2; 17.2-1; 17.4-2; 18.1- hummingbird, first one noted on trip; 18.4-3; 18.5- great blue heron; 18.8 crossing over Turn Pike; 19.7 at highway leading N to Auburn, continued N to Auxburn; 20.3 turned W at Auburn; 21.1 bridge over creek; 21.6-1 red headed woodpecker; 22.9- bridge over creek; 22.4-2; 25.1-1; 25-1; 26.6-2 red headed woodpeckers; 27.4-4; 29.7- turned around and followed back to proper road leading N to Dover; 32.6- now turning N to Dover; 33.3-1; 33.3-1; 33.7-1; 34.4-1; 34.6-1; 35.3 Camp Daisy Kindman. Picked Mary up and returned to Lawrence via same route. Recorded only eleptional sete records up to Richland turn off. 36.4 skissortailed flycatcher; 37.0 upland plover,

remained on fence post at 40 feet; 39.6 upland plover, on fence post; 62.0 Richland turn off, will keep record of doves to S end of proposed Clinton Reservoir dam (point of ridge where road deviated from straight course; 64.4-1; 64.8-2; 65.9-2; 67.7-1; 68.8-1; 69.2 Wakarusa River bridge, green heron flew up creek; 71.6 Clinton; 7401-2; 74.2-1; 75.5 now at S end of proposed dam, 11:45 A.M. Summary of mourning doves between Wakarusa bridge 5 on highway 75 N to Dover: 75 doves as follows: 39 singles, 13 pairs of 2; 2 groups of 3 and 1 group of 4. Between Richland turnoff to S end Clinton Reservoir dam 10 of 4 singles, 3 pairs of 2. An estimation of some other birds noted between Lawrence & Dover (one way) as follows: 12 cuckoos; 8 brown thrashers; 15 mocking birds, 8 shrikes. There were no hawks noted along entire route. Collected blue grosbeak 640626-3 from 1 mi. W & 4/10 mi. N Clinton, Douglas Co. ♂ Late testes 9 mm, 31.6 gms wt.

Univ. Kansas, Douglas Co., Kansas

July 6, 1964

640706-1 Mus musculus, lab. mouse embryo. 16 days old from MWA strain black.

640707-62

Campus, Univ. Kansas, Lawrence, Douglas Co., Kansas
July 7, 1964

Prepared the following squirrel which had been hit by car:
SKI 640707-1 Sciurus niger 470-220-68-28-450gms, testis 12 mm

9mi. S Saffordville, Chase Co., Kansas
July , 1964 (insert)

Gary Packard, grad. student, K.U., collected a Crotophagus collaris and presented to Paul Mitschler, a student in my course 151. It measured 107 body, 194 tail, 33.5 gms. Two others preserved:
640712-1 Crotophagus collaris, body 85, tail 143, 23 gms
640712-2 Crotophagus collaris, body 102, tail 172, 35 gms.
[See next page for July 12, 1964 pages 640722-63, for additional nos. the above 2 nos are repeated.
6/10 mi E and 1 1/4 mi S Lesenworth (P.O.), Jefferson Co., Kansas
July 17, 1964

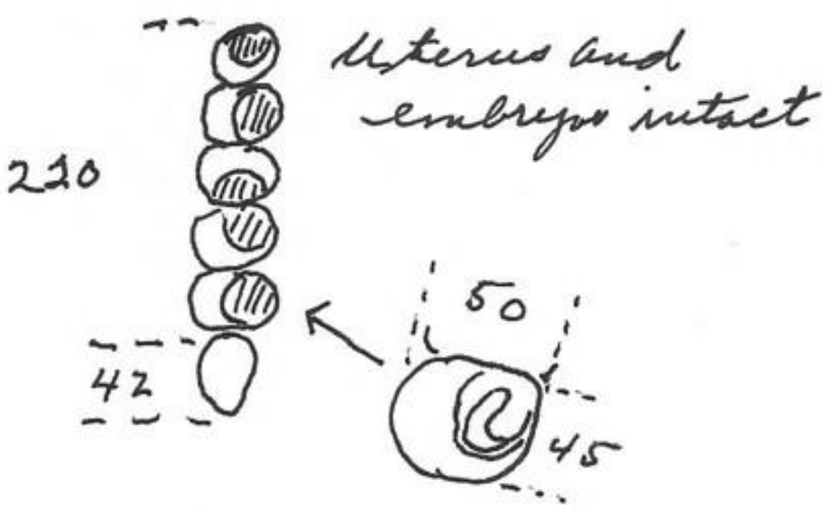
Two bats from caves.
640717-1 ♂ Eptesicus fuscus 118-48-12-18-19 gms. wsp. 320
640717-2 ♂ Eptesicus fuscus 115-41-12-17-17 gms. wsp 319
Five other bats of this same species measured:
115-42-11-16-15 gms ♂
115-41-11-16-14 gms ♂
116-42-11-17-15 gms ♂
113-42-11-17-18 gms ♀
120-50-11-17-14 gms ♂
SKU 640717-3 ♂ Eptesicus fuscus 115-50-12-17-16 gms. wsp. 332 mm. testis 6.8

Oskaloosa, Jefferson Co., Kansas (appox 5 mi. W Oskaloosa)
July 22, 1964

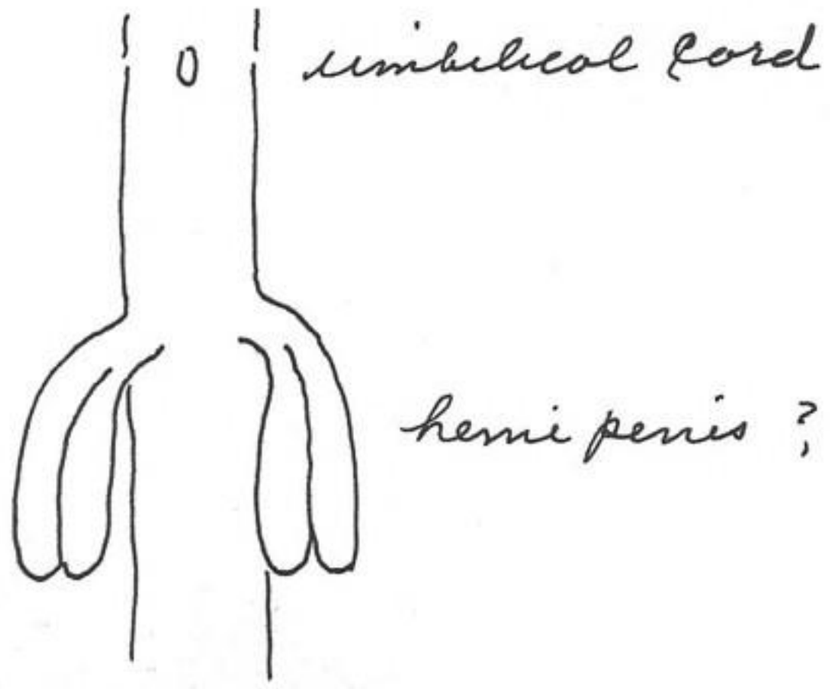
measurement of embryos:
172 body, 21 tail, 7.5 gms ♂
170 body, 21 tail 7.0 gms ♂
~~147~~ 158 body, ~~19~~ 30 tail 7.1 gms ♀
173 body 20 tail 7.1 gms ♂
174 body 22 tail 7.5 gms ♂

for demonstration purposes.

Larry Brandon was presented with a rattlesnake from Oskaloosa. It contained 5 embryos in one uterus and 5 in the other uterus. One side dissected and embryos measured. Other side preserved. Length appros 4 feet.



640722-1 Crotalus (embryo) from above. 173-20 tail. 7.1 gms. body



[INSERT] 640722-63

Selman's Cove, Woodward Co., Oklahoma (approx. 4 mi. SW Freedom) or 1 mi. N and 1 1/8 mi. W Alabaster Caverns State Park.

(entered July 22, 1964) July 12, 1964 (inserted from page 640707-62)

Robin Orahood presented me the following bats from this cave. This population was taken at random from walls of cave and should represent natural population in regard to sex proportion, age groups. He said that only adults were flying in air and the young ones remained on the wall. and other adults. (see previous page for repeat of these nos. 1 and 2) (herps)

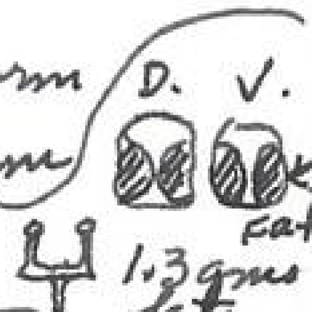
640712-1	♀	Tadarida mexicana		100-34-10-18-12 gms 315 wsp. ut normal
640712-2	♀	"	"	87-32-9-11-9 gms 238 wsp. destroyed
640712-3	♀	"	"	87-31-9-14-10 gms (Fish+Wildlife 672-16784) ut. normal
640712-4	?	"	"	75-30-9-( )-( ) " (" " " 672-17776)
640712-5	?	"	"	band only. (" " " 632-79583)
640712-6	♂	Dipodomys		261-145-42-13-70 gms (not from cave) ♂, test II
640712-7	♀	Tadarida mexicana		105-37-10-17-10 gms 313 wsp. ut normal
640712-8	♂	"	"	85-29-9-11-7 gms 211 wsp.
640712-9	♀	"	"	100-33-10.5-17-10 gms 314 wsp. ut normal
640712-10	♀	"	"	105-37-10-17-11 gms 315 wsp. ut. normal
640712-11	♂	"	"	92-33-10.5-18-9 gms 306 wsp.
640712-12	♀	"	"	94-33-10-17-10 gms 303 wsp. ut. normal
640712-13	♀	"	"	120-43-10.5-17-10 gms 325 wsp. ut. normal
640712-14	♀	"	"	100-34-10-17-10 gms 315 wsp. ut normal
640712-15	♀	"	"	94-32-10-17-9 gms 307 wsp. ut normal
640712-16	♀	"	"	95-33-10-17-10 gms 306 wsp. ut normal
640712-17	♀	"	"	96-33-10-17-10 gms 302 wsp ut normal
640712-18	♀	"	"	96-32-10-17-10 gms 304 wsp. ut normal
640712-19	♂	"	"	85-30-10-13-7 gms 233 wsp
640712-20	♀	"	"	98-32-10-17-9 gms 298 wsp ut normal
640712-21	♀	"	"	96-33-10-17-10 gms 302 wsp. ut normal
640712-22	♀	"	"	101-37-10-17-10 gms 318 wsp ut normal
640712-23	♀	"	"	101-35-10-17-10 gms 309 wsp ut. normal
640712-24	♀	"	"	95-32-10-17-10 gms 298 wsp ut. normal
640712-25	♀	"	"	100-34-10-17-10 gms. 312 wsp ut. normal
640712-26	♀	"	"	99-34-10-16-9 gms 299 wsp. ut normal
640712-27	♀	"	"	96-35-10-16-9 gms 300 wsp ut normal
640712-28	♀	"	"	99-34-10-16-9 gms 310 wsp. ut normal
640712-29	♀	"	"	100-34-10-16-10 gms 309 wsp ut normal
640712-30	♀	"	"	99-33-10-17-10 gms 304 wsp. ut normal
640712-31	♀	"	"	85-32-9-13-8 gms 239 wsp ut. normal
640712-32	♀	"	"	101-34-10-17-10 gms 313 wsp. ut normal

MEASUREMENTS ONLY — ALL

3d

[INSERT] 640722-64

640712-33	♀	*Tadarida mexicana*	95-32-10-17-10 gms 300 wsp.	ut normal
640712-34	♀	" "	93-32-10-17-10 gms 302 wsp	ut normal
640712-35	♀	" "	101-36-10-17-12 gms 318 wsp	ut normal
640712-36	♀	" "	99-35-10-18-11 gms 316 wsp	ut normal
640712-37	♀	" "	100-34-10-18-11 gms 309 wsp	ut normal
640712-38	♀	" "	89-30-10-18-10 gms 301 wsp	ut normal
640712-39	♀	" "	98-32-10-17-11 gms 310 wsp	ut norm
640712-40	♀	" "	102-37-10-17-11 gms 314 wsp	ut norm
640712-41	♀	" "	100-34-10-17-11 gms 305 wsp	♀
640712-42	♀	" "	84-29-9.5-11-7 gms 200 wsp.	ut normal
640712-43	♀	" "	99-34-9.5-12-7.5 gms. 220 wsp	ut. normal
640712-44	♂	" "	85-29-9.5-12-7 gms 230 wsp	
640712-45	♀	" "	85-29-9.5-12-8 gms 210 wsp	ut normal
640712-46	♂	" "	90-31-9.5-13-9 gms 242 wsp	
640712-47	♀	" "	91-31-10-15-9 gms 270 wsp	ut normal
640712-48	♀	" "	86-31-10-14-9 gms 258 wsp	ut normal
640712-49	♀	" "	91-33-10-14-9 gms 263 wsp.	ut normal
640712-50	♀	" "	86-31-10-15-9 gms 272 wsp	ut normal
640712-51	♂	" "	92-31-10-15-9 gms 268 wsp	
640712-52	♀	" "	91-33-10-15-9 gms 267 wsp	ut. normal
640712-53	♀	" "	99-34-10-17-10 gms 304 wsp	ut normal
640712-54	♀	" "	96-34-10-16-10 gms 307 wsp	♀ ut. normal. .7 gm fat
640712-55	♀	" "	92-34-10-16-10 gms 290 wsp	ut. normal
640712-56	♀	" "	101-34-10-17-10 gms 310 wsp	ut normal
640712-57	♀	" "	100-34-10-17-10 gms 306 wsp	ut normal
640712-58	♀	" "	99-35-10-17-10 gms 315 wsp	ut normal
640712-59	♀	" "	101-34-10-18-10 gms 310 wsp	ut normal
640712-60	♀	" "	96-33-10-16-10 gms 300 wsp	
640712-61	♀	" "	95-33-10-16-9 gms 290 wsp	
640712-62	♀	" "	94-32-10-16-9 gms 298 wsp.	
640712-63	♀	" "	98-33-10-17-11 gms 310 wsp	
640712-64	♀	" "	101-36-10-17-10 gms 315 wsp	
640712-65	♀	" "	84-31-10-16-10 gms 289 wsp	ut normal
640712-66	♀	" "	97-33-10-17-8 gms 302 wsp	
640712-67	♀	" "	98-34-10-17-9 gms 306 wsp	
640712-68	♀	" "	100-33-10-18-9 gms 309 wsp	
640712-69	♀	" "	83-28-8-9-5 gms 190 wsp	ut normal
640712-70	♂	" "	72-25-8-9-5 gms 165 wsp	
640712-71	♂	" "	82-29-9-11-6 gms 198 wsp.	
640712-72	♀	" "	83-31-9-12-6 gms 238 wsp	
640712-73	♂	" "	85-31-9-12-6 gms 228 wsp	



m. only (beside 640712-34 to 640712-40)

m. only (beside 640712-42 to 640712-53)

m. only (beside 640712-55 to 640712-73)

[INSERT] 640722-65

	640712-74 ♀	Tadarida mexicana	"	92-31 -9.5-14-8 gms 265 wsp.
	640712-75 ♂	"	"	86-31 -9-15-8 gms 258 wsp
	640712-76 ♀	"	"	91-31 -10-15-8 gms 275 wsp
	640712-77 ♀	"	"	88-32 -10-14-7 gms 258 wsp
	640712-78 ♂	"	"	90-32 -10-14-7 gms 263 wsp
	640712-79 ♀	"	"	88-33 -10-14-8 gms 263 wsp
	640712-80 ♂	"	"	90-31 -9.5-14-8 gms 243 wsp
	640712-81 ♀	"	"	99-34 -9-13-7 gms 220 wsp.
	640712-82 ♂	"	"	86-31 -9-14-7 gms 258 wsp
	640712-83 ♂	"	"	98-34 -9-12-7 gms 221 wsp.
	640712-84 ♀	"	"	95-34 -9-15-8.5 gms 283 wsp
	640712-85 ♂	"	"	91-32 -9.5-14-7 gms 272 wsp
	640712-86 ♂	"	"	88-32 -9.5-14-7 gms 250 wsp
	640712-87 ♀	"	"	83-29 -9-13-7 gms 246 wsp
m.only	640712-88 ♀	"	"	94-33 -10-17-9 gms 305 wsp ut normal
m.only	640712-89 ♀	"	"	97-32 -10-17-8 gms 295 wsp. ut normal
m.only	640712-90 ♀	"	"	93-33 -9-16-8 gms 293 wsp. ut normal
m only	640712-91 ♀	"	"	96-33 -9-16-9 gms 293 wsp. ut normal
m.only	640712-92 ♀	"	"	97-33 -10-17-8 gms 304 wsp ut. normal
m only	640712-93 ♀	"	"	99-33 -9-16-9 gms 306 wsp. ut normal
m only	640712-94 ♂	"	"	93-33 -9.5-17-9 gms 293 wsp testis 3.8
m.only	640712-95 ♀	"	"	101-34 -9.5-17-9 gms 310 wsp ut normal
m only	640712-96 ♀	"	"	100-34 -9.5-16-9 gms 308 wsp. ut normal
m.only	640712-97 ♀	"	"	104-34 -9-17-9 gms 315 wsp. ut normal
m only	640712-98 ♀	"	"	97-32 -9.5-17.8 gms 296 wsp. ut normal
m.only	640712-99 ♀	"	"	90-31 -9-13-8 gms 240 wsp. ut normal
m.only	640712-100 ♀	"	"	91-32 -9-13-8 gms 241 wsp. ut normal
m.only	640712-101 ♂	"	"	85-31 -9-12-7 gms 218 wsp. testis 2.2 mm
m.only	640712-102 ♀	"	"	89-33 -9-15-8 gms 268 wsp. ut normal
m.only	640712-103 ♂	"	"	93-31 -9-15-8 gms 278 wsp. testis 2.0 mm
m only	640712-104 ♀	"	"	83-29 -9-12-8 gms 225 wsp ut normal
m.only	640712-105 ♀	"	"	82-29 -9-12-7 gms 232 wsp ut normal
m.only	640712-106 ♂	"	"	86-31 -9-15-8 gms 258 wsp. testis 2.4 mm
m only	640712-107 ♀	"	"	87-31 -9-13-7 gms 232 wsp. ut normal
m only	640712-108 ♂	"	"	85-30 -9-14-8 gms 263 wsp. testis 1.8 mm
m.only	640712-109 ♂	"	"	79-26 -8.5-10-5 gms 185 wsp. testis 2.4 mm
m.only	640712-110 ♂	"	"	90-31 -9.5-14-7 gms 242 wsp. testis 2.8 mm
m.only	640712-111 ♀	"	"	86-30 -9-14-8 gms 264 wsp. ut normal
m. only	640712-112 ♀	"	"	87-32 -9-13-6 gms 238 wsp. ut normal
m.only	640712-113 ♀	"	"	93-33 -10-16-10 gms 290 wsp. ut normal
m.only	640712-114 ♀	"	"	101-34 -10-16-10 gms 308 wsp. ut normal

m.only

[INSERT] 640722-66

m.only	640712-115	♀	Tadarida mexicana	"	95-32-10-16-10 gms 299 wsp. wt normal
m.only	640712-116	♀	"	"	97-32-9-15-9 gms 294 wsp wt normal
m.only	640712-117	♀	"	"	97-31-10-16-10 gms 296 wsp. wt normal
	640712-118	♀	"	"	96-32-9-17-9 gms 292 wsp. wt normal
m.only	640712-119	♀	"	"	99-34-10-17-9 gms 297 wsp wt normal
	640712-120	♀	"	"	93-32-10-17-9 gms 300 wsp wt normal
m only	640712-121	♀	"	"	96-33-10-16-9 gms 300 wsp. wt normal
m.only	640712-122	♀	"	"	97-33-10-16-9 gms 304 wsp wt normal
m.only	640712-123	♀	"	"	96-32-9-16-9 gms 300 wsp. wt normal
m.only	640712-124	♀	"	"	93-33-10-17-9 gms 293 wsp. wt normal
m.only	640712-125	♀	"	"	95-32-10-17-9 gms 298 wsp. wt normal
m.only	640712-126	♀	"	"	96-33-10-17-9 gms 302 wsp. wt. normal
m only	640712-127	♀	"	"	101-35-10-18-10 gms 312 wsp. wt normal
m.only	640712-128	♀	"	"	95-33-10-17-9 gms 300 wsp wt normal
m only	640712-129	♀	"	"	100-34-10-17-9 gms 307 wsp. wt normal
m.only	640712-130	♀	"	"	99-34-10-17-9 gms 306 wsp. wt normal
m.only	640712-131	♀	"	"	115-41-10-18-10 gms 322 wsp. wt normal
m.only	640712-132	♀	"	"	96-32-10-17-8 gms 304 wsp. wt normal
m.only	640712-133	♀	"	"	104-37-10-17-9 gms 318 wsp wt normal
m.only	640712-134	♀	"	"	89-31-9-16-7 gms 270 wsp wt normal
m.only	640712-135	♀	"	"	85-31-9-12-7 gms 218 wsp. wt normal
m.only	640712-136	♀	"	"	82-29-9-12-6 gms 233 wsp. wt normal
m.only	640712-137	♀	"	"	92-32-9-14-8 gms 266 wsp. wt. normal
m.only	640712-138	♀	"	"	83-28-9-12-6 gms 224 wsp. wt normal
m.only	640712-139	♀	"	"	88-31-9-13-6 gms 228 wsp wt. normal
m.only	640712-140	♀	"	"	87-30-9-14-7 gms 258 wsp. wt. normal
m.only	640712-141	♀	"	"	79-27-9-12-6 gms 189 wsp. wt normal
m only	640712-142	♂	"	"	92-32-9-14-7 gms 256 wsp. testis 2.2 mm
m.only	640712-143	♂	"	"	83-29-9-13-7 gms 225 wsp. testis 2.1 mm
m.only	640712-144	♂	"	"	89-33-9-14-7 gms 260 wsp. testis 2.2 mm
m.only	640712-145	♂	"	"	90-31-9-13-7 gms 240 wsp testis 2.0 mm
m.only	640712-146	♂	"	"	82-30-9-12-7 gms 230 wsp. testis 2.1 mm
m.only	640712-147	♂	"	"	87-32-9-12-6 gms 238 wsp. testis 1.8 mm
m.only	640712-148	♂	"	"	83-28-9-12-6 gms 228 wsp. testis 2.3 mm
m only	640712-149	♂	"	"	92-34-9-15-8 gms 270 wsp. testis 2.2 mm
m.only	640712-150	♂	"	"	94-32-9-15-8 gms 278 wsp. testis 2.3 mm
m.only	640712-151	♂	"	"	91-31-9.5-15-8 gms 274 wsp testis 2.0 mm
m.only	640712-152	♂	"	"	87-30-9-11-6 gms 200 wsp. testis 2.1 mm
m.only	640712-153	♂	"	"	90-31-9-14-7 gms 250 wsp. testis 2.2 mm
m only	640712-154	♂	"	"	90-31-9-13-6 gms 240 wsp. testis 2.0 mm
m.only	640712-155	♂	"	"	88-32-9-13-7 gms 252 wsp. testis 1.9 mm

[INSERT] 640722-67

m. only	640712-156 ♂	Tadarida mexicana	"	90-31-9¼-7 gms 242 wsp. testis 2.3 mm
m only	640712-157 ♂	"	"	88-32-9-14-7 gms 255 wsp testis 1.9 mm
m. only	640712-158 ♀	"	"	89-31-9-14-7 gms 240 wsp testis 2.2 mm
m. only	640712-159 ♀	"	"	105-37-9.5-18-11 gms 318 wsp. ut normal
m only	640712-160 ♂	"	"	94-32-9.5-16-8 gms 278 wsp testis 2.3 mm
m only	640712-161 ♂	"	"	94-32-9.5-15-8 gms 268 wsp. testis 2.0 mm
m. only	640712-162 ♀	"	"	83-28-9-10-5 gms 192 wsp. ut. normal
m. only	640712-163 ♂	"	"	80-25-9-11-5 gms 193 wsp. testis 2.0 mm
m. only	640712-164 ♀	"	"	94-33-9.5-16-9 gms 304 wsp. ut normal
m. only	640712-165 ♂	"	"	94-33-9.5-17-8 gms 296 wsp. testis 2.8 mm
m. only	640712-166 ♀	"	"	96-33-9.5-17-9 gms 302 wsp. ut. normal
m. only	640712-167 ♀	"	"	100-34-10.5-18-9 gms 311 wsp. ut. normal
m. only	640712-168 ♀	"	"	99-35-10-18-9 gms 310 wsp. ut. normal
m. only	640712-169 ♀	"	"	97-33-10-17-9 gms 304 wsp. ut normal
m only	640712-170 ♀	"	"	90-32-9-14-7 gms 251 wsp. ut normal
m. only	640712-171 ♂	"	"	82-29-9-11-5 gms 198 wsp. ut normal
m. only	640712-172 ♂	"	"	92-31-9.5-14-8 gms 265 wsp. testis 2.2 mm
m. only	640712-173 ♂	"	"	90-31-9-14-8 gms 250 wsp. testis 2.1 mm
m. only	640712-174 ♂	"	"	91-31-9-14-7 gms 270 wsp. testis 2.3 m.m,
m. only	640712-175 ♂	"	"	92-31-9-14-7 gms 268 wsp. testis 2.0 mm
m. only	640712-176 ♂	"	"	89-30-9-12-6 gms 210 wsp. testis 2.1 mm
m only	640712-177 ♂	"	"	86-31-9-13-7 gms 270 wsp. testis 2.1 mm
m. only	640712-178 ♂	"	"	87-32-9-13-6 gms 235 wsp. testis 2.0 mm
m. only	640712-179 ♂	"	"	84-29-9-12-6 gms 200 wsp. testis 2.0 mm
m. only	640712-180 ♂	"	"	88-32-10-15-8 gms 273 wsp testis 2.3 mm
m. only	640712-181 ♂	"	"	91-33-9.5-14-7 gms 265 wsp. testis 2.0 mm
m. only	640712-182 ♂	"	"	91-32-9.5-14-7 gms 270 wsp. testes 2.3 mm
m only	640712-183 ♂	"	"	87-32-9-13-7 gms 251 wsp. testis 2.6 mm
m. only	640712-184 ♂	"	"	87-31-9-12-7 gms 230 wsp. testis 2.3 mm
m. only	640712-185 ♂	"	"	92-32-9.5-13-7 gms 258 wsp. testes 2.2 mm
m. only	640712-186 ♂	"	"	91-30-9.5-14-8 gms 266 wsp. testis 2.3 mm
m. only	640712-187 ♂	"	"	85-31-9-12-6 gms 218 wsp. testes 2.2 mm
m. only	640712-188 ♂	"	"	90-32-9.5-14-7 gms 260 wsp. testes 2.5 mm
m. only	640712-189 ♂	"	"	82-29-9-11-6 gms 226 wsp. testis 1.9 mm
m. only	640712-190 ♂	"	"	86-31-9-13-6 gms 259 wsp. testis 1.9 mm
m. only	640712-191 ♂	"	"	89-33-9.5-13-8 gms 265 wsp. testes 2.3 mm
m. only	640712-192 ♂	"	"	83-29-9-11-6 gms 230 wsp. testes 2.0 mm
m only	640712-193 ♂	"	"	88-33-9-13-7 gms 262 wsp. testes 1.9 mm
m. only	640712-194 ♀	"	"	92-34-9.5-12-7 gms 273 wsp. ut. normal
m. only	640712-195 ♀	"	"	88-33-9-13-7 gms 268 wsp. ut. normal
m. only	640712-196 ♀	"	"	79-26-9-9-5 gms 185 wsp. ut normal
m. only	640712-197 ♀			83-28-9-12-6 gms 225 wsp ut normal

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[INSERT] 640722-68

m.only	640712-198 ♀	Tadarida	mexicana	88-32-9-12-7 gms. 255 wsp. ut normal
m.only	640712-199 ♀	"	"	83-28-9-13-7 gms 246 wsp ut normal
m.only	640712-200 ♀	"	"	85-31-9.5-13-7 gms. 248 wsp. testes 1.2 mm
m.only	640712-201 ♀	"	"	96-35-9.5-~~9.5~~ 17 -9 gms. 303 wsp ut normal
m.only	640712-202 ♀	"	"	90-33-9-13-7 gms. 270 wsp. ut normal
m.only	640712-203 ♀	"	"	78-27-9-12-5 gms. 215 wsp. ut normal
m.only	640712-204 ♀	"	"	87-31-9-14-8 gms. 270 wsp. ut normal
	640712-205 ♀	"	"	93-31-9-13-7 gms. 270 wsp.
	640712-206 ♀	"	"	87-30-9-11-6 gms. 203 wsp.
	640712-207 ♀	"	"	86-31-9-11-7 gms. 258 wsp.
	640712-208 ♀	"	"	87-31-9-13-6 gms. 260 wsp.
	640712-209 ♂	"	"	88-32-9-14-7 gms. 272 wsp.
	640712-210 ♂	"	"	89-34-9-15-7 gms. 270 wsp.
	640712-211 ♂	"	"	93-34-9.5-14-7 gms. 270 wsp.
	640712-212 ♂	"	"	80-28-9-11-6 gms. 215 wsp.
	640712-213 ♂	"	"	84-31-9-14-6 gms. 258 wsp.
	640712-214 ♂	"	"	85-30-9-13-7 gms 260 wsp
	640712-215 ♂	"	"	81-28-9-15-7 gms 269 wsp.
	640712-216 ♂	"	"	92-35-9-14-7 gms. 276 wsp.
	640712-217 ♂	"	"	86-30-9-14-7 gms 260 wsp.
	640712-218 ♂	"	"	90-32-9-13-7 gms 257 wsp.
	640712-219 ♂	"	"	88-31-9-13-6 gms 225 wsp.
	640712-220 ♂	"	"	90-31-10-14-7 gms 271 wsp.
	640712-221 ♂	"	"	87-32-9-13-7 gms 252 wsp.
	640712-222 ♂	"	"	87-32-9-14-7 gms 258 wsp.
	640712-223 ♂	"	"	85-31-9-14-7 gms 273 wsp.
	640712-224 ♀	"	"	85-30-9-12-7 gms 253 wsp.
	640712-225 ♀	"	"	85-31-9-12-7 gms 274 wsp
	640712-226 ♀	"	"	85-31-9-15-7 gms 271 wsp.
	640712-227 ♀	"	"	93-32-10-18-9 gms 308 wsp.
	640712-228 ♀	"	"	95-33-10-18-9 gms 304 wsp.
	640712-229 ♀	"	"	92-33-10-17-9 gms 305 wsp.
	640712-230 ♀	"	"	89-30-10-16-8 gms 304 wsp.
	640712-231 ♀	"	"	83-31-9-13-6 gms 235 wsp.
	640712-232 ♀	"	"	82-29-9-12-7 gms 232 wsp.
	640712-233 ♀	"	"	85-32-9-15-7 gms 263 wsp.
m.only	640712-234 ♀	"	"	96-33-10-17-10 gms. 302 wsp. ut normal
m.only	640712-235 ♀	"	"	100-34-10-18-10 gms. 311 wsp ut normal
m only	640712-236 ♀	"	"	94-32-9.5-17-11 gms. 308 wsp. ut normal
dest.	640712-237 ♀	"	"	99-33-9.5-17-10 gms 307 wsp
dest.	640712-238 ♀	"	"	97-32-10-17-10 gms 295 wsp.

bgns. ↓

[INSERT] 640722-69

m.only	640712-239 ♀	Tadarida mexicana	"	95-32-9-17-9 gms wsp 298 ut. normal
m.only	640712-240 ♀	"	"	99-34-10-18-10 gms 224 wsp. ut normal
m.only	640712-241 ♀	"	"	99-33-9.5-17-10 gms 307 wsp. ut normal
m.only	640712-242 ♀	"	"	100-34-10-18-10 gms 306 wsp ut. normal (26 mm free-tail)
m only	640712-243 ♀	"	"	118-43-10.5-19-12 gms 223 wsp. ut normal
m only	640712-244 ♀	"	"	95-32-9.5-17-10 gms 306 wsp ut normal
m.only	640712-245 ♀	"	"	98-33-10-17-11 gms. 305 wsp. ut normal
m.only	640712-246 ♀	"	"	97-32-10-17-10 gms. 295 wsp. ut normal
m.only	640712-247 ♀	"	"	99-34-10-18-10 gms 313 wsp. ut normal
m.only	640712-248 ♀	"	"	100-34-10-17-10 gms. 308 wsp. ut normal
m.only	640712-249 ♀	"	"	99-34-10-17-11 gms, 306 wsp. ut normal
m only	640712-250 ♀	"	"	100-33-10-17-11 gms. 305 wsp ut normal
m only	640712-251 ♂	"	"	69-23-8.5-9-5 gms 152 wsp. testis 1.8 mm
m.only	640712-252 ♂	"	"	68-20-9-7-4 gms 127 wsp. ut normal
m.only	640712-253 ♂	"	"	74-25-9-9-7 gms 285 wsp. ut. normal
m.only	640712-254 ♀	"	"	93-32-9-16-11 gms. 290 wsp. ut. normal
m.only	640712-255 ♀	"	"	94-33-10-17-11 gms. 302 wsp. ut normal
(dest.)	640712-256 ♀	"	"	99-34-10-16-10 gms. 300 wsp. ut normal
m.only	640712-257 ♀	"	"	99-34-10-17-12 gms. 115 [315 ?] wsp. ut. normal
m.only	640712-258 ♀	"	"	94-34-10-17-11 gms. 305 wsp. ut normal
m.only	640712-259 ♀	"	"	96-34-10-17-13 gms. 304 wsp. ut. normal
m.only	640712-260 ♀	"	"	90-30-10-17-9 gms. 302 wsp. ut normal
m.only	640712-261 ♀	"	"	94-32-10-16-11 gms. 303 wsp. ut. normal
	640712-262 ♀	"	"	92-32-10-18-12 gms. 301 wsp. ut normal
(dest.)	640712-263 ♀	"	"	101-34-10-17-9 gms. 310 wsp. ut normal
m.only	640712-264 ♀	"	"	90-31-9.5-12-10 gms. 242 wsp. ut normal
m only	640712-265 ♀	"	"	101-36-10-17-13 gms. 305 wsp. ut. normal
m.only	640712-266 ♀	"	"	92-34-10-17-10 gms. 290 wsp. ut normal
(dest.)	640712-267 ♀	"	"	98-33-10-17-8 gms. 300 wsp. ut normal
m.only	640712-268 ♀	"	"	93-31-10-17-12 gms. 300 wsp. ut. normal
m.only	640712-269 ♀	"	"	99-34-10-17-13 gms. 305 wsp. ut. normal
m.only	640712-270 ♀	"	"	100-34-10-18-10 gms. 310 wsp. ut. normal
	640712-271 ♀	"	"	100-35-10-18-11 gms. 300 wsp. ut normal
(dest.)	640712-272 ♀	"	"	99-34-10-17-12 gms. 299 wsp. ut normal
m.only	640712-273 ♀	"	"	91-32-9-14-9 gms. 265 wsp. ut. normal
m.only	640712-274 ♀	"	"	92-32-9-14-9 gms. 259 wsp. ut. normal
m only	640712-275 ♂	"	"	93-33-10-16-10 gms. 292 wsp. ut normal
m.only	640712-276 ♂	"	"	98-34-9-14-10 gms. 263 wsp. ut normal
m.only	640712-277 ♀	"	"	96-32-10-17-10 gms 310 wsp. ut normal
m.only	640712-278 ♀	"	"	101-37-10-18-12 gms 316 wsp. ut normal
m.only	640712-279 ♀	"	"	98-34-10-18-11 gms 320 wsp. ut normal

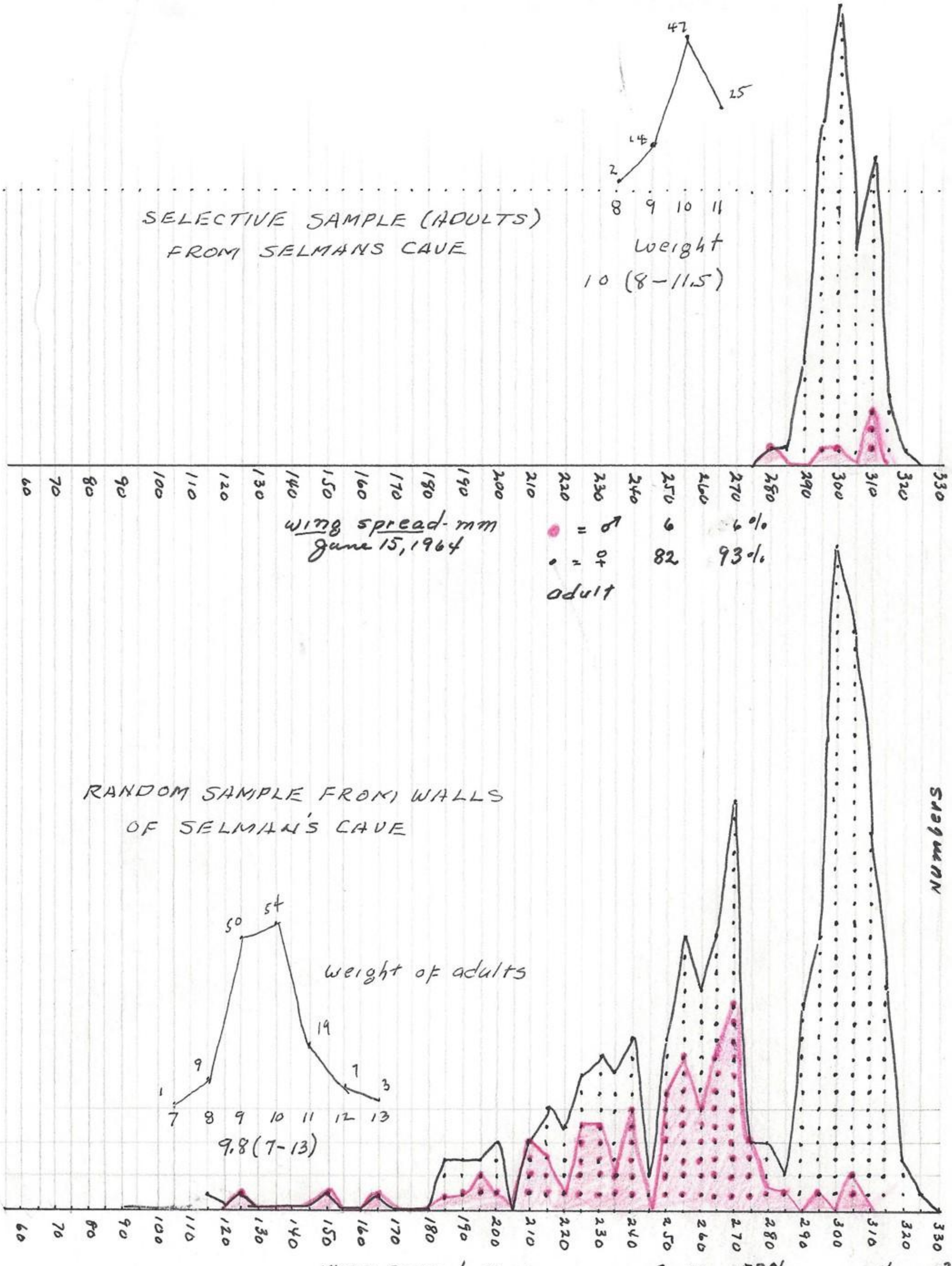
[INSERT] 640722-70

m.only	640712-280 ♀	Tadarida	mexicana	95-33-10-17-10 gms 308 wing spread ab normal
m.only	640712-281 ♀	"	"	95-34-10-17-10 gms 308 wsp. ab normal
m.only	640712-282 ♀	"	"	95-33-10-16-11 gms 305 wsp ab normal
m.only	640712-283 ♀	"	"	91-31-10-17-9 gms 302 wsp ab normal
m.only	640712-284 ♀	"	"	98-34-10-16-10 gms 308 wsp ab normal
m.only	640712-285 ♂	"	"	91-32-10-14-7 gms 270 wsp testis 2. mm
(dest.)	640712-286 ♀	"	"	100-34-10-18-10 gms 310 wsp ab normal
m.only	640712-287 ♀	"	"	99-36-10-17-10 gms 315 wsp ab normal
m.only	640712-288 ♂	"	"	91-31-9.5-14-7 gms 268 wsp. testis 2.1
m.only	640712-289 ♀	"	"	102-38-10-19-12 gms 312 wsp ab normal
m.only	640712-290 ♀	"	"	97-32-10-17-9 gms 299 wsp ab normal
m.only	640712-291 ♂	"	"	95-34-9-16-7 gms 280 wsp. testis 2.4 mm
(dest.)	640712-292 ♀	"	"	98-33-10-17-9 gms 298 wsp ab normal
(dest)	640712-293 ♀	"	"	98-33-10-17-8 gms 308 wsp ab normal
(dest)	640712-294 ♀	"	"	87-30-9-13-5 gms 258 wsp ab normal
~~ad~~ only	640712-295 ♀	"	"	92-33-9-14-7 gms 254 wsp ab. normal
m only	640712-296 ♀	"	"	93-34-9-15-7 gms 270 wsp. ab normal
m.only	640712-297 ♂	"	"	81-28-9-12-5 gms 210 wsp testis 2.2
	640712-298 ♀	"	"	85-31-9-12-5 gms 215 wsp
(dest.)	640712-299 ♀	"	"	97-32-10-17-9 gms 300 wsp ab normal
	640712-300 ♀	"	"	95-34-9-16-8 gms 281 wsp —

Of the specimens of Tadarida mexicana the greatest length is 120 mm and the shortest length is 68 mm. The greatest wing spread is 325, the shortest 115 [?] Of the smaller bats without adult hair, about 10 per cent of the males, the testis were surrounded by fat, the other had testis more anteriorly placed and free of fat. Those encased in fat were those individuals with more fat than the others. The color varied from a light (about same color as fat) to a noticeable yellow. Only one bat showed signs of diarrhea. In very young animals the testes were angular  ; others were not as well formed as adults. It is remarkable that on June 15 the females were 100% pregnant and all carried embryos, whereas on July 12 there were no pregnant females but young accompanying the females.

11

[INSERT] 640722-71



640725-72

Lawrence, Douglas Co., Kansas

July 25, 1964

made list of equipment for canoe trip to northern Minnesota: (5 in party).

- camera, ex. meter, film
- lens attachment, ~~bellows~~ ~~telephoto lens~~
- binoculars (light weight)
- tent, ground cloth (2), one for covering food & equipment outside tent.
- stove, pipe.
- sun glasses
- sunburn ointment
- burn "
- bandaids, bandage
- aspirin, benadryl
- tweezers for splinters
- yoke, canoe, repair kit
- cooking equip. special
  - matches (some for wet wood)
  - 1 large frey pan
  - 1 small frey pan
  - 1 large handled pan
  - dish pan
  - small handled pan
  - large knife
  - spoons - forks, plates, cups
  - spatula
  - choir girl
  - soap, rags
  - reflector oven
- small towels
- toilet paper (2 rolls)
- ~~wash basin~~
- canoe, sponge
- clothing
  - shoes, 3 prs socks
  - 1 pr pants
  - 2 pr underclothing
  - 1 long sleeve shirt
  - 1 sweater
  - 1 raincoat
  - 1 hat
  - 1 pr. glasses
- watch (water-proof)
- candles
- repair kit for mattresses
- sleeping bags & mattresses
- spectacles, ~~plates~~, ~~cups~~.
- safety pins
- rubberized bags & plastic bags
- 2 umbrellas
- axe
- 2 chairs and back straps
- 5 canoe paddles
- 5 & life jackets
- snorkel
- mosquito repellent
- notebook, paper.
- 3 pens, ink
- bat nets, preparation material
  - ~~butterfly~~ net, jar, envelopes
- fishing equipment
  - 3 poles, lures.
- 2 flashlights & batteries (8) and bulb.

food:

- salt, pepper
- powered milk
- coffee, sugar, saccarin.
- diet drink, hemo.
- bisquick
- powered eggs
- cream ~~soda~~
- canned meats
- cereals
- butter jar
- potatoes
- oles
- dried fruit
- bread
- bacon
- peanut butter
- jam
- cheese
- Candy
- raisins - rice
- tang
- soups.
- hash
- baked beans.
- ~~potatoes~~

- bird book
- pocket knife
- compass
- duffle bags

13

640725-73

emergency equipment.

- mirror
- hacksaw blade
- needles, thread
- pliers, wire.
- scissors
- whistle
- mm ruler
- map.
- ~~compass~~

· screw driver
· hose connections for pack

personal.

- toothpaste + brush
- comb, deodorant

razor - blades - soap.
small towel

interteebe

Lawrence, Douglas Co., Kansas

Aug 12, 1964

Left Lawrence for Ely, Minnesota at 1:30 P.M. will follow route 71, mileage 51382. Marysville 514 mileage 5:00 P.M mourning doves uncommon to this point. 2 red-headed woodpeckers between Lawrence and St. Joseph. Well keep record of mourning doves from Marysville (514). Two doves only between Marysville and Clearmont (534). 8 in one flock about 3 mi. N Clearmont. State line 539. (Bradyville) 5:30 P.M. Series terminal moraines N of Bradyville 5:42 1 dove; 544. 1 dove; well keep record these doves. 544 1 dove; 545 1 dove; 548 1 dove; Clarinda 551; 3 doves between last mileage and Villisca at 567; 570, 1 mourning dove; 572, 2 doves; 1 dove; 1 dove; 573, 1 dove; 576, 2 doves; 577 1 dove; 579, 1 dove; 582 1 dove; 1 dove. no hawks so far; 587, 2 doves; 591, 1 dove; 592 4 doves; 595, 4 doves; 604 Atlantic and end of census. Arrived Swan Lake State Park 8:30 P.M at 51666. Definitely more doves in Iowa than in Missouri. Green heron, red-headed woodpecker, blue jay at lake. pheasant, yellow shafted flicker

Swan Lake, Carroll Co., Kansas

Aug 13, 1964

Left 7:30 A.M. will follow 71 north. Will ~~kept~~ keep census of mourning dove from Carroll. 65669.

65669 - first dove at 691; 698 second dove since Carroll; two flocks of grackles and cowbirds; 704 first crows since Lawrence;

734 2 doves; meadowlark about 1 per mile across Iowa; swallows associated with farm houses; 748 second pair of crows since first ones observed; Sioux Rapids 750; Spencer 771 (10:00) no mourning doves since last recorded. There is a definite lack of doves across the country; 775 3 crows; 787 Arnolds Park 10:25, 795 2 doves; 600 red-headed woodpecker, first since this A.M. Minnesota line 604 at 11:00 A.M. 608 red headed woodpecker and chattered-line ground squirrel; have seen only 2 others across Iowa to here; mi. 860 8 mourning doves last 10 miles 876 red headed woodpecker, 4 mourning doves from last note to Redwood Falls at 886; mi. mat 891-road kill; Minn. R. 943; 2 m. doves 898; Olivia 911 - 11 butterflies since Minn. R.; 918 r. headed w-p 2 m. doves; 1st lakes & Dukes (12 teal, blackterns) 950 begin. Con. Life Zone correlated & rapid term. Mordine, 4 crows 969 End census at Sauk Centre. Between Sauk Centre to ~~Little Falls~~ Swan Lake counted 15 mourning doves which shows increase in this area. Gulls, Forsters tern in lakes. Definitely more mourning doves in this area of deciduous country than across prairie of Iowa and Minnesota, arrived Crosby, Minnesota at 7:30 P.M. Camp at city park at edge of lake east of town. Forsters tern, kingfisher, common loon, grackles, robin, Tamiasciurus, killdeer at camp.

Crosby, Crow Wing Co., Minnesota

Aug 14, 1964

Left camp 8:30 at 52095. Well for law 169, and 1. First hawk 3 miles east of Crosby since Lawrence! Mississippi River crossing at 123. about 90 feet wide and relatively shallow; 159 6 crows since last stop (Crosby). Arrive Ely 4:45-52289. Check with Beland of the Canadian Waters Outfitting to pick up Chris on the 20th of August. She is with canoe party in canadian water with Lucy Remple and her mariner group. Canoes rent for $3.50 per day. He claims to have about 300 people in the field at this season. and believes there are more people in area than it can support. Purchased some food including dry powered eggs and ham, some fresh bread + eggs. Continued to Kiowashiwi Lodge to inquire about trail to Lake IIII. They claim that trail is impassible although trail directly E is used. Returned to Lake I Landing and set up comp. Flat areas almost non-existent. 7 camps were established and 19 cars parked (owners in field). Camping should not be permitted.

15

ITINERARY CANOE TRIP 1964, N. MINNESOTA

640814-75

Photo 640814-1 of this general area

FERNBERG ROAD.

KIWISHIWI L.

LAKE I LANDING

AREA OF BAT ACTIVITY

LAKE I

CAMP III

CAMP I

LAKE II

LAKE IV

LAKE III

CAMP II

HORSESHOE LAKE

~~Kawishiwi Camp~~ (Fernbag Rd) Minnesota 640815-76

aug 15, 1964 (Lake I Landing)

Left 11:00 A.M. enroute to Sand Lake II 3 loons, 8 black ducks, 3 gulls. arrived first portage at 13:00 AM. Left 12:30 to return to base camp for Annette and Sally. Returned to portage Camp (island nearest portage) in about 1 1/2 hours. Set up camp and prepared for rain. Rained in evening and most of night.

Lake One Camp (Island), Minnesota (South end Lake I)

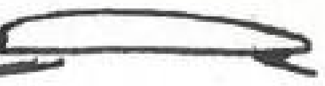
aug 16, 1964

Rain and clearing weather today. noted a vole (microtus pennsylvanicus?) on east end of island. In afternoon photographed tent 640816-1 to 640816-4. In evening Annette and I canoed to channel west of lake. This is the most interesting area of the lake. Noted 3 common loon, one adult and 2 young, nearly size of adult. They were at mouth of this channel. They called and have called all hours of the day and night. One more arrived by flight from west. Caught 4 pike in this channel. Along edge of lake at about every 200 feet are piles of shells of the common bivalve shell. They have been eaten by some kind of mammal. deer tracks in forest which is dense lake n.w. Pacific forests. Raven, chickadees, large gull, black mallards, most common birds. at night the bats (myotis sp.?) are common and fly over water. One hit the line of our pole (about 1 foot over water) and dropped into the lake. Another immediately came to its rescue. It was able to leave water in about 4 seconds after striking the surface. approx 8:15 Canoe passed by on way to Lake 2. Tent works perfectly in both rain and sunshine. Rain comes three pipe hole in tent but stove evaporates water before it reaches stove.

Aug 17, 1964

Fog this A.M until sunrise and after. Several photos this morning:

640817-1 Mary Paulins on rock and splash below
640817-2 " " in canoe ready to leave
640817-3 " " in canoe with fir and other trees as border
640817-4 " " " " to N of island with fir as border
640817-5 trunk left by campers.
640817-6 Bee equipment at fire place.
640817-7 Mary Paulins in canoe with rock in foreground -

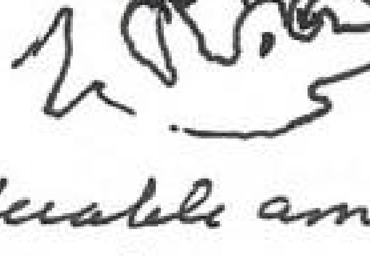
watched loon off island to S trying to swallow fish larger than the loon could accommodate. It would dive and flash about in its attempt to consume the fish. Noted several painted turtles Chrysemys picta one about 9 inches long and low surface  . They are on logs or rocks within the edge of lake. Two species of toads around water. A green sponge and white sponge common on submerged logs.

Will leave this A.M for next camp in lake III. Left 11:00 A.M arrived (over) second portage 12:00 P.M. Photo 640817-10 and 640817-11 and 640817-12 of lake 2 from portage. Photo 640817-13 of wheeled boat and

640817-14 of Annette & Mary Pauline. Left portage 12:30 PM. Arrived Camp (1) at 1:30. Left 2:30 P.M for second load. Annette, Mary, James and I on first trip plus tent, food & essentials. Noted a bald eagle about 20 minutes out. Also a kingfisher and a deer at camp. Arrived 3:45 P.M. Left 4:00 P.M. On way back to portage trawled all the way with a spoon but no strikes! At portage 2 ravens chased a bald eagle east. The eagle alighted in top dead tree on island to SE and 2 crows started to dive at it and call continually. On return, noted 2 turtles feeding on leaves of a birch that had been submerged by beaver cutting. Another turtle, all flat type with red on legs, slide down a granite rock from its perch on top. It made a very rasping noise. 6 crows flew by and did not act concerned with our presence. At channel leading to camp there were approx 24 ~~small duck~~ red-breasted merganser capable of running on water but could not fly. They ran over water each time we elevated a plastic sail on canoe. 2 adults in this same flock were ~~gadwalls~~ red-breasted merganser. At camp, arriving 5:15 P.M, noted a garter snake leaving rocks and going into water. Clethrionomys active during day. One gadwall in lake. Photos 640817-15 and 640817-16 of James Robert & Mary Pauline in canoe at camp Lake III

Aug. 18, 1964

Second camp at S end of Lake III. Early this A.M. 21 red-breasted mergansers swam in channels south of camp. When disturbed they ran on top of water, making



a considerable amount of water disturbance. This action may have some significance in protecting the group as a whole as it does attract considerable attention or warning. After paddling 3 times on water for 400 feet, they left water and climbed on to steep sloping rock and remained, all facing same direction, for 20 minutes and then left to the west in swimming on the surface of the water.

At camp 2 camp robbers (Canadian jay) visited camp (camp not in established area. In 5 consecutive approaches, each near camp, they came within 5 feet of me. They left after about one minute.

A warbling vireo has been singing on island to west

78

It started at daybreak and is still singing at 11:00 A.M. 640818-78 Several tree squirrels at camp. Caught one Peromyscus maniculatus in trap set at camp. Shortly after sun hit tent a hymenopter (black wasp about 1 inch or less long and large abdomen) fed on mosquitos at entrance of tent. It consumed one about every 20 seconds. Sometime it would fly out of entrance of tent with a mosquito and then returns. It hummed continually and struck at mosquitos at 6 or more inches. One red-breasted merganser at camp this A.M about 7:30 P.M. Took photo 640818-1 of mary Pauline at landing rock at camp. Shots at 10:00 A.M. Regular exposure is 60 x 5.7. Warbling vireo stopped

Calling at 11:30 A.M. Undated at camp: Yellow-shafted flicker flew by.
Photo 640818-2 of selected flowering plants in marshy bay.
" 640818-3 general view with branch borders
" 640818-4 frog, moss, lichen, red berries (2) birch bark
" 640818-5 cedar berries
" 640818-6 black berries
" 640818-7 spruce cones (gummed) and leaves & spruce moss
" 640818-8 moss under fir & spruce trees, dark coal background
" 640818-9 red berries, birch bark, climbing vine (2 colors) and others
" 640818-10 mushroom
" 640818-11
~~" 640818-11 small flower and ant~~ moss & lichen on floor of forest
" 640818-12 ferns into sun
" 640818-13 shells eaten by some aquatic mammal.
" 640818-14 cut grass in Microtus runway
" 640818-15 white lily and 640818-15a
" 640818-16 yellow lily
" 640818-17 of camp. (no. 2) with ~~pinderosa~~ red pine and lake beyond. This photo is the end of roll of film roll no. 1.
At camp, in dense spruce-bog area, noted an Arctic three-toed woodpecker. Back black, outer tail feathers white, barred belly & sides, reddish orange strip on top of head,  a grackle? at camp.
Photo 640818-18 of misc conifers with dead red fir background
" 640818-19 cones of 2 needle (1 inch long pine) Pinus banksiana (jackpine)
" 640818-20 ~~bad~~ liverwort (close up)
" 640818-21 liverwort
" 640818-22. from camp
" 640818-23. Jay in cone at camp (and 640818-23a)
" 640818-24 Corn bread in reflector oven
at 6:00 P.M. outside temp in shade = 73° F. Temp water at 2 inches deep = 70° F. Ph. 5. This evening fish 1 hour around shoreline and had only one strike: Late this evening beaver and muskrat in water near camp. One bald eagle (young) calling from large island to west most of day. Noted in air twice and seemed to be larger than adult.

Lake III, Minnesota (camp 2)

Aug 19, 1964

This morning caught a Peromyscus leucopus. It measured:
640819-1 Peromyscus leucopus. 160 - 75 - 22 - 18 - 20 gms at record only.
Photo 640819-2 of this mouse. From dense timber & fallen logs, mast & lichens

79

One pileated woodpecker on dead spruce tree in stand of 640819-79 spruce, fir. searching for food until near top of tree and then flew 200 feet to and old fir tree where it drummed for several seconds. It continued The drumming is loud. It called several times. Noted one snowshoe rabbit in willow at end of one of the bays. It has been noted in area several times. Made trip to Horseshoe Lake S of Lake III camp. arrived over portage at 11:30 A.M. Well follow around lake from the west side to south side to east side etc. 4 common loon in west bay of first lake. they flew over ridge to south, calling. From N end of this lake to S end of second lake, connected, we

caught 2 northern pike and 12 strikes. One Tamias striatus ~~[illegible]~~ ran along rocks at edge of lake. Arrive S end of second lake at 2:08 P.M. Covered portage (17 rods) to lake beyond. At this lake beyond Horseshoe photographed 640819-3 and 640819-4 a blue and red berry common along portage which is densely vegetated. James Robert ~~caught~~ had 2 strikes at this lake. One Douglas fir tree along portage measured 8½' in circumference (chest high). Returned to Horseshoe Lake and left at 3:00 (from S end Horseshoe) continuing around border of lake to east. 2 strikes on this route compared to 12 on west route. The south sides of this lake are shallow & covered with lily. Three least chipmunks on this route. This lake definitely

has more northern pike than Lake III because of less fishing pressure by motor boats. Left N end of Horseshoe Lake at 4:30 arrived at Camp at 4:45 P.M. Photo 640819-11 and 640819-~~[illegible]~~ 11a of James Robert and northern pike. 640819-12 of fillets 640819-12a in fry pan. of this fish. 640819-13 of fried pike and potatoes. 640819-13 of bark of ~~ponderosa pine~~ Pinus resinosa (sp?) red or norway pine. 640819-14 moon light from camp.

Lake III, Minnesota

Aug 20 1964

at 7:30. temp 54°F, water 62°F. Sky cloudy. will return to Ely for Annette C. James Robert & I left 7:45 A.M. 2 Canada Jay at camp. 26 young of the red-breasted merganser N around bend. They fluttered on water for 3 blocks. They make terrible noise & commotion & kept about a 3 foot interval. Kingfisher. With wind & sail reached channel between Lake II & III at 8:20 A.M. waves just ~~whitecapping~~. Arrived portage between Lake II & I 8:30 A.M. 4 loon at portage. Arrived S end Lake I over portage at 8:40 (9 minutes for 2 ports & small lake). Arrive Fernberg landing at 9:40 A.M. Ely 10:30. Left Ely 11:20 at ~~[illegible]~~ 523141.8 Left Fernberg Landing 12:07 P.M. High wind. S end Lake I at portage 1:20 P.M. End portage 1:35. Now on Lake II with high wind from SE. Started ~~1:00~~ 2:20 P.M for Camp at end of lake III. Arrived entrance to Lake III 2:45. High wind all the way. Island here excellent for photographs. Left 3:10 P.M. Worst of wind to follow. Party in camp this A.M had left and 5 crows feed on refuge.

The following photos at Lake I camp before departing for Fernberg Landing:

640823-1a red berries W
640823-1b purplish berry
640823-1c white flower around marshy area of lakes.
640823-1d mountain ash berry
640823-1e pancakes + fire
640823-1f. camp fire and camp
640823-1g ~~camp fire~~ equip. hatchet, rope, matches, pocket knife, saw
640823-1h James Robert & chair (packs)
640823-1i close-up of straps on chair hitch
640823-1j portage sign
640823-1k " lake
640823-1l camp
640823-1m "

80

Arrive Camp on Lake III at 3:35 P.M. Woves 640820-80
→ 1½ - 2 feet high.
at Camp recorded the following photos:

640820-1 Clothrenomys gapperi. caught at camp.
640820-2 Clethrenomys "
640820-3 James Wellemyr Bee
640820-4 Annette Christine
640820-5 Mary Pauline
640820-6 James Labat
640820-7 Annette
640820-8 Bee family
640820-9 Lures used for fishing
640820-10 K-B spoon 4½ inch & reel.
640820-11 Camp stove, stainless steel,

Bald eagle (adult) search S shore of Lake III near camp,
Canada jay Comes into Camp more regularly & at 5 feet.
At 8:00 P.M after sundown, a young bald eagle flies across lake from usual area on island W of Camp to area of portage between Lake III and Horse-shoe Lake. Night hawks (2) and 8 small bats fed over water immediately west of camp. Temp at 11:00 A.M air = 60, water temp 58° F. 60° F

Lake III Minnesota

Aug. 21, 1964

1 young bald eagle west of Camp. this A.M. 8 spruce grouse fed 50' N of Camp, first observed in area. Deer trails in timbered area. Photo 640821-1 and 2 of stove in tent. Has rained all day up to 1:00 P.M. Temp 50° F. water temp 60° F High wind all the time.

Photos 640821-3 Annette Christine

" 640821-4 James Labat. Annette
" 640821-5 ~~Annette~~ James Labat
" 640821-6 Chris, Polly & Jay
" 640821-7 stove. End of roll 21.

Cloudy and windy all day. Temp 50° F at 7:00 P.M. Inside tent with stove 80° F. Crossbills (24) in area

Lake III, Minnesota

Aug. 22. 1964

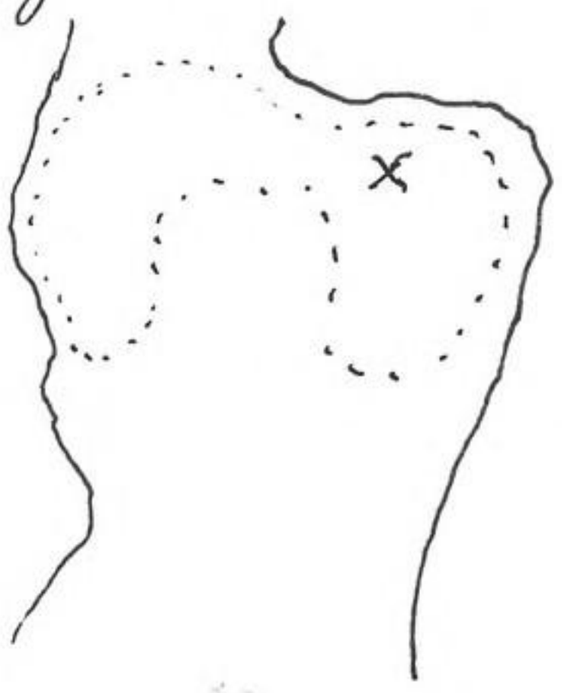
640822-1 to 5 of lichens, liverworts & general.
1 = cladonia on rocks
2 = "
3 = "
4 = liverwort
5 = general view & Cladonia
Left Camp 1:00 P.M. Rain but no wind. no sun. Following channel that leads NE from S end of Lake III, thence across main lake and along N end of Lake to Portage, arriving at 2:20 P.M. Crossed portage and camped on bluff at east side of mouth of river that leads into Lake I. arriving at 2:40 P.M. Set up tent and returned to Lake III Camp to pick up camping equipment, leaving at 3:30 P.M. arrived camp Lake III 4:30 P.M and returned to present camp at 5:45 P.M. Noted young eagle at Lake III Camp. 5 crows were at our Camp after party had left. at Lake I camp saw a young bald eagle flying S across ridge between Lake I and II. Fished some channel east of the S end of Lake I but without success. Previously we caught 4 pike there

Lake I, Minnesota

Aug 23, 1964

Left camp at S end Lake 1 (portage camp to pond) at 12:00 P.M.
Arrived Fernberg camp 1:15. Left for return trip 1:30 P.M.

4 black ducks in area of Fernberg Lake I landing. These duck will come to landing a feed out of dres hands. Other black ducks were noted between Fernberg and 1 mile beyond. These ducks swim along edge of lake and when one passes by with canoe they workk out on to land into the vegetation or remain motionless on edge of lake. Other black ducks were observed beyond and occurred as pairs and acted in normal manner to man's presence. at a point (Channel) between Kawabini Lodge Lake and the nett large lake beyond noted a small bat (Myotis) about 6 inches in wing spread flying over the water and picking up insects from the surface of the lake. The channel at this point was about 150' wide. It would utilize both sides but mainly one or the other, flying about 3 feet (as high as 8 feet) above the surface until dipping down for an insect. It would make contact with the surface of the water and at first was believed to be drinking. (last 2 nights too cold for night feeding) Feeding continued for at least 45 minutes, all within the area outlined, working back and forth over the water. at a point marked x and after having taken 5 photographs of this bat (640823-2 to 640823), both James Robert and I swung at the bat to determine species and in so doing capsized the canoe, James striking with paddle to left at stern followed by a swing with paddle to right by me in middle of canoe. The shift of balance cause the canoe to ship water and

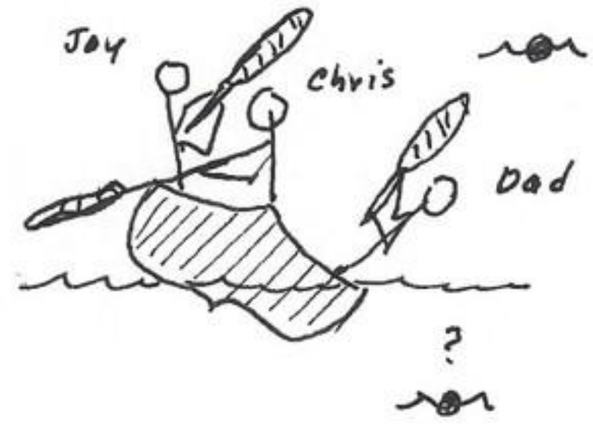


. I went over and completely submerged. James at helm and Chris at stern slid out of canoe with the canoe at perpendicular angle. James swam for paddles and Chris attempted to aright canoe. I climbed on gunwal and leaned over canoe to return it to a horizontal position and kneeling in submerged canoe cut rope to camera bag to bring it to the surface when it was passed to James and thence to assisting boat which came to our rescue. Paddles were 20 feet from canoe Chris' ponchos sank, as did a canoe rag to wipe out water. The boat pulled us to shore where we wrung out clothes and continued. Note binder completely ruined & come apart. Jay packet book soaked; 4 flashlights full of water; camera, film, exposure meter had just been put in water proof bag and were not harmed; watch with water in

Sequence of events are:

balanced serenely but alerted to passing bat.

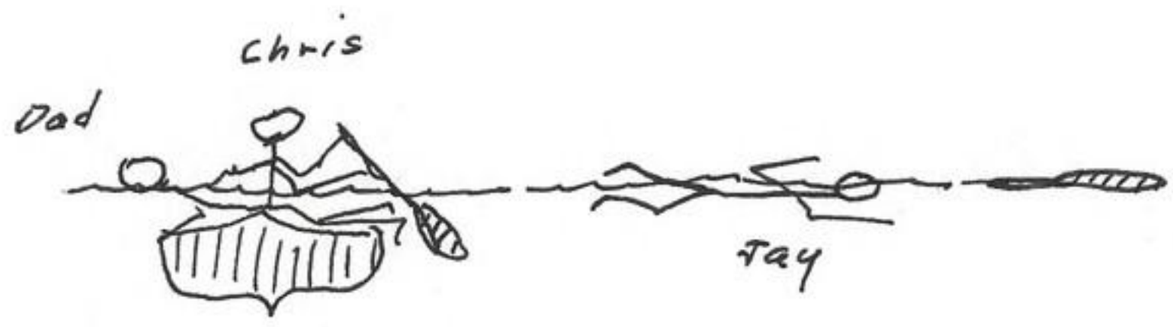
James Robert strikes at bat to right



Dad swings to left. James & Annette counteract overbalance to left but not sufficient to overcome shift of momentum to left.

Annette clings to stern; Dad falls free of canoe; James Robert slide out of canoe but clings to canoe.

!



Chris maintains position at stern, Dad weights canoe and assumes upright position in canoe; James Robert swims for paddles.

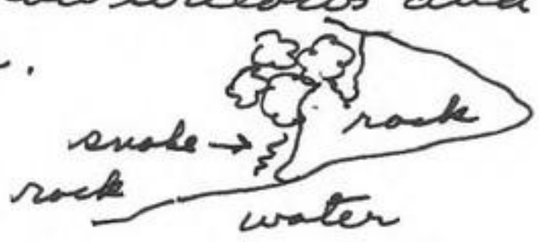
This capsize is one of exceptional circumstances and would not happen under usual canoeing. In instances where three individuals are in one canoe, do not allow irregular movement of more than one individual at a time. Shifting of weight can be permitted only with knowledge of all members concerned. As a precaution, the extra paddle should be stropped (slip knot) to canoe; paddles being used are invariably lost in the commotion and with high wind will float away beyond reclaim. All items (including watch) in canoe should be made secured or made buoyant. Photos 640823-7 & 8-9 of Annette & James Robert after 'wringing out' after capsize. Photo 640823-10 of personal effects dry out.

The bat was brownish in color like a myotis and blackish bare wings. It's flight was of the delicate action. One interesting action was at the time I struck at it and at the time of the final strike with paddle, it hovered overhead for approx. 4 seconds, not over 4 feet directly above us. At the time we left, 45 minutes later, the bat was still feeding in this restricted area. Continued S to camp and picked up second load of gear, arriving at 3:50 P.M. Left at 4:20 P.M. and arrived Fernberg at 5:30 P.M. at the old camp at S end Lake #I (just mentioned above) photographed a Morning cloak butterfly 640823-11#. 6 turtles rested on a log at head of bay near the camp. all left upon approach (20') except 2 which remained until within 8 feet. Left Fernberg Landing at 6:00 P.M for Ely. Standard highway just being completed between Ely & Fernberg - Moose Lake area.

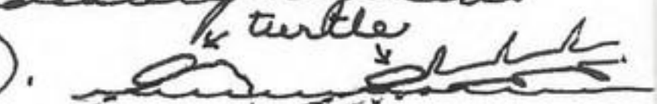
640823-12 of fresh water sponge.

Summary of fauna: (on canoe trip only)

Thamnophis sirtalis sirtalis - Eastern garter snake.
One noted at Lake III Camp. This snake was seen two times in same general area and on each occasion moved from the edge of the water to protection of low willows and other vegetation apprax 3 feet from water. The water was deep and there was no vegetation between water and rocks.



Chrysemys picta bellii - western Painted turtle.
Generally distributed in all lakes or apprax. 1 per 1/2 mile of shoreline. They occurr as singles, more commonly as pairs and as many as 7 together, and generally observed on rocks or logs either in water or immediately adjacent to water (seldom more than 2 feet from water). One turtle was perched on top of rock 3 1/2 feet high and when approached slid down rock into water with considerable noise and completely out of control. Most of the turtle glide noiselessly into the water, generally at about 30 feet away. Two turtles fed on or around a submerged birch tree cut and dammed by beaver. They swam around tree as if eating the green leaves. We passed by at 6 feet and did not disturb them. One group of 6 turtles, all about same size (6-7 inches) were resting on partly submerged logs and within 8 feet of each other, 5 of them almost touching each other, 4 left quietly, the other 2 left with a sudden plunge into water when camera was moved into position. Occasionally the head of a turtle would extend above water in quiet bays. All turtles were about same size. The reddish on legs and side art is distinctive. Turtles were most common in quiet bays but were noted on all types of shorelines. Would estimate we saw 40 turtles on our trip.



Myotis lucifugus (Sp.?) cowed be keeni, Brown bat. at all comps noted bats feeding over water in evening. There were two sizes, one small and one larger. The smaller one was undoubtly myotis. See notes for details. The one bat which fed in broad daylight with full sunshine of skeptional circumstances and this activity was not observed at any other place. Some areas supported more bats than others, the optimum condition were in narrow lobe channels protected from winds, especially those from open bodies of water (large lobes)

Clethrionomys Gapperi. red-backed vole.

apparently common in dense growth of conifers and foalen timber. Four were seen in middle of day crossing portage trails or moving about the outskirts of camp. Caught one along base of uprooted spruce tree in trap.

Peromyscus leucopus. white footed mouse.

Caught one in trap (same position as the one that caught the red-backed vole) one night and a second one the following night. They are not active in the daylight hours like the red-backed voles.

Microtus pennsylvanicus. Most common in marshs around lakes and at head of bays. On small islands they are over-grazing their food supply. This condition is less noticeable on large islands or mainland.

Castor canadensis. beaver.

Old cut trees (birch up to 1½ feet in diameter) show beaver more common at one time than today. Tree cutting activity is minimum and evidence by only occasional cut limb or stick along shoreline. One active house about 3/10 mi up channel from Lake I Landing and another submerged (old) house at S end Lake I and beginning of Pond Portage (old portage). We saw only 3 beaver on trip but heard 8 others at night. I believe these lakes could support many times the number of beaver as is the present population.

Ondatra Zebethicus. muskrat.

more numerous than beaver. Noted 9 on trip. They seemed more wary then in other areas of greater human population.

Odocoileus virginianus. White-tailed deer.

One noted feeding along edge of vegetation (marsh) at head of quiet bay. It was moving in water knee deep. Trails of deer are in forested area, generally 15-20' from edge of water.

Tamiasciurus hudsonicus. red squirrel.

Common everywhere, especially in dense stands of spruce and conifers. They are relatively tame and will chatter at 10 feet away.

Lepus americanus snowshoe rabbit.
Observed only one at camp on Lake III. This rabbit was most commonly flushed in marsh vegetation and would always run into conferous & deciduous forests. They are tame to approach. Droppings elsewhere in area were noted.

Tamias striatus Eastern chipmunk.
3 noted on shores of Horseshoe Lake. They run along edge of lake for some distance in contrast to least chipmunk that remains locally.

Eutamias minimus. least chipmunk.
Common on rocks and down-trees along edge of lakes. At some camp grounds are tame and can be fed.

Frogs (unidentified except Rana pipiens) common along edge of lake in most areas. A few toads also present.

Gavia immer. Common loon.
18 observed on lakes ranging in numbers from 1 to 4 per group. They react to bald eagles and to some extent to humans. Increased human use of area will certainly affect the activity of these birds. Some lakes should be made inviolate to maw.

Quiscalus versicolor. Bronzed grackles
One fed on human refuse at Fernberg Landing (Lake I Landing). No other grackles was noted.

Larus argentatus. Herring gull.
From 1 to 4 were noted on all larger bodies of water. They seemed to be resting on rocks in center of lakes or flying overhead. On one occasion they fed on garbage of a camp. Late one evening 4 were flying in formation as if leaving the lake area.

Anas rubripes. black duck.
One group of 8 fed at Lake I Landing. They are so tame that one can feed them by hand. When not feeding they rest within a tenth of a mile or so from the public landing. 5 pairs were noted beyond the public landing and here they are not tame but act as usual. They prefer the quiet bays of water lilies & sedges.

Anas streperos. One noted. gadwall

Loxia curvirostra. Crossbills
One group of 14 rested in top of dead conifer. They were heard occasionally almost everyday.

Perisoreus canadensis. Canada jay
At Lake III camp we established camp in an unused area. Late in the second day 2 canada jay arrived for inspection.

On the following day they made 3 or 4 inspections of camp, coming within 5 feet of us for bread. 5 came at one time & on one occasion. They were heard but seldom seen beyond camp sites.

Haliaeetus leucocephalus. bald eagle

One or possibly 2 pair in area, one Lake I and 1 in Lake III area. The one, an adult in Lake III was first noted in top of dead conifer on west side of Lake III just beyond entrance to Lake II. One young and one adult were noted at S end of Lake III in general area of camp. The young eagle most consistently from area marked in red, but was noted to fly over camp and toward Horseshoe Lake to S.E. The adult hunted in same area but at no time did I see it feed the young bird. On one occasion noted 2 ravens chase the adult eagle (area marked x) from area x. The eagle flew SW to island where it was attacked by 4 crows. One young eagle was noted at S end Lake I.

Corvus brachyrhynchos. Crow.

One group of 5 systematically searched camp sites after parties left. Other individuals or groups of 2-3 were noted in other areas. I would estimate 20 crows from lakes area.

Corvus corax. Raven.

One group 3 and 2 group of 2. Less conspicuous than Crows.

Hylatomus pileatus. pileated woodpecker.

One at Lake III camp. (see notes). Many elongated cabin of bark of trees and large linear holes were probably made by this species

Colaptes auratus Flicker.

More common than expected. 4 or 5 noted each day. The call of the pileated is similar to the flicker.

Picoides arcticus Arctic three-toed woodpecker.

noted one in camp at Lake III in general vicinity of the place where pileated was seen. (see notes)

Mergus serrator. red-breasted merganser.

One group of about 24 kept formation from day to day and the group was frequently seen bleading water in advance of canoe, more commonly at about 1/10 mi away. They would move around an island to evade a canoe or paddle 1/2 mile in advance of a canoe. These birds are definitely heavy

Some plants:

Nymphaea tuberosa or adorata - white water lily.
Nuphar variegatum - yellow water lily
Equisetum fluviatile - horsetail
Potamogeton natans.
Sparganium americanum.
Pinus banksiana - jack pine
Pinus resinosa - norway or red pine
Pinus strobus - white pine
Picea canadensis - white spruce
Picea mariana - black spruce
Larix laricina - tamarack
Abies balsamae - balsam fir
Thuja occidentalis - white cedar
Betula papyrifera - paper birch
Populus tremuloides - aspen
Pyrus americana - mountain ash
Ledum groenlandicum - Labrador tea
Vaccinium pennsylvanicum & V. Canadense - blueberry
Sambucus racemosa - red-berried elder
Pteris aquilina - bracken fern
Lycopodium club moss

annoyed by man. Singles fed in quet bays.

Junco hyemalis (sp.?) Slate colored juncos.

Singles fed among spruce & deciduous forests at camps.

Chordeiles minor nighthawk.

One or two fed on lakes in evening, generally as singles

Canachites canadensis spruce grouse

noted one group only (see notes). These 8 fed on ground and flew to low branches of trees. They could be approached to within 20 feet before flying.

megaceryle alcyon. Kingfisher.

One or two seen per day at nearly all lakes. They did not call as frequently as in Kansas area.

Sitta canadensis. Red-breasted nuthatch.

Heard or seen regularly every day.

Warbling vireo (sp?) One at camp on Lake III. Sang all morning up to 11:00 A.M and then stopped. Inhabited island to west.

Birds and mammals that will be affected by man ~~and~~ by increase use of area would include: common loon, red-breasted loon, black duck, Canada jay, raven, crow, gull, bald eagle, chipmunk, beaver, painted turtles and while-tailed deer. These are the kinds of animals that are attracted to camp sites or are annoyed by the presence or passing of man and comes in the area. The common loon was being displaced continuously by passing boats as was the flock of young mergansers. Concentrated use of certain areas may precede the nesting and feeding activities of the bald eagle. While beaver are mainly nocturnal, they are annoyed by canoes. Painted turtles that spend considerable time sunning on logs are always dislodged by passing canoes and especially those fishing near the edge of the lake. Favoritism by the black duck has produced a bird that is not at all like the wild ducks that are away from the travelled routes. Chipmunks, Canada jays and crows has completely changed their normal feeding activities because of the solecitation of man for their presence around camps. Overfishing for northern pike has produced a fish population that is out of balance with the natural population. natural populations of plants are being completely changed at camp sites. One walk at a camp site will trampled ground cover and remove dead forewood timber.

Human use of lake area and recommendations for improvement:
1. Standard poved roads are being developed into wilderness area which permit placing of motor boats or canoes into drainage areas that lead directly to most distant outposts. The distance from home base is being lessened to the point that distance itself is loosing enchantment. Road noises of passing cars and trucks and especially construction noises are heard in the lake areas that at one time were considered remote. These easily accessible approaches to distant lakes are creating an unusually high human population pressure. Distance is no longer a barrier. To correct this, all roads of any description (service, emergency or otherwise) should be eliminated beyond Ely.
2. Trails are being enlarged and are now being used to bring in motor boats on wheels and fishermen who walk in to distant lakes for fishing only. Eliminate all trails of every description except portage trails. After all this is canoe country and not hiking country as is found elsewhere. Portage trails should be single path, concrete, turnouts for resting and natural stone docks and landing area. There should be no signs (maps with details are sufficient).
Large areas of the wilderness should be set aside as absolutely inviolate to human trespass until a time when education and appreciation of natural out-of-doors values can be developed. Portage trails, on main thorofares, are now two way, wide, and worn to bare soils. Landings are constructed to receive canoes, many of them built of logs and stone. Immediate areas at landing are trampled, wood exhausted from temporary fires, trash all over the place including discarded equipment, unsightly camp sites.
3. Private lodges (and forest services) are on all main drainage or access points. These building and accompanying cottages, boat docks, boats etc are unsightly and out of place. Their influence on the wildlife and landscape in general is profound. Large motor boats ply the waters, trawling consistently reduces fish to low numbers, lakes are congested, large motor boats are used for pleasure riding, adjacent lakes are equipped with the same large boats and motor for extending range of influence beyond lodge. The facilities (T.V., bars, dance etc) are not in keeping with original objective of the primitive area. Eliminate all lodges and Forest Service buildings. Pontoon plane can take care of emergencies. Fish are taken from these lakes and carried outside area.

4. There are more people in area, under present arrangements, than the area will support. This problem will become increasingly more different in time. To maintain wilderness value, overcrowding must be eliminated. To rectify, use area by appointment. Limit use to every 2nd, 3rd, 4th, 5th year if necessary. Use single lakes for 1 family, individual or group. Establish travel lanes for getting to distant lakes. Keep parties to minimum size, scouts could be divided into patrols (natural group of fellows).

5. Camp sites are destroying the natural plant communities surrounding lakes or on islands. The ground is worn or trampled to bare soils (original glaciated clay). All trees have been stripped of dead branches (one can determine length of time a camp has been used by heeghth of dead branches above ground, the lower ones are taken first, then those that can be reached with a paddle and then those taken with rope or from climbing up tree), small trees (and many large ones) are cut for fuel, soils are washing into water of lake and contaminating aquatic community. Refuse such as cans, aluminum foil, plates, paper are being thrown into surrounding area or into lake. Human excrement completely surrounds the camp, generally uncovered. In several camps and at portages, feces had been dropped in the lake water proper! On several occasions I noted men urinating in the water. These trampled campsites are increasing in number and their obtrusive position on the shoreline are being unsightly sores on the otherwise primetive shoreline. Most camps are on promintories and can be seen from many angles of the lake. Camp sites should be limited to one per lake or segment of lake and not be in a position that can be seen from next camp site. The sight should be chosen with artistic setting and view of lake, set back, however, so that it is not noticeable from the lake. A camp site should be made of a concrete plateform, sufficiently large to support 1 tent, cook stove, 2 chairs and other equipment. The tent should be adapted to fit a concrete base with lake facing side of concrete and plate glass window.

Tent should be constructed for both coolness when weather is warm & warmness when weather is inclement. Cooking should be done with liquid or bottled gas which is carried in the canoe. This type of fuel should also be used for heating tent, if necessary. In otherwords, no wood is to be consumed from primitive area. A one week camp will consume all dead wood in the immediate area of camp!

It may be that in the future, a more economical and more practical way of cooking & heating will be available but in the meantime, we should not scar the landscape that will take 60 years to recover. All food containers, and refuse should be returned to Ely for disposal. Human excrement should also be deposited at designated points or returned to Ely. Research in this field will be necessary. ~~but~~ This is not an impossible task as it is being solved by interplanetary travel. Use of soaps (chemical) should be held to a minimum, especially for washing dishes and bathing. Under the above circumstances of preventive contamination, all water in lakes should be useable for drinking, otherwise contamination eventually will preclude use of water from lakes except by boiling.

6. The wildlife is being changed by contact with humans, mostly unfavorable and mainly by taming of animals or molesting. Certain lakes should be held inviolate, especially some lakes used by the common loon and other aquatic birds that need uninterrupted environment for raising young & feeding. Fish populations are being altered by removing large species and causing aggregations at composites because of presence of refuse & garbage and fish carcasses being thrown into the water. Some lily pads are actually being extracted from some bays by constant abuse by fisherman lines and boats. Several species of mammals and birds are being tamed to the point where the animal has lost all it natural actions and feeding behavior. Such animals would include the black duck, Chipmunk, Canada jay and others. The way to improve this situation is to educate people to the proper values of nature contact and to set aside certain areas as inviolate to human trespass. Instead of molesting loons by running them down, consider them as having prior use of the lake and steer ones course around them. Set aside the areas used by the bald eagle for hunting & feeding. Certain other areas used by birds & mammals for feeding should also be respected. One of the worst enemies of birds & mammals are dogs, which are being brought into the area by campers. Do not permit dogs or any other kind of domestic animal into area. What chance have Spruce grouse to feed at edge of camp with a hunting dog in camp. At present, fishing is the main objective of man. In time fishing in this area will be secondary and the main objective will be the scenic and wildlife values.

7. At present, the main objection to use of primitive area is the employment of large motor boats and canoes with motors. This factor is the most objectionable one of all the misuses of the area. These boats and motors distract, both psychologically and physically, from the true appreciation of the primitive area. There is nothing more objectionable than to be camped on a quiet lake and then have a fast motor boat with fish hogs shouting their conversation over the noise of the motor. Your canoe rocks and the shoreline crashes with waves as this smoky cruiser passes by. Oil collects on surface of the water, gas is poured into the lake, tin can litter the shoreline. The objective of these people is to go as far as they can with motor into unvisited lakes and entirely for fishing in the untouched lakes. They make the trip in one day that should take a week or month. In the meantime, they destroy the primitiveness enroute. A motor boat trawling on a lake all day can reduce fish population 20-30 times faster than would a canoeist interest in only enough fish for food. Other noises are objectional, mainly planes, helicopters voices, yelling, ole noises, guns, and metal canoe noises. — all motor boats and motors should be eliminated and canoes with paddles only permitted. Travel should be by human power only, thus all sails on canoes should also be abandoned as they are out of place in a primitive area where man is to be as unobtrusive as possible. Man should be invisible.

8. Fishermen are taking over the area and will do so until fish resource is exhausted. Fishing should be abandoned except for emergency food and then taken only with primitive gear. Emphasis should be on appreciation of natural aquatic populations, scenic appreciation, canoeing and study of flora and fauna. Restrictions should be placed on use of area until man can be properly educated to the true values of primitive areas. As it is now, the area is being used as a physical obstacle course for canoeist with their main objective to cover the greatest distance in miles; for fisherman with the only objective to catch fish in primitive waters at the expense of the main wilderness values; clientel from lodges in some lakes for pleasure ride only; and curiosity seeks in & out of lakes just for record only.

10. Peripheral outfitting areas are becoming recreation areas and are attracting types of individuals who have no true interest in wilderness. Recreation centers should not adjacent to primitive areas. Keep them in areas strictly for recreation. Like Spirit Lake in Iowa

Recommendations for outfitting:

Put car in order before vacation trip. Have suffucent time to test repair.

Take adequeate finances

Sufficient time without rushing or meeting time schedules.

Equipment compact and in Duluth packs. Everything on back.

Condition paddles.

Waterproof ~~for~~ individual with heavy weigth rain suit. with hood.

Water repellent warm jackets (heavy weight)

glaves (cotton).

2 pairs shoes one of which is lightweight for camp.

2 pairs socks (1 pair of which is wool for sleeping)

1 pair of pants (can be dried rapidly)

2 lightweight, long sleeved shirt, washable.

hat. sun glasses

2 pair eye spectacles with holders & protectors

2 pair underwear

2 rolls toiletpaper

extra cup.

food.

brown sugar

grill.

1 large box (20 qts) powered milk per week

1 can nestles chocolate per week

sugar, 1/2 cup per week

1 large box per week.

dry foods.

Standard lunch of. bread, butter, peanut butter & jelly.
salami or canned tuna, sardines sporn etc.
cheese. cookies. chocolate bars.

Standard breakfast. eggs, potatoes, except hot drinks (or fish)

" supper biscuits, hot meal (spagetti, sporn, soups) hot drink.

tarps for tent floor, food

sail for canoe.

sponge for canoe

all equipment waterproofed when necessary and secured to canoe

secure equipment within canoe.

more buoyance to canoe

2 per canoe, 3 per canoe less desirable.
light weight stove worth its value in extremely cold weather
and in case of emergency sickness.
eliminate:
small unimportant items.
excessive rope & string
extra food
excessive fishing lures.
chairs (if bullrich parks are used) Provide dry sand paper to strike matches in wet weather
matches - several small containers and do not used until needed, otherwise when opened they collects moisture & are damaged.
extra flashlight heads and 2 sets of batteries per 2 weeks
heavier axe
2 saws in case one breaks.
1 cup detergent per week
1 chainsaw (SOS) pad per day.
nylon mesh rag (will dry immediately)
extension handle for frypan & pots.
repair fishing reels & poles.

Under most climatic conditions, in the northern Minnesota area, a light weight tent with open ventilation is adequate and comfortable. There are times, however, when low temperature, snow & rain, are uncomfortable if a open type tent is used. The best principal in a tent is to construct it for bad weather, being draft proof and completely closed. Provision should be made so that in hot weather, it can be opened up for proper ventilation. a tent should be large enough so that one can move about without touching walls and high enough for, layer effect of heat. A tent 8 feet high is better than one 3 feet high, especially if a stove is used. Stoves is a good emergency precaution if sickness or casualty occurrs. In cold weather or when wet, a stove is comforting. Stoves require the minimum of fuel, about 1/20th or less the amount used in an open fire, especially when cooking with a reflector oven. Ground cloths (plastic) are better than built-in floors in tents, as they can be dried & cleaned separately. When a tent is completely closed for comfort, a plastic window should be provided. In warm or fair weather an extension should be provided so that the door can be left open, even when raining. Cloth of tent should be white to let in light. A dark tent is psychologically uncomfortable unless light from lamp is provided.

Crasby, Minnesota 640824-94

Aug. 24, 1964

Arrived 11:30 P.M. Camped at lake east of town. Started to rain early this A.M and rained continuously. Left 7:30 A.M. Still raining at 9:30 A.M.

Beginning of crow census at Sauk Centre to Missouri via highway 71. Mileage 52689.

52689 - Sauk Center, 4 crows.
52881 - Iowa State line. No crows since Sauk Centre. Time 7:00 P.M
52803 - Gull Point on Spirit Lake. Photo 640824-1 of legible rays, " 640824-2 of Chara & mosses under water three tree at Park. Camped at Gull Point Camp Grounds (Boat Landing)

Gull Point, Spirit Lake, Iowa.

Aug 25, 1964

Left at 7:45 AM - mileage 52920.6. Herring gull, Baltimore oriole, English Sparrow, purple martin, eastern Kingbird, black tern, great blue heron, spotted sandpiper, purple grackle, and a warbler at this camp. Air temp 48°F. water temp Spirit Lake 66°F. First crow at Sioux Rapids. First red-headed woodpecker at 6 mi S Atlantic. At Clarinda, Iowa, stopped for lunch. Photos

640825-1 Chris (orange reflex. from table)
~~640825-2~~ "
~~640825-3~~ Annette & Chris
640825-4 James Robert's whiskers
~~640825-5~~

53165 mileage at Missouri State Line. No crows since starting of census yesterday. Rivers muddy in S Iowa, more ponds (artificial) in Missouri than Iowa. Highway 71 to Leavenworth turnoff, thence to Leavenworth, thence South 73 to highway 24 to Lawrence. arriving 7:00 P.M at 53318. The first large flock of grackle-blackbirds at Lawrence. One flock extended for approx 1/2 mile. Other places in Iowa & Minnesota only occasional small flock of 20-50 birds. Round trip to Ely area and return 1936 miles Trip of 14 days.

Lawrence, Douglas Co., Kansas

Sept. 5 1964

Bob-tailed red fox squirrel, preparing nest of fresh green leaves & stems. This is the same squirrel (1620 Tennessee St.) noted on a previous year preparing the same kind of nest and in exactly the same position in tree. (See June 28, 1963) This activity occurred in evening before sunset.

1 2/10 mi. N and 1 1/2 mi. E Lawrence (P.O), Douglas Co., Kansas

Sept. 6, 1964

Vegetation at lakes to edge of water and some aquatic vegetation. In previous years the area was relatively free of vegetation and shores of lakes with broad mud flats. This crowding vegetation is keeping shorebirds from using the lakes in usual numbers. Lesser yellowlegs & blue winged teal here.

640106-95

3 2/10 mi. E and 8/10 mi. N Lawrence (P.O.), Douglas Co., Kansas

Sept. 6, 1964

At 5:30 P.M, noted a Bartramia longicauda in road (2 tracks) crossing field of alfalfa. This feed is in riverbottoms and is extensive in area - the usual haunts of the horned larks and in winter, the Lapland longspur. The upland plover flew from road at approx. 100 feet to feed of alfalfa where it remained for about 3 min. while we stopped the car and watched it with the binoculars. It was nervous and flew in a half circle, alighting again in the road where it remained until approached again. One both occasions the bird gave a call as it left the ground. Horned larks were in field and about 1 per 1/10 mile of road, where they seemed to prefer. About 6/10 mi. E of the above locality and along Kaw River noted 2 actitis macularia along edge of river. One turned its head to view a night hawk flying about 80' overhead. Swallows and chimney swifts were noted flying low over water. no other waterfowl or shorebird was noticed on river during a 30 minute watch (at sundown). Collected a poke-weed, Phytolacca americana.

Lake View, Douglas Co., Kansas

Sept. 7, 1964

Checked lake east of road that bisects Lake View Lake. This lake now has water to edge of weeds and beyond. Two weeks ago it was considerably smaller with mud flats - at that time noted 6 lesser yellowlegs, 3 blue-wing teal and one of the smaller sandpipers (semipalmated ?) feeding on mud flats at edge of water. Today the water covered all mudflats and extended into weeds, thus eliminating mud flats and habitat for shorebirds. The only birds were 8 woodducks, 5 blue-wing teal (in one flock) and some barn swallows flying over water. The ducks left the open water and flew into water among the weeds. At sundown a morning dove lit in weeds where it remained. This year has been characterized by ponds with weeds growing to edge & beyond where in former years the lakes & ponds supported mud flats. Rains have come at the wrong time (as far as farmers are concerned for growing crops, lacking in growing season and too much after growing season) This condition explains type of vegetation around lakes. Hot weather and plenty of rain (late summer) has produced excellent conditions for propagating weeds. I have never seen so many weeds nor so lush growth among

forested areas. They remind one of tropical 640907-96
conditions. on
way to Lake View at a point about 2/10 mi. N of Hall Mark
Co. at pond at about 20 min before sundown, noted thousands (3)
of grackles & blackbirds flying east. They formed a long
interrupted line of birds with some flocks 150 feet wide and
40 feet high (compact) to single birds, but all flying E & SE
across the pond to points E. Between this place and
lake view noted 2 striped skunks killed in road, one about
one mile W of Hall Marks and one about 4/10 mi. SE of
Lake View. Was informed today that Kentucky bluegrass is
difficult to grow in hot summer weather but stands winter
temperature and come up again in following spring. Rye
grass tolerates hot summer weather but is easily killed in
winter. A fox squirrel at 1620 Tennessee was injured
by car to the extent that it could not use back legs. It
could move over ground but could not climb trees.

Tonganoxie State Lake, Kansas

Sept 12, 1964

The superintendent of Lake said that a timber rattle snake
measuring 5' 2 1/2 inches was collected from the W side of lake
at edge of lake. This snake was taken about 1 month ago. One
week later a group from ~~Shawnee~~ Wyandotte, Kansas collected
40 copperheads from the timbered slopes on west side of lake.

Haskell Bottoms trip via 19th, S on R.R to Wakarusa, Lawrence, Kansas

Sept. 13, 1964

Left 2:45 from 1620 Tennessee, Zimmerman Steel Co 1 done 3:00. rows to
S along tracks. 3:21 23rd St overpass. 8 doves. Census non-selective:

Sparrow hawk 1	Hairy woodpecker 1	cooper hawk 1
Chickadee 1-1	red-wing blackbird 1500 - 18-4-36-3-400-	
Cardinal 1-	barn swallow 6	
Crow - 6-		
doves 8-1	red-tailed hawk 1	armed R.R. crossing at present

of trees in Haskell Bottoms at approx 4:15 P.M

Lawrence, Douglas Co., Kansas

Sept 19, 1964

Robins in groups and noted as such for first time this season

Oct 1, 1964

First noticeable and conspicuous change of colors. Poison ivy
completely turned to yellows and reds. Some plants under
forest drooping.

Lawrence to Baldwin Lake via railroad tracks, Douglas Co., Kansas 641003-97

Oct. 3. 1964.

Started 2:00 P.M at R R bridge over Wakarusa river. Day clear, cool and strong wind from S. 2:45 8 crows calling. 2:55 shrike, 3:00 bridge over Coal Creek, chickadees, red-bellied woodpecker, cicada calling, many grasshoppers on railroad bed. Since starting has seen 2 mourning doves, 2 small sparrows, 3 flocks redwing blackbirds (50 each) 4 groups of 5 deep in weeds along R.R., redtail. Rana pipiens active. at Coal Creek raccoon home left creek and walk way in both directions on railroad tracks. on rails, always away from creeks and other kinds Titmouse & Chickadees in flocks of 8 chickadees. Monarch butterflies common. Sibleypool 3:10 3:20 3 jays along creek calling. small birds in trees. mosquitos numerous in shade. 3:30 Composition of grasshoppers change from large green (1-2 inches) to small dark winged grasshopper. Numbers also change. Average 1 per 8 feet of railroad (1 every foot to 1 every 20 feet) adjacent areas seems about the same. yellow shafted flicker called also flank gold finch. Bridge 78, red bellied woodpecker, 1 dove, chickadees (brown crest). 4:00 8 mile post. 12 bobwhite 4:10. marsh hawk 4:00 2 mourning dove, 1 cardinal. birds rare otherwise flicker calling. 4:20 7 crows in field to W. 4:30 2 M doves, 1 cardinals, house wren 4:33 2 Cardinals 4:36 good stand pampas (old) to east on slope.

4:38 Vinland station. 4:43 2 M doves. 4:48 10 mi marker, 2 cardinals leaving R.R 5:00 to E, thence S (crossing before crossing cat basing bill, 5:05 killdeer. 5:12 4 eastern bluebirds at deep eroded creek bed (30' deep). 5:20

otherwise greenish yellow

now to E 5:25
chimney swift in air
2 red-bellied woodpecker
5:30 red-bellied w, 1 flicker
James Robert picked me up at this point. Continued on to lake, about 1/2 field. No voices found.

Lawrence, Douglas Co., Kansas

Oct. 6, 1964

Chimney swifts in air in usual numbers (6:00 P.M)

Oct 9, 1964

Chimney swifts in air at 6:00 P.M.

Oct 10, 1964

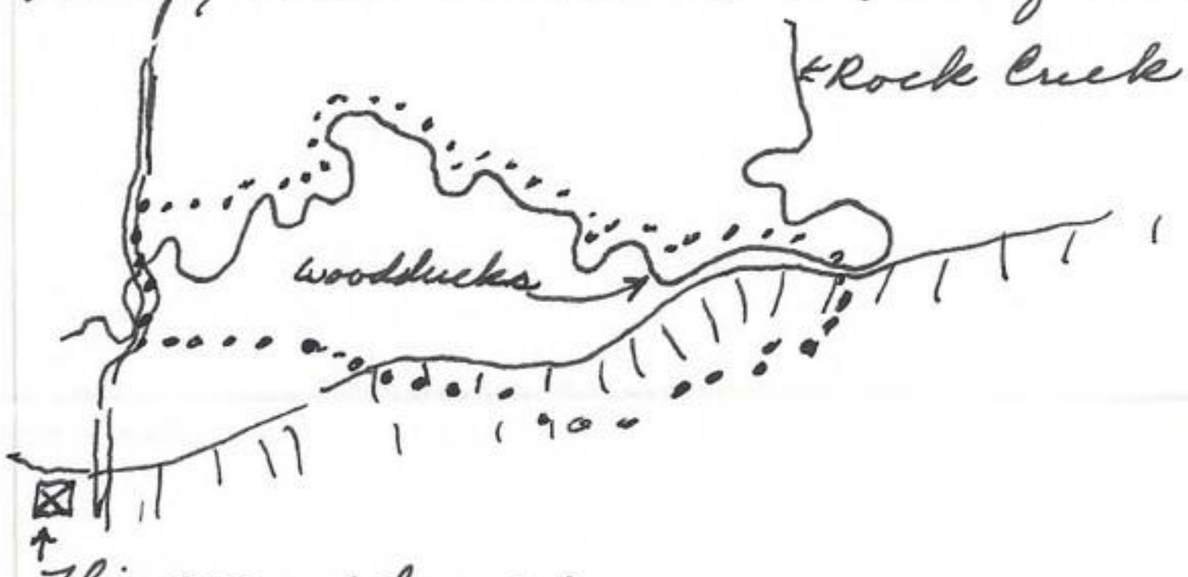
Chimney swifts in air at 5:30 P.M. These birds have not been seen in morning at 8:00 A.M or at noon but only in evening. This has been the case in the last 3 days. In the evening they fly above fraternity houses S E of Chancellor residence on Campus at K.U. Last night has been first real deep frost and cold weather.

641110-98

Rock Creek, Douglas Co., Kansas

Oct. 10, 1964

at a point (1/2 way across S end of) sec 24 R 18E T 13S travelled E three hillside forest to point where Rock Creek turn N & leaves S side of valley, thence return on N side of Rock Creek to car. Annette and I made trip. Stinging nettle was so thick along trail in forest that we were forced to return via N side creek. Birds uncommon. Those observed were:



This area of damp soils & grades and probably supports Symplocarpus & Mimulus. This was a private home recently raised by a tornado.

yellow-shafted flicker, 2 woodducks, 2 red-tailed hawks, 5 crows, 12 black-capped Chickadees, 3 blue jays some small birds, 2 red-bellied woodpeckers, some sparrows along cultivated area. One small lizard 2 inches long. water running in creek bed only about 1 gal per 10 secs or so. Poison ivy & virginia creeper colored and most conspicuous change. These make trees red (trunk). Some yellow in trees but major color on schedule. Phots 641010-1 of ground mushrooms (3 kinds) and no. 641010-2 of similar species on soils where tree had been uprooted. These mushrooms are associated with the uprooted soils from tree.

Lawrence, Douglas Co., Kansas

Oct. 12, 1964

Chimney swift still in area and in about usual numbers. Did not notice at 8:00 A.M or noon but at 5:00 P.M about 20 in air in Chancellors residence on Univ. of Kansas. The last 2 days have been cool & rainy.

Oct 14, 1964

Chimney swifts have definitely decreased in numbers but a few still in area. They are not seen in the daytime except in evening when they circle above their resting places in chimneys. I would estimate that the summer population has been reduced appropximately 95%. 8 entered Church chimney at Vermont & 17th.

Oct 15, 1964

There were no chimney swifts in area this evening at usual places where the birds are generally seen entering chimneys. I believe this to be the last day the birds were in area. Heavy migration of nighthawks passing to south. First noted 5:00 and they continued to at least 6:30 P.M. Estimated 15 birds per square city block throughout city. all moving south-

641116-99

Lawrence, Douglas Co., Kansas
Oct 16, 1964

climax of colors today. This years has seen a regular and uniform color change. Most of the leaves have remained on the trees without the usual preseasonal drying of leaves. As one looks out over the city he finds about 80% of trees yellow in contrast to green. The night hawks of last evening were not in the air this evening nor were there chimney swifts.

Blue Mound, 5 E Lawrence, Douglas Co. Kansas
Oct 17, 1964

Photo 641017-1 yellow hickory, jay & Pally.
" 641017-2 oak & ivy leaves.
" 641017-3 yellow leaved bush.

Eudora, Douglas Co., Kansas
Oct 17, 1964

Photo 641017-4 Pally & Jay on Wakarusa River just S of bridge crossing river.

Lawrence, Douglas Co., Kansas
Oct 17, 1964

Photo 641017-5 of red bush
" 641017-6 of tree.

Lecompton to Lawrence via Kaw River, Douglas Co., Kansas
Oct 18, 1964

Left bridge 7:35 A.M. air temp 54, water 48, cloudy day & slight wind. 8:05 killdeer. usual birds on bank. 8:10 2 mallards 8:15 9 woodducks flew up river, Jay got one. 8 killdeer on sandbar. Hillside trees in yellows and reds. Trees along river 90% yellow with only occasionally a green one although green is among yellows. Sandbar shows mainly brownish yellow. 8:39 9 woodducks & 1 great blue heron, 2 redtails, 4 crows, 2 killdeer 8:42 major creek from right. 8:56 kingfisher. 4 killdeer 9:07 second major creek from right. 8 crows concerned over great horned owl ?. Cooper hawk flew across river 9:17 gadwall cripple. 9:20 leaving hillside on right to more center of valley 9:30 1 woodduck. (Petes place in river with 12 metal decoys) Stopped until 10:10 10:20 16 blue wing teal, got one. 8 greater yellowlegs ? 12 gadwalls remained here until 10:35. 10:40 collected two of the 8 yellowlegs

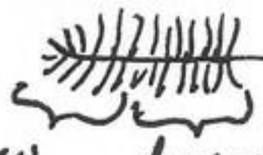
641017-1 greater yellowlegs. 354 mm total length
641017-2 " " 370 mm total length

10:00 major creek from left and at bend turning to S toward Lakeview. Stopped here for lunch. 18 large ducks (mallard & gadwalls) in river to south one duck flig down river past us. On lee of trees and wind blowing leaves into river. Most leaves still on trees. Left 11:30 A.M. flock 8 ducks 1 spotted sandpiper ? along edge.

wind sufficient to blow sand on sandbars. 641018-100 12:00 at bend (Brunes), blue wing teal. 12:05 1 group 8 ducks, 1 teal. 12:20 spotted sandpiper & 3 killdeer (not associated together) 12:30 Kansas Power & Light, 1 great blue heron. 12:45 13 wood ducks, 10 blue wing teal in river, left upriver. arrived bridge at Lawrence 1:30 P.M. Temp air 70°F, water 50° Rana pipiens occurred along edge of river at about 1 per every 1/10 mile.

Lawrence, Douglas Co., Kansas

Oct 20

after leaves started turning color, they have maintained intense color with new yellows & reds continually adding to other leaves. After about the first 5 days of color change the wind blew many from trees but not as it usually does. On this date there is some sign of drying of first leaves that turned color. A pine tree (long needle) on K.U. Campus has been dropping leaves the last months from the inner branches  . In a diameter of 40', there were approx. 25 buskels of dried leaves on the ground. The tree is now greener with the loss of the dried needles. Photos 641020-1 to 641020-6 of elm, oak leaves 641020-7 of moon

Lecompton to Lawrence via Kaw River, Kansas

Oct. 25, 1964

Annette P and I made canoe trip from Lecompton bridge E to point where river turns to left at which point Jones R and Albert Brune continued down river. Between these two points noted 2 great blue heron, 1 mallard (the only duck), 24 killdeer and 4 small sandpipers (about Baird size), 2 redtails, 3 crows. and the usual birds along the riparian growth. Tree still retaining true yellows, oaks show fading but some in good color. Air & water temp 53°F. Day cloudy & slight wind. Photo 641025-1 of Kaw River to E from Lecompton bridge. Photo 641025-2 of Annette along river. Rana pipiens along bank of river.

Lawrence, Douglas Co., Kansas

Oct 26, 1964

Rain and cloudy weather of last 2 days have rejuvenated the yellow + red colors of trees. This year has undoubtedly been the most colorful in the last 15 years.

Oct 29, 1964

The following is the condition of leaves on trees in Lawrence (on K.U. campus)

30% barren of leaves
10% dead leaves remaining on trees (dried and without color)
3% green and full complement of leaves on tree
7% yellow leaves with 10% of the leaves on a single tree still green
40% brilliant yellow leaves (50% of which have been blown from tree). This is the dominant color. Some maples brilliant red. Oaks a dark red and last to have changed.

641029-101

Merriam Cove, Woodward Co., Oklahoma

Oct 29, 1964

A group of K.U. students visited this Cove on Oct 25, 1964 and reported the following:

approx. 8,000 Tadarida mexicana. Of this group they collected 28 males and 25 females which they considered a random population. This is in contrast to collections made July 12 when there were only 3% males. This percentage of males to females may represent the juvenile population, which at that time was 53% males and 46% females or the males could have moved back to the female brood colony.

One ♂ + one ♀ myotis velifer and 2 Eptesicus fuscus were also taken as specimens. One Plecotus townsendi, 641029-1, ♂, testis 7 mm 95-42-11-31-8 grab. prepared as a museum specimen. (skin only)

Lawrence, Douglas Co., Kansas

Nov. 1, 1964

Took several photos of country N E of Lawrence

641101-1 Large dead tree near N. Hist. reservation
641101-2 yellow elm leaves and red berries from vine on tree.
641101-3 old barn and feeding yards
641101-4 Kaw river to E from Lecompton bridge
641101-5 Great Blue Heron + shorebird tracks in sands below bridge
641101-6 Cottonwood trees just S W of bridge
641101-7 tree on Marvin residence at 1613 Tennessee St in Lawrence.

most (98%) leave of trees off trees or in case of oaks, dry + earthen color.

This is native forest and so not the case in town where the trees are protected.

Lawrence, Douglas Co., Kansas

Nov. 2, 1964

Wind of last night reduced leave of trees on K. U. Campus to about 95%. Leaves remaining in center of some trees. More leaves remain on trees in residential area off hill but in the latter place the colors 95% are faded + yellows are brown except in some cases where trees are still green + yellow. For all tense and purposes the color of fall is over.

Lecompton, Douglas Co., Kansas

Nov. 8, 1964

Mary Pauline
Annette, and I made canoe trip on Kaw River from bridge at Lecompton to a point where stream enters from the side side of river where river leaves the and railroad tracks Emmedept. S side of the valley. Left about 9:30 A.M Returned by walking back along railroad tracks. Air temp 64° F, water temp of Kaw River 2 inches below water 60° F. Along river noted the usual birds on bank. 3 woodducks in one flock and 2 in another flock, 1 kingfisher, few Rana pipiens on bank, 3 turtles, 18 killdeer, 2 redtail hawks.

Lawrence, Douglas Co., Kansas

nov. 12, 1964

noted monarch butterflies on campus at K.U.

nov. 13, 1964

Few monarch butterflies in area

nov 15-16, 1964

Rain most of time, the first substantial rain of autumn, following drought period.

nov 19, 1964

Snow last night and first deep cold. Rain preceded.

nov 20, 1964

Randall Errol Brown presented me with 5 Synaptomys cooperi. Four of the mice were born march 23, 1964 when a female was caught in a live trap (see notes of March 24, 1964). One of the young died in the afternoon of nov 20. When mice were placed in cage the entrance hole into the nesting box was discovered in about 1½ minutes. after that the mice entered at will as if immediately conditioned to new orientation of hole. The dead one measured 641120-1 ♀ 121-19-19-10-34 gms

listed in refrig as 641129-1

nov 24, 1964

First night of extreme activity of mice since mice were placed in cage. Ordinarily the mice would leave nesting cage at about sundown and enter main runway area for food and water. This evening the mice raced around as if mad. This activity was correlated with warming weather.

nov 30, 1964

Temp 5° above this evening. Synaptomys during fine.

Univ. Kansas, Lawrence, Kansas

Dec. 1, 1964

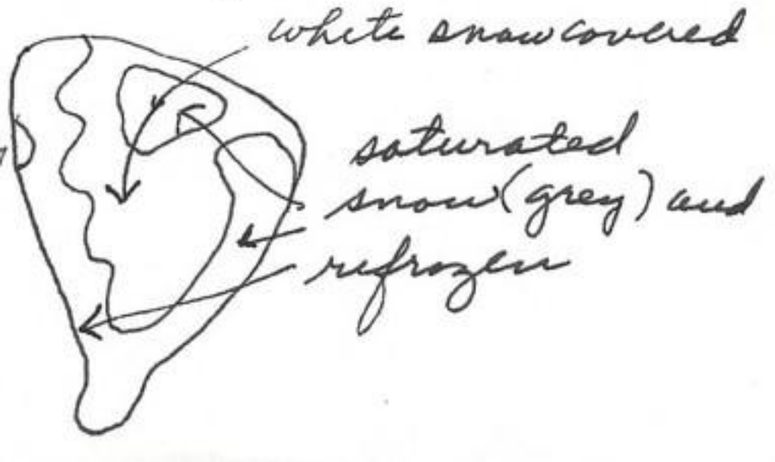
Potters Lake completely frozen. Ice clear with few white spots

Dec 2, 1964

Snow this A.M., Covering ice on Potter's Lake as a white sheet of snow. By afternoon the snow disappeared in local areas as slush, finally disappearing as slush

Dec 4, 1964

Potters Lake now partly covered with snow & refrozen saturated snow



03

641215-103

Alabaster Caverns, Wood Co.,?, Oklahoma

Dec. 15, 1964

Robin Arakaki presented me with the following bats from the above locality.

641215-1	myotis lucifer	102-47-11-16-16 gms	♀
641215-2	"	94-44-10-16-11 gms	♂
641215-3	long-eared bat (Plecotis)	100-47-16-34-8 gms	♀
641215-4	" " "	95-46-10-33-7 gms	♀

Lawrence, Douglas Co., Kansas

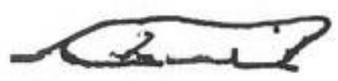
Dec 19, 1964

The three young Synaptomys cooperi died today (last night). (See notes Nov 20, 1964),

641219-1	Synaptomys cooperi	124-20-9-10-26 gms	♀
641219-2	"	126-20-9-10-32 gms	♂
641219-3	"	125-20-19-10-36 gms	♂

These three young Synaptomys had been extremely active on the wheel for the last week and last night were active most of the night. I believe their death was a result of a psychological shock of overactiveness as the adult did not participate and is normally healthy today. Overexhaustion and bad weather caused their death. Noted the following characteristics and habits of these mice: Greatest activity at sundown, leaves nesting area.

stance when weather is extremely cold.
movement is by slow shuffling of hind feet while still maintaining curled position.



when startled, body low and close to surface
legs streched outward or laterally.
in tunnel, full stride is attained.

when vibrissae are extended forward the regular body hair is forced out as a distinct ruff. This is assumed when animal emerges from bed and tests the ordor of the air.

when corredors are formed either as tunnels or trails on the surface, the forelimbs are forcefully used to clear the way by a lateral thrust. Water taken in usual way. Ice water consumed by both knawing and lapping. forms grooves in ice

In the nesting box the mice frequently rested on top of the nesting material and built overhead nests from that position. These nests migrated from day to day in position. Some nests were partially excavated while others were completely covered overhead. Other nests were made in the center of the nesting material, completely concealed. Runways were maintained in the nesting material but changed from time to time. It seemed remarkable that a mouse could enter the nesting box and after a fraction of a second travel 1½ feet to the top of the nesting material. At one time three of the young mice used a single nest, one animal covering another. The movement of one animal disturbed the other two. Considerable time was spent scratching and washing the fur from all exposures. The three young animals were conditioned to use an exercise wheel, at first a single animal only, then later a second animal in unison with the first, and finally the third animal joining the first two. The three animal act was developed after several weeks. The exercise wheel was just the right width for three, impossible for 4. Toward the last, the synchronizing of movement into wheel and the turning of the wheel was uncannily maneuvered. When two used the wheel, they would run for about 20 seconds and then stop, either extend their heads out the sides or leave wheel to inspect the outside, with some regularity of pattern, and then returning to the wheel to continue the rotation act. If one entered first, the other timed the entrance to the wheel without getting hit by the crossbar as it rotated. Sometimes the bar would pick up the animal and turn the animal upside down. When the two animals would start on opposite side the wheel refused to start. Each mouse would then take a hold of the wire treddles and attempt to pull the wheel downwards to get it in motion. One would usual stop + join the other for moving the wheel. At one time different colored felt was introduced in cage to be used for nesting material. The mice, in turns ate the felt and according to color eaten produced a different colored feces of pure colored felt. The food bar containing oatmeal was also used as a place for defecation + urination. Fecal pellets smaller + browner than found in the wild. young refused other foods, adult accepted other green foods, lettuce, apples, celery. etc.

641225-105

Lawrence, Douglas Co., Kansas

Dec. 25, 1964

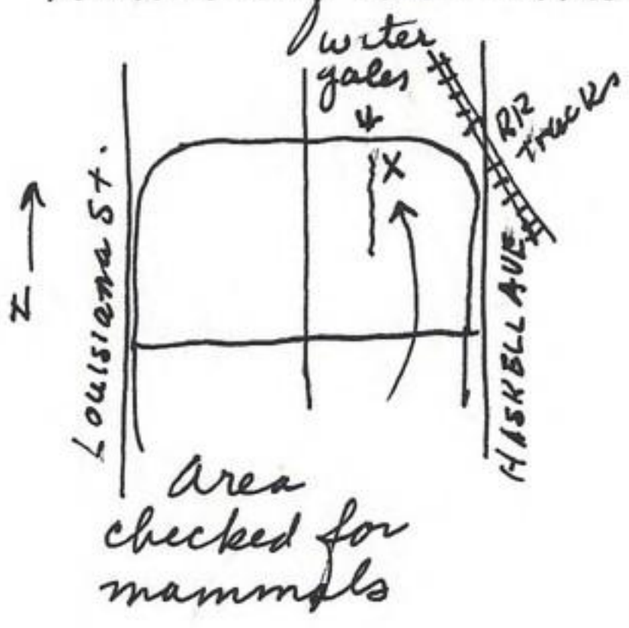
Recorded the foelowing photographs in color (35 mm) in natural light.

641225-1 special package wrapping by Chris + Polly.
641225-2 " " " " " "
641225-3 to 641225-11 Copies of photos from Arizona Magazine + some of my own black and white shots,
641225-22. Chris and umbrella.

Wakarusa River, Douglas Co., Kansas

Dec. 27, 1964

made trip from east Lawrence at R.R tracks, south to Wakarusa River (late afternoon) 2:00 to 5:30 P.M. The following observations were made; 65 crows in one flock near Wakarusa river. They were resting in top of trees and called. 3 cottontails noted along tracks. 2 redtails, 1 sparrow hawk, 11 cardinals (9 ♂♂ and 2 ♀♀) in one flock along edge of Wakarusa River, 20 tree sparrows; 1 yellow-shafted woodpeckers, 1 red-bellied woodpecker, 1 Bewicks wren. Birds rare along R R tracks on open flat valley area. At the N E end of Haskell Bottoms inspected area of old shed and down boards, doors and galvanized tin for numbe of mammal using these places for protection. See rates of previous years for record of inspection. Today under 21 items of protective structures, found one pair of ~~Microtus~~ Peromyscus leucopus ? ap., one of which was brown and the other greyish. They were under a sheet of metal roofing in a nest. Other years this some area supported as many as 50 or so mammals (Sigmodon, Microtus, Peromyscus etc.) This year the vegetation has been more heavily grazed by cattle + in addition horses, than in previous years. This ~~afternoon~~ morning drove to Kansas City and enroute between Sunflower and De Soto made census of birds observed 100 feet on either side of the highway. Along this route did not see a single bird! Time of observation approx 8:30 P.M.



area checked for mammals