

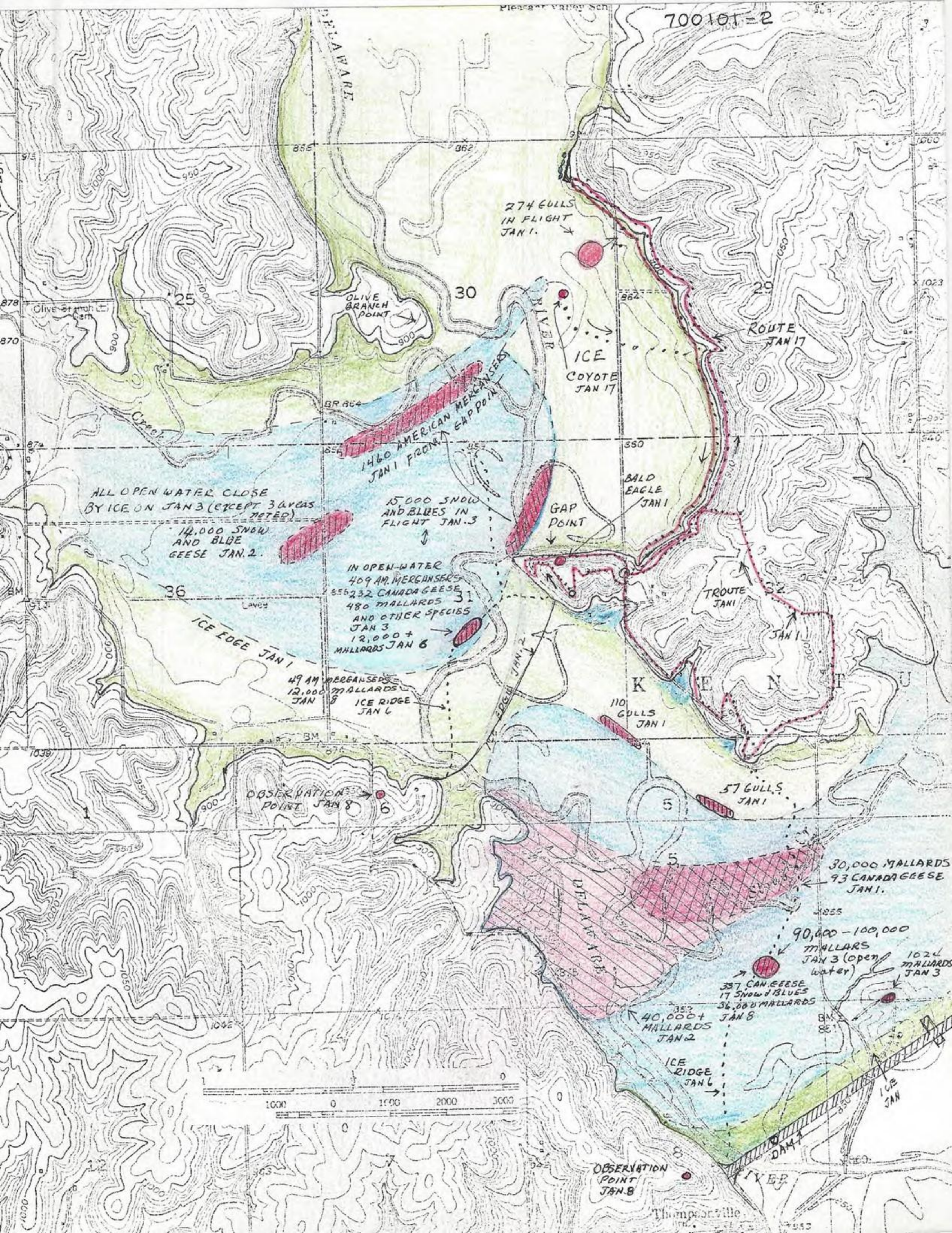
JOURNAL 1970

JAMES W. BEE

1970

Perry Reservoir, Jefferson Co., Kansas
 Jan 1, 1970

Survey of birds on Perry Reservoir. Left Lawrence at mileage 98.0, sky completely overcast, snowed a trace last night^(1 inch), temp. 18°F, time 10:11 A.M. Will follow 59-24 highway. Kansas River frozen above dam and covered with snow. Water below dam open but ice on borders, just beyond island at bend the ice completely covered river and beyond about 80% of river. Mileage 01.8 at 59-24 junction at 10:16. Will keep list of all birds to Perry Res. 04.2 midland. 04.5 2 redtails, one a dark phase with slightly reddish tail. 04.9 sparrow hawk. 05.1 Harlan hawk and loggerhead shrike. 07.1 2 starling. 07.7 8 meadowlarks and approx. 300 starling in flock 08.7 sparrow hawk. 10.0 13 meadowlarks. 11.0 Williamstown. more fog as we approached Perry. This fog was preceded by about 2 minutes of increased light from sun indicating a thinning of overcast clouds just before fog. 14.0 2 crows and 150 starlings. 14.1 redtail. 14.6 Perry Res turnoff. 15.6 yellow-shafted woodpecker. 16.6 sparrow hawk. 16.7 cardinal and yellow-shafted flicker. 17.0 approx 150 juncos and 30 tree sparrows associated with drainage. 17.5 SE entrance Park will continue N to Gap Point. 18.5 15 juncos and 4500 starling. 16.6 turn to left off main road. 19.9 Slough Creek Bridge. E bay in ice and covered with snow with open water 300 x 300 feet. 23 mallards in open water, ice out to 2/10 mile from bridge and open water beyond. 21.0 2 yellow-shafted flickers. 21.3 turn-off to Slough Creek area (first road). 22.0 bluejay. 22.5 12 cardinals, 20 tree sparrows and 12 juncos (all juncos slate-colored). 22.6 crossing drainage, creek open but ice borders. 23.8 now descending to Gap Point, redtail. 24.1 Gap Point. at 11:05 A.M. Left car 11:10 and will check Gap Point ridge to W (see map for itinerary). Song sparrow associated with overhang of steep slope at road cut. 11:15 fox squirrel tracks at top of ridge at east end. The squirrel tracks are about 1 every 20 feet with certain areas heavily travelled. 11:23 head first drainage (from



274 GULLS
IN FLIGHT
JAN 1.

ICE
COYOTE
JAN 17

ROUTE
JAN 17

1460 AMERICAN MERGANSERS
JAN 1 FROM GAP POINT

ALL OPEN WATER CLOSE
BY ICE ON JAN 3 (EXCEPT 3 AREAS
NOTED)

14,000 SNOW
AND BLUE
GEESE JAN 2.

15,000 SNOW
AND BLUES IN
FLIGHT JAN 3

IN OPEN WATER
409 AM. MERGANSERS
232 CANADA GEESE
480 MALLARDS
AND OTHER SPECIES
JAN 3
12,000+
MALLARDS JAN 6

ICE EDGE JAN 1

49 AM MERGANSERS
12,000 MALLARDS
JAN 8

ICE RIDGE
JAN 6

BALD
EAGLE
JAN 1

GAP
POINT

TROUTE
JAN 1

110
GULLS
JAN 1

OBSERVATION
POINT JAN 8

57 GULLS
JAN 1

30,000 MALLARDS
93 CANADA GEESE
JAN 1.

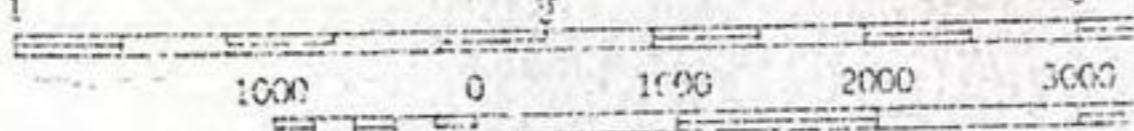
90,000 - 100,000
MALLARDS
JAN 3 (open
water)

337 CAN. GEESE
17 SNOW & BLUES
36,000 MALLARDS
JAN 8

40,000+
MALLARDS
JAN 2

ICE
RIDGE
JAN 6

OBSERVATION
POINT
JAN 8



DAM

Thompsonville

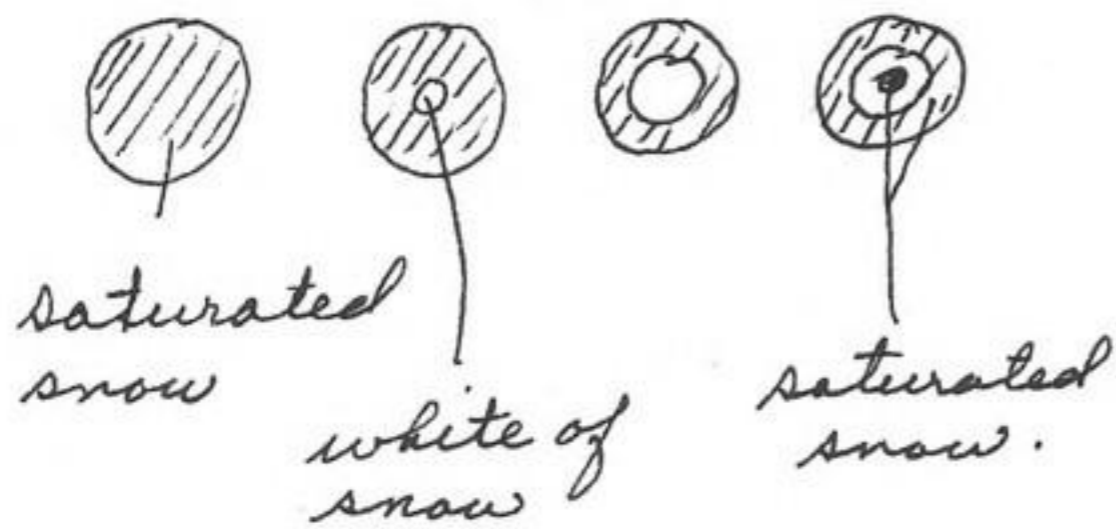
south) The drainage systems on N side have been obliterated by Pleistocene river erosion. 11:25 head second drainage (S side). Squirrel tracks have been generally represented among trees on top. The old clearing, now in heavy grass and trees (from 2-3 feet to as high as 25') of successional growth, starts at this point and occupies the flat top of ridge to its western limit. 11:27 SW promontory point which is a good advantage point for observing the lake to W and S. Observations were made from rock outcrops (the face of the outcrop had a solution cavity approx. 4 1/2 inches deep). This is the only point that permits visibility of lake. All other areas have trees as barriers. To the S and W would estimate 12,000 mallard ducks, mainly in open water but at least 5,000 of the 12,000 resting on the edge of the ice extending out into the lake from the east shoreline. There were no doubt other kinds of ducks associated with the mallards but the predominate species 98% were mallards. Bluejay and hairy woodpecker at this point. Left point and continued NW to main point. There are no rabbit or squirrel tracks associated with grasses of open area on top. 11:46 NW Gap Point. This is the best observation point to observe the lake from Rock Creek to Olive Branch Point to bay N of Gap Point to main body of water to S. At present one cannot successfully survey the lake because of trees that obscure the vision. There is one oak near top that can be climbed easily which permits good visibility. I would recommend an observation tower be constructed at the NW point on the highest point and high enough to clear trees on edge of ridge so that one could see not only the lake but the shoreline as well. Such an observation tower could be winterized and should be operated 24 hours of the day and night, especially during the ^{early} winter months when the only open water is in this area. Information of population numbers and composition would be invaluable and could be continued until the reservoir populations become stabilized. A 60x to 130x scope would permit species identification and count or estimate numbers of the populations. This area is

the critical area for early winter populations of birds, especially as the water in reservoir n of here to Agawoke becomes completely frozen. Juniper tree 58" high 150 SE of point.

As I approached this point and made myself visible to water below, a substantial part of a group of 1460 American mergansers left the water at the edge of the ice. These birds are extremely wary, even more so than mallards. Three short warning calls, believed to be made by one bird, started the movement of these birds. As they started to patter on the surface of the water it sounded like an abrupt heavy rain shower. The noise maintained a loud sound for 3 seconds and then in the next 6 seconds the noise decreased to 0 at the time the birds became airborne. There is ^a keen unison in the movement of these birds. Approx. 2 minutes later a second group of birds, presumably those on the ice or out of vision because of the shoreline vegetation, moved into a position where they could see their intruder, ^{and then left.} These left, as did the first group but not with the same intensity of sound. A third group did not leave until I approached the edge of the lake and then only some 50' away. These birds were on lee side of point (wind from S) and were in protected recesses of the ice sealed bank. These birds swam out into the lake for 30' in full view of my presence before they left in unison. I could see every detail of their plumage, bill and eyes. It is interesting that in one instant these birds will leave with the least amount of identification of the intruder and at a considerable distance while in another case, when surprised, will swim in plain view and at close range before departing. These birds on the lee side of Gap Point moved by flight to a new position 1/2 mile to the NW where they formed a long raft. They then moved to the SW and at that time I made an actual count of 1460 birds. As these birds are frequently diving as they move along with the raft, I would consider that 10% are missed in surveying their numbers, so to the actual count of 1460 would add 10% or 146, making a more realistic population number of 1606 individuals. A bald eagle ^{furiously} left its perch on lee side of Gap Point and flew N and then W. This occurred about 20 seconds after the first group of mergansers

1970-4

had left because of my presence and because the other 2 groups did not leave until after the eagle had passed over them, am of the opinion that the mergansers were not reacting to the eagle but to me. Left vantage point at 11:55 and descended to most westerly extension of point to W at water level. On this weedy point were 18 Cardinals, 80 tree sparrows, 8 goldfinches, 8 song sparrows, 22. bobwhite. plus 4 black-capped Chickadees and 2 downy woodpeckers. In the lake at point were 3 ring-necked ducks, 5 American Coot, 3 mallards, 1 green-winged teal. These birds remained after the mergansers left and were associated with them. Continued E along base of hill on N side and west to car. Starting at 11:15 from point. 1:23 9 cardinals, 8 juncos, 12 goldfinch, 8 Harris sparrows, 20 tree sparrows, 3 chickadees, 1 yellow-shafted flicker, 4 song sparrows, gentle snow just starting. 1:34 274 gulls flying NE presumably ring-bills. They were flying about 600 feet high. Bay N of Gap Point entirely in white with saturated rings along shoreline contact, and overaging 50 feet apart. There many tracks of small birds in snow, indicating these birds have fed in area sometime this A.M.



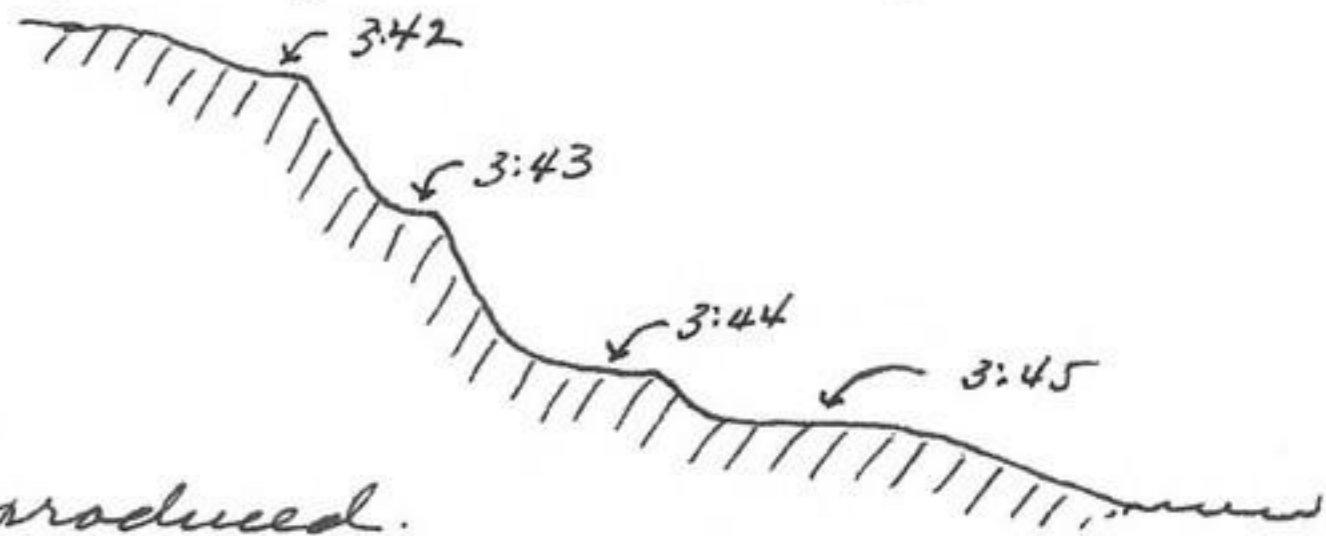
1:40 8 juncos.
1:50 arrive at car.
2:00 at car and leaving by foot to S along old road that follows along lake.

Will continue to S end of ridge, thence E, thence back to car (See map)! 2:03 drainage from main Gap Point canyon. 3 song sparrows. 2:04 Peromyscus trail across road. 2:05 red-bellied woodpecker 2:07 Coyote and squirrel tracks. 110 gulls on ice to west. 2:12 2 chickadees, 1 red-bellied woodpecker. 21 mallards in by of first major drainage. New road above bay. This is one of several open areas of water at mouths of drainages. 2:15 bay. Ice sufficient to support my weight. Coyote tracks along side of bay on ice & snow. 2:18 crossing head of bay and 2 sets mallard tracks entering drainage from bay. 3 crows on ridge to E. 2:20 3 blue jays. 2:23 2 red-bellied woodpeckers, 2 bluebirds, squirrel tracks across road. 2:24 Coyote track along road, one cottontail track. 2:25 Peromyscus trail, squirrel trail. Gained top of road road to left but neither this cut or top of ridge adequate

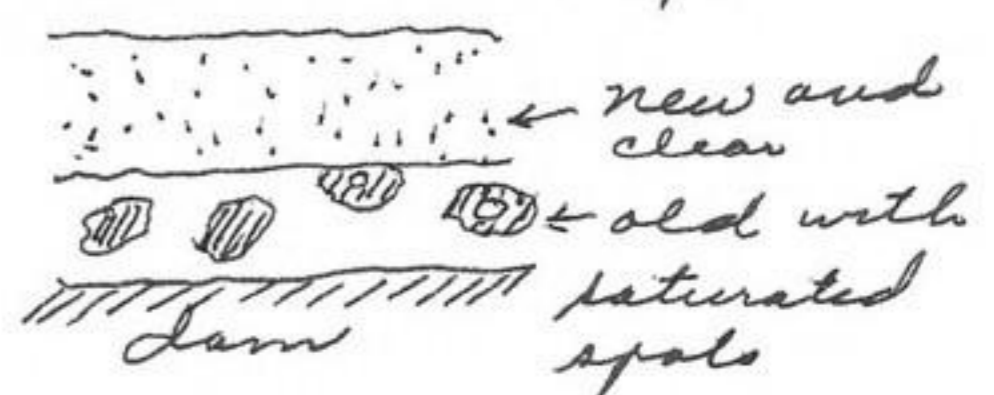
for vantage point because of tree that interfer with view of lake but an observation tower could be made to control this area of the lake. 2:30 top of ridge at end of flat field of grass. 10 feet below rock cliffs can be used with the least tree interference but even then one cannot see east shoreline of bay because of trees along the edge of the lake. There are more saturated circles, many confluent than in Hap Lant Bay. Some open areas near shore may be influenced by springs. Ice out 2/10 mile from east shore, open beyond to W. ^{Southern} Mallards, at that distance are leaving edge of ice to fly to open water beyond. 2:35 now back to road. Grass of open field bent to west. 2 robins, yellow-shafted flicker, 2:38 broad field drainage. now west to point which is a good advantage point. Cottontail trail. 2:45 end of peninsula. 25 gulls (including one juvenile glaucous gull) on edge of ice to SW. At 2:47 these gulls left ice and joined a group of 32 gulls entering lake from the east. The two groups flew N 2/10 miles and then returned to identical resting place on ice. These gulls did not effect the movement of the 110 gulls farther north. All told there are now 167 gulls on ice and 13 flying over open water to W or 180 total, nearly all ring-billed gulls except 4 juvenile Herring and the one glaucous. Left point at 2:58. The glaucous gull stands out as a large dark bird in profile (although actually light colored) in contrast to the small ring-billed gulls.

3:03 on main road. Coyote ^{tracks} frequently observed. and 2 squirrel tracks. 3:04 cottontail track. 3:05 new road now to E and upgrade. On slope to NE are junipers growing at ecotone between grass and deciduous forests, mainly among trees at edge although 2 or in open field. 3:08 25 bobwhite, 7 of which crossed the road from S. 3:11 Point. One goldfinch and 3 sets of *Peromyscus* tracks (*leucopus*) as extension of ridge. 2 sets of coyote tracks crossed road at this point. Redtail, red-bellied woodpecker, hairy woodpecker. 3:13 crows-like drainage, bay at base open but no ducks. Red-bellied woodpecker 3:15 downy, 2 yellow-shafted flickers, 39 Harris sparrows, 18 cardinals, 4 chickadees, 2 downy woodpeckers, 4 titmice and 2 bluejays. 3:22 ~~10~~ male & 8 ♀ cardinals in a linear weed strip leading down across open field. They were feeding on weeds like tree sparrow. 2 downy woodpeckers with these cardinals. These birds flew up slope to deciduous forests to join 40 tree sparrows, 18 juncos, 3 chickadees and 2 titmice. 3:25 ^{potholed} road that leads E to boat ramp to right. I have been following a road under construction. at this point

left main road and ascended ridge to top to W. In the trees from base to top noted 18 sets of fox squirrel tracks, mainly near top of slope. 3:28 top at beautiful field of grass. No tracks beyond forest. On the 2 track road did not see a small animal track (rabbit, rodent, etc) between point (3:28) and sanitary facility to N. 3:35 main road and first rabbit and coyote track. Will continue to top ridge to N. Red-bellied woodpecker flew across open field from W to E. Average height of grass in field is 1 foot. 3:40 top of knoll (no birds in grass across field). 3:42 first crossroad level. 5 squirrel tracks to this point. 3:43 crossroad level with animal trail and could be developed for horizontal trail. 3 squirrel tracks to this point. 3:44 base level broad 6 squirrel trails to this level. 3:45 shore level bench, good animal trail. Slope gradual to bay, the greater percentage in impenetrable weeds and vines. 8 sets of squirrel tracks and 2 rabbit tracks. 5 tree nests of squirrels on this level. (in 200') 3:50 1 cardinal at old pond and no other small bird. This pond has produced a gully 20' deep below the dam. 7 sycamore trees at S end dam. 3:52 boat dock. Between here and pond counted 42 squirrel tracks and 2 cottontail. Among partly cleared opening just E of ramp noted 80 slate-colored juncos, 120 tree sparrows, 8 chickadees, 2 red-bellied woodpeckers, 8 goldfinch and 1 downy, 17 Harris sparrows. Tracks farther NE in deciduous forests would indicate these birds having moved SW for 200 or so feet. 4:05 car. Snow (light) the full time in area or since 1:23 P.M. Marsh hawk circled the point along water contact, then 5 three Gaps proper. Left 4:11 temp 24°F, mileage 24.2. 24.6 top hill. 25.1 yellow shafted woodpecker, marsh hawk feeding along road grade. 25.8 drainage. 20 juncos; 90 tree sparrows in open weed field. 26.4 24 Eng. sparrow. 26.5 12 cardinals, 2 yellow-shafted flickers, 18 tree sparrows and 10 juncos. 27.0 main road. 27.7 3 juncos, redtail, 28.2 four juncos. 28.4 Slough Creek bridge. Saturated spots in ice especially to W. 29.7 main road, now to right. 30.4 right to Perry area. 30.8 5 cardinals. Boat ramp bay in ice to end of rack wave barrier. 31.6 3 blue jay. Bay at administrative area in ice but open beyond. 31.9 headquarters now to W. At



headquarters 40 tree sparrows, 25 juncos, 8 cardinals. Ice along
dam out to 60-80 feet. Wind from
NW. Delaware River frozen below
dam. 33.4 W end dam. at 4:45 P.M.



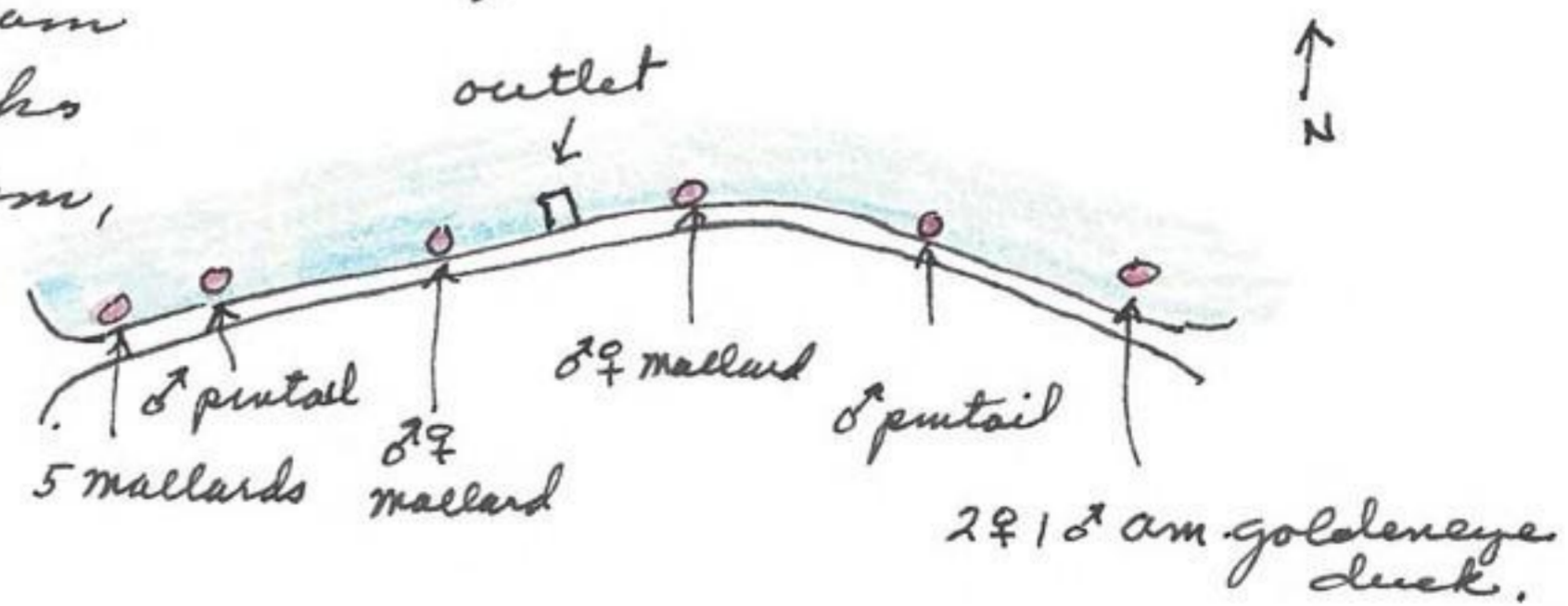
mallards started to arrive at reservoir
and they came from S, most of them
flying approx. 250-400 feet above dam. They glided N and
finally alighted in center of lake among a raft of ducks already
in lake. From 4:50 to 5:20 these ducks (mallards) arrived
at a rate of 100 per 10 seconds with maximum numbers at approx.
5:05 P.M. The numbers were almost continuous and ranged from
single birds to flocks (V formations) of 2-4 thousand birds. It
is estimated that 18,000 mallards flew over dam from the S
and alighted in the lake, all gliding into wind. These ducks
could have been moving in from the Kaw drainage or from
the distant S. A few single mallards just cleared dam and
were those that appeared to be injured and demonstrated this
fact in their flight. At 5:06 93 Canada geese flew over
dam and alighted in same area. Both ducks and geese
moved over dam at about the position of the outlet. Several
small groups of birds, juncos and starting, fly up over dam
and then momentarily deviate their flight before moving W toward
land. The raft of mallards (from my position at 200 feet east
of the west end of dam) is equivalent to the height of the
deciduous forests on the ridge to NE and extending from
1/2 way down ridge (from Gap Point to end of ridge to S) to about
a point intersecting the main promontory to N or W side. Even
as late as 5:20 large groups of up to 300-500 mallards were arriving
from the S. Flight stopped at 5:25 and at 5:30 too dark for
good vision but still a single or two could be seen moving N.
Visibility to Gap Point but Olive Branch Point indis-
tinguishable because of light snow in area. All observa-
tions from W end of dam. This will include end of
census. I would estimate that at 5:30 there were 30,000
mallards in lake N of dam and principally in one linear raft.
Arrived Lawrence 6:10 P.M. Temp 24°F.

Perry Reservoir, Jefferson Co., Kansas
Jan 2, 1970

Annette P and I checked ducks on Perry Reservoir, especially the
late afternoon movement of mallards and geese. Arrived at the
west end of dam at 4:55 P.M. and made several observations before twilight.

4:55

At this time (~~4:55~~ 5:55 P.M.) there were already approx 3000 blue and snow geese in water (see map) west of Gap Point. Other blues and snows were arriving from the north and in a linear flock as far as I could perceive with 10x binoculars. They were gliding down from a high level and coming straight in without deviation. Will keep record of number and last arrival time. In lake north of dam (see map) in protected areas which were NE segment on lee of Conspicuous peninsula and west ridge and into center of lake, noted approx 40,000 mallards. Wind from NW. The birds were closely distributed along shore and more generally distributed in lake proper. To these mallards were others arriving from the S and SW, flying over dam between the outlet and W end of dam, rarely E. of outlet. Do not know how many ducks ~~were~~ had passed over dam before 5:55 P.M. and what we were observing could have been the end of the evening movement of ducks back to the resting area in lake from their daytime feeding in fields. Beginning at 5:55 recorded the arrivals as follows: 500-50-14-2-7-30-220-600-50-50-4-6-3-(Canada goose single)-4-8-8-5-15-8-4-5-8-9-6-3-5-5-1-8-4-2-5-5-(5:05 P.M) 8-4-1-(5:10) 6-4-3-2-2-4-10-17-1-2-4-(5:20 P.M) 5-1-1 (5:30 P.M) end of duck census. ^{1728 mallards total} The few ducks that moved into lake is a small number in comparison to the thousands of yesterday and indicates variation in the feeding and resting behavior of the mallard. Between ~~5:55~~ ^{4:55} and 5:05 11,000 more blue and snow geese arrived making a total of 14,000 now on ice. At 5:32 there were 220 Canada geese arriving from S of dam. They flew north and alighted in lake in about the middle of the duck raft. On our original arrival at dam noted the following ducks at edge of north side of dam, either feeding or resting on ice at edge of rocks. The border (60') of ice had been reduced by wave action.



Have noticed that several lone ducks (mallard) find it difficult to clear dam. These birds are cripples or incapacitated, several had a foot dangling and frequently enlarged. These are the ducks that will be eliminated first by predators.

Perry Reservoir, Jefferson Co., Kansas.

Jan 3, 1970

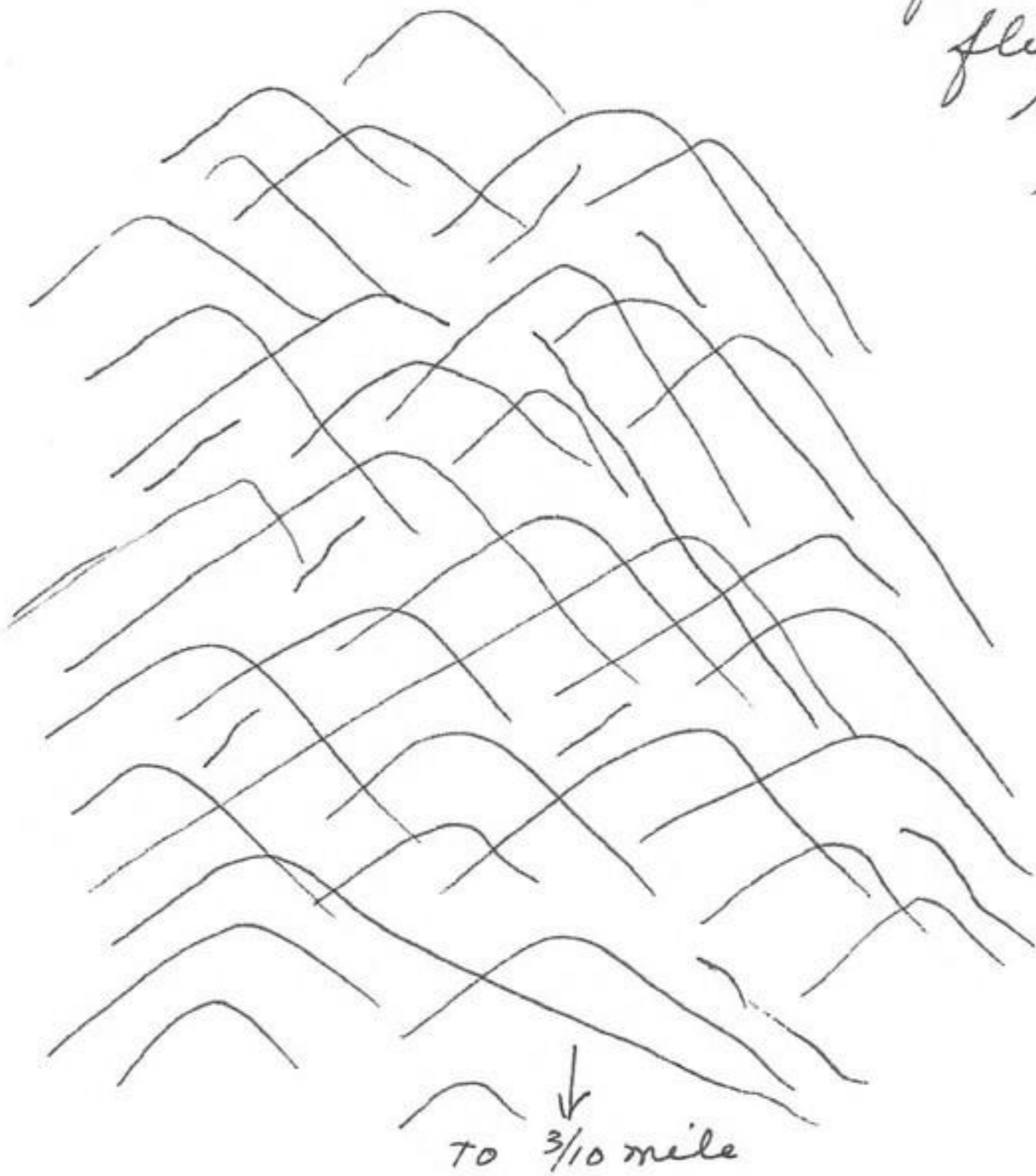
Checked Perry Reservoir to determine effect of restricting water habitat by encroaching ice. Left Lawrence at 10:00 A.M., mileage 31.7, sky overcast earlier this morning but now 98% clear blue above, temp 21°F. At Kaw River there is an increase in ice below dams, around edges and beyond where 70% is now in ice, in several places forming a barrier across width of river. Above river (dam) still in ice and covered with snow. 35.5 junction highway 59-24. Will keep complete list of birds between here and Perry Reservoir. 10:07. 36.0 4 starling. 38.0 Midland, 5 starling. 38.7 approx. 300 starling at edge of road. 39.0 35 English Sparrows. 39.9 sparrow hawk. 41.5 loggerhead shrike. 41.6 19 starling. 42.1 Sparrow hawk 43.8 12 starling, 3 E. spaw. 44.7 Williamstown. 46.5 redtail in top of dead tree facing sun. 48.3 Perry Res. turnoff. 49.2 22 starling. 49.7 3 junco. 50.4 3 Cardinals. 50.8 44 tree sparrows. 51.2 SE Park Entrance. Will continue N. (10:21 A.M.) 52.0 marsh hawk. 52.3 now to left, cardinal. 53.0 7 slate-colored juncos. 53.6 Slough Creek, all water as far as I can see is now in ice. The older ice with snow covering has numerous fracture systems with saturated snow bordering the fracture. New ice with minimum of snow to almost clear ice, especially beyond to W. There are no fractures on new ice. 53.9 3 juncos. 55.0 leaving main road and now to Slough Creek Area, 1 crow, and 13 Cardinals, 65 tree sparrows, 35 slate colored juncos. These birds are associated with weed patch in first draw. 55.7 7 Cardinals and 12 tree sparrows. 56.3 drainage of Perry @ Slough Creek Area, creek open with green moss but bordered by snow covered ice. 56.7 red-bellied woodpecker. 57.4 brink of hell (W) and now descending to Gap Point, 2 Cardinals, 1 red-bellied woodpecker. 57.8 Gap Point (boat ramp area). In weeds just N of orchard were, 19 Cardinals, 60 tree sparrows, 25 juncos, 5 Chickadees, 1 downy. From drainage SW of area can see a large raft ^{of ducks} to S near dam, a small raft nearer dam, and will check these 2 areas later in the day. A small group of mallards (4,000) are resting on ^{solid} ice approx 2/10 mi. S of main peninsula on W side of lake. To the west of Gap Point is an open body of water with American mergansers, mallards, Canadian geese and other ducks but will survey this group from Top of Gap Point. There is, however, an eagle (bold) flying back and

1970-11

forth over mergansers but without success of identifying cripple birds or fish. It alighted on edge of ice (20' from merganser) and remained unnoticed by the geese or ducks or mergansers. This open water and the two near dam (made and maintained by birds) are the only open bodies of water in the Perry Reservoir.

Left car ^{10:55 A.M.} at steep road cut at E end of Gap Point and will gain top of ridge to W (Gap Point) and make census from SW point which is the best vantage point for area to W and S. At this rocky observation point made the following observation. The open water is approx. 280 feet long and 90' wide, and as stated above is the only open water except the 2 small open areas to S near dam. The ducks especially the mergansers have kept this water open. Another interesting feature is the new ice shoreline formed since yesterday when ice extended farther into the Rock Creek - Gap Point Bay. It is now a graceful curved line stretching from Gap Point to second promontory (see map) on west side of lake, and appears to have been formed by wave action and circulating currents. Most of the mergansers are swimming in the water but their action varies from active fishing to just swimming in unison from one end of the open body of water to the other, or resting (up to 20%) on the edge of the ice. There are 186 ♂ and 223 ♀ mergansers. In addition there are 232 Canada geese, 480 mallards, 30 green-winged teal, 8 coot, 3 male pintails, 2 baldpates, 3 buffle heads. The mallards are resting on ice but occasionally enter the water. The geese are on edge of ice but like mallards occasionally a group of 5-6 will enter the water. The geese are resting with heads on backs and of the water birds are least affected by planes or noise although a call is given at regular intervals which is ignored by the flock. While observing these birds will keep check on snow & blue geese movements and other noteworthy observations. At about the time of my arrival at observation point, the blue & snow geese were flying low and inspecting this open body of water for possible landing but instead left area and flew to north, gaining elevation as they left. I would estimate that there were at least 12-15 thousand in a percentage of 60 snows or more to 40 blues. They moved far enough N to loose sound but at 10:20 they returned and flew south directly over area at about 350 feet

high. I could hear their wings at this height. The formation was mainly in V flight and so compacted as to remind one of a coarsely woven cloth with the pattern in continuous movement as the line crisscrossed each other. The width of the formation was approx. $2/10$ mile wide (probably a trifle less) and continuous for $5/10$ mile. As this flock moved about it changed from a long linear formation:



to one of a compact formation, particularly when the flock became compacted at the

end of their directional flight and the flock reversed their direction and then they appeared as a compact ball thus: This may all be a factor of perspective. It is my opinion that these geese are the same ones that arrived last evening (see notes of yesterday) and at the time I arrived had already left the water and were deciding to realight or continue elsewhere. Will keep record of their movement. 10:20 72 mallards left from open water and

flew 5 to other raft by dam. 10:24 The geese are now almost out of sight to 5 beyond ^{there to 40.} dam. 10:25 40 mallards left to S.

There is, on the overage 2 gulls (ring-billed) over mergansers. and even though these mergansers are actively feeding, there is not the population of gulls usually associated with these birds and would indicate that ^{most of} the gulls have departed from the reservoir area. There is a noticeable change of character to the reflective white of the male merganser according to incidence of light off its plumage, changing from a very conspicuous bird to an inconspicuous one. When disturbed the mergansers swim in one direction and at that time there is a maximum or minimum ^{group} conspicuousness to these males according to light reflection and this may have some adaptive significance.

11:30 60 mallards left area ^{and flew} to S. 5 crows along ice shoreline in middle of lake feeding on material that was incorporated into the ice shoreline as it was formed.

11:28 45 mallard left to S. 11:34 23 mallards left to S. all ^{mallards} flying to raft by dam and fly about 20' above the ice. Canadian geese came to attention when plane flew low overhead (200'). 11:34 14 ring-billed gulls moved into area.

11:39 11 mallards flew to S. 11:40 12 mallard to S. 11:41 45 mallards to S. 11:42 18 mallards to S. 11:44 72 mallards left to S and trailing 3/10 mile. ^{Blues & snows flew N overhead.} 11:45 50 mallards to S. oak tree made loud cracking noise from temperature pressure.

11:45 17 mallards flew to S. 11:46 8 mallards to S. There are now 13 ring-billed gulls in area over pond. Two per cent ^{of the 5} original mallard population remaining. 11:50 1 crow left ice and flew to W. 12:00 blue and snow geese returned from north. They are higher than when first observed but are maintaining their elevation as they fly around the Perry ^{Res.} area. As they passed overhead they required 2 minutes and 10 sec. to pass by and flew approx. 300 high. 12:03 loud ice fracture noise in lake. 12:04 4 snow geese flying N. followed by a group of 43 snows and 24 blues. 12:05 blues & snows ^{of above} now passing ^S overhead and are in long linear formation. 12:13 23 gulls left the open water and flew S in one ^{close} formation. 12:14 32 gulls (ring-billed) arrive and alighted on ice by water. 12:25 snow and blues flying ^N overhead and stretched out to 3/4 mile.

12:29 can see blues & snows compacting and preparing to return to the S. 1/2 mergansers now resting on ice.

12:35 blue & snow geese returned from N and in compact formation. They moved over into the Rock Creek bridge area, circled 2 times and are now over my area. Ice fracturing and some 5 sec. long. Others loud & sharp.

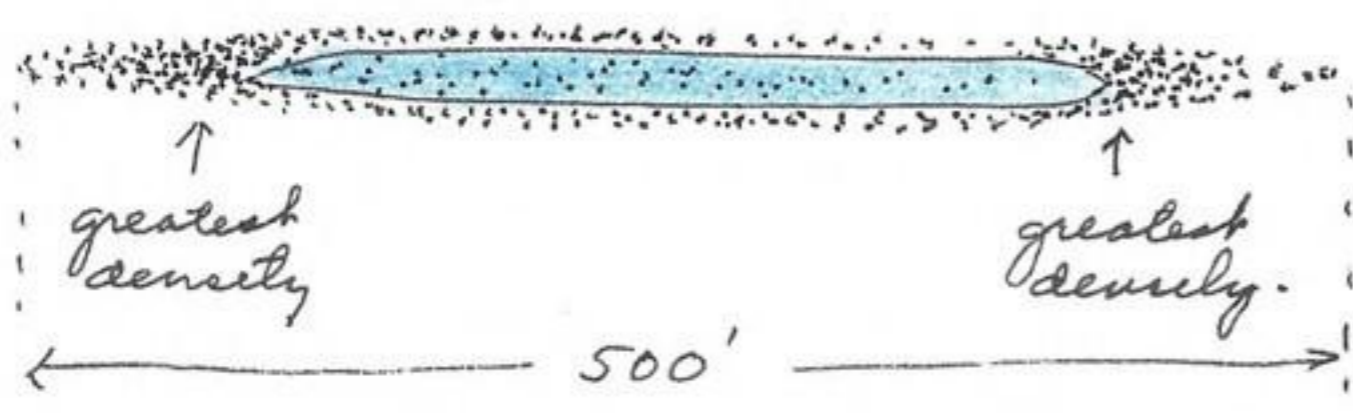
12:50 120 snow blues ^{flying} N. followed in one minute by main group. They are now lower and can hear song-beats. They call continuously, some calls not normal. This group took 2 minutes to fly over. The Canada geese are not concerned with the snows and blues as they fly overhead. At about 1 to 1 1/2 miles N of here in the reservoir area the geese when flying N seem to compact and their northward movement is stopped and after circling for 2 or 3 times reverse their direction. 1:02 blues and snows have

been circling to the north and finally pushed on farther to the north! A redtail arrived from SE and was within 20' of me before it recognized me. It flew out over ice for about 200 feet and then returned along N side of Gap Point where it called for the first time. The ducks and geese did not react to the redtail. 290 of the mergansers are now on edge of ice. The mergansers have not reacted to danger (if indeed any has existed) since my arrival, except when blue & snow geese fly overhead, they orient their body axes while swimming.

1:10 flock of snow geese flew S overhead. They were as high as I have observed them to be so far, as they flew first to down, thence E to about bridge on Slaughter Creek, thence S where they circled several times in a very compact formation over what would be the Kaw River. At 1:15 they were gaining altitude and disappeared out of sight to the S. As if leaving area. 1:16 Bald eagle was first observed flying S thru Gap and thence S along side of hill just under brink. It moved in and out of drainage systems and finally came to rest in top of a dead tree at edge of hill above road cut at end of ridge (see map) where it remained. The redtail in the Gap Point area called as the eagle flew by. 1:23 49 starling deviated their flight and dropped down to a tree about 20 feet from the eagle. They did not approach to eagle any closer. They left after 3 minutes after their curiosity had been satisfied. 1:26 a jet plane moved down thru reservoir about 300 feet above which was much lower than any plane had flown today. The noise startled me and also caused the Canada geese to all stand up and 80 mergansers took flight but return immediately after plane was beyond area. 1:33 2 redtails alighted in tree about 50' from eagle and after about a minute flew over to eagle and with legs extended made 4 passes at the eagle. They then left, one of which alighted and remained in tree some 150 feet beyond. There is a decided difference in size of these 2 species; the eagle is several times larger than the redtail. Left vantage point at 1:42 P.M. with conditions stabilized at open water habitat W of point. Wind has been from NW (slight). W & NW exposures are cool but S exposure are pleasant and some signs of melting.

1970-15

snow on rock surfaces, 1:43 base of hill to S. Arrived car at 1:50. Only birds on S side of Point were 1 downy, 2 yellow-shafted and 3 Chukadees. On top at observation station the only birds observed were 2 yellow-shafted flickers, 2 blue jays and 8 goldfinch. These birds passed thru area only. Left at 1:55, mileage 58.6, temp 32°F. 58.8 same group of small birds in orchard area as previously observed, 59.2 marsh hawk in open field on top. No water in road on N exposure but some melting on other exposures. 60.2 drainage, 85 starb-ing in one flock. 61.4 main road 61.6 2 crows. 62.8 Slough Creek bridge. 64.1 main road. 64.9 sparrow hawk hovering. 65.1 sparrow hawk. 65.2 SE Entrance to Park and now to W to dam. 66.2 E end of dam (2:12). Continued to outlet and made the following observations ^{2:15} on the 2 other open bodies of water on Perry Reservoir. The smallest one is approx ^{1/10} ~~1/10~~ mi. NNW of outlet and is approx. 80' x 30' and trending E.W. Counted 1024 mallards, 11 coot, 5 pintails and 13 green-winged teal. These birds were on edge of pond or in water. The larger open water area is approx 1/2 mi. NW of outlet and appears to be elliptical but may be circular. A circular area always appears to be elliptical regardless of position viewed. If this is indeed circular it would indicate that mallards establish and maintain ^{open} circular bodies of water in freezing temperatures while mergansers, because of their hunting behaviorism keep open a linear body of open water as was true W of Gap Point.



The distribution of density areas would indicate that the pond is circular. ^{The} the diameter of the mass of ducks is just short of 500 feet as measured by driving car along dam with set points

establish between car and duck mass. On the basis of an actual count of a certain segment and then estimating on this known segment came up with a figure of 90,000 ^(95,000) - 100,000 mallards. This is an increase over the estimate of 40,000 of yesterday. The difference may be due to actual increase from outside sources and aggregation of all smaller groups in area as a result of freezing of ^{all} the open water remaining

in the reservoir. The increment may be result of mallards forced to leave the smaller ponds and bodies of water in the surrounding area of Jefferson-Shawnee and Douglas Counties, ^{because of the freeze-ups.} will keep check of movement of mallards etc until twilight.

2:41 Since 2:21 there has been a movement of mallards from the aggregate ^{to} a direction to the SSW; at first only a few mallards at a time but by 2:41 groups were leaving on the basis of 2 to 4 thousand at a time. although smaller groups were the usual size. As a group would leave, they would not represent a localized group within the aggregate but would constitute a few birds on a general regional basis. By

~~the system~~ this system a linear line is formed instantaneously and by a gradual increment, a long continuous line

is formed rather than a mass of unorganized birds that might be put in jeopardy because of lack of space for maneuvering. 2:48 mallards leaving raft at a continuous flow involving thousands.

Long lines of 15-20 abreast are passing to the S.W. Only a few ducks are arriving and these from the SW. 2:53 bald eagle flying over Gap Point. 3:00 the whole sky was a mass of mallards as they dropped down to the open water and increased the aggregate $\frac{1}{2}$ times the number already at pond area. no gulls associated with the mallards at this time. The

open water produces an interesting pattern of blue water, surrounded by dark mass of ducks which is surrounded by the light of ice & snow. 3:07 incoming ducks and aggregate momentarily stabilized. From 3:10 to 3:16 there has been a continuous departure of ducks. These ducks are flying SW and then W. One group of horned larks (60) flew up over

dam and at a point just beyond dam at contact with ice of reservoir, turn both to the right & left and alighting on rocks and edge of ice. There is always confusion as small birds fly over dam and come in contact with the broad expanse of ice and snow. all but 13 mallards have left small open

water just N of outlet and those that have left have flown to the larger open water. 3:21 all mallards have left first pond leaving 12 am east. 3:22 ducks are now arriving by the

thousands and believe them to be the same group as left only a short while ago. Of these ducks only 3 alighted in small pond.

In large pond the ducks now represent approx. $\frac{2}{3}$ of the original flock first observed at 2:15 P.M. 3:30 marsh hawk

arrived from N, flew over ducks in large aggregate and then
 continued S over dam. Some ¹⁵⁰ ducks left as a result but most
 of them ignored the hawk. 3:35 Great numbers leaving aggregate
 (all fly to SW). This continuous departure of ducks lasted for
 6 minutes (3:41). This was the most massive so far. 3:45
 sporadic departures. 3:47 another major surge to SW. Flock on
 ice & in water now about $\frac{1}{3}$ original size. A single snow goose
 approached aggregate from S but before it could land it joined
 a departing group of mallards that carried the goose back again to
 the south-west. 3:53 53 Canadian geese flew ^{from N. pond.} W over ridge.
 3:55 increased departure schedule of mallards. Both geese
 and ducks fly SW and then W but rarely to SE or east.
 It is my belief that these ducks are flying out into Kaw
 Valley to the SW for feeding purposes. 4:00 approx. 6000
 mallards remaining and is the fewest number in aggregate.
 4:07 37 Canadian geese left from N pond and flew SW over
 ridge. 4:08 28 Canadian geese left from N pond & flew SW.
 Coos still in first pond (N of outlet). Adult ring-billed gull
 and the juvenile Glaucous gull arrived from N and fed on
 excrement? of ducks left on ice surrounding the main pond.
 4:20 ducks are leaving and arriving at equal rates. 4:25
 marsh hawk flew N from dam, inspected duck aggregate (main one)
 and then flew N to main promontory on W shore. 4,000 ducks
 ducks arrived from SW and alighted in main aggregate. Population
 gradually building up at pond, but now only 12,000 at pond.
 4:28 approx 4,000 blues ^{40%} and snows ^{60%} flew S over reservoir at a
 high level. Ducks arriving from SW and blackening the
 sky and in 4 minutes increased the aggregate at main pond by
 approx $\frac{1}{2}$ original number (or from $\frac{1}{3}$ size of 3:47). 43
 Canadian geese left pond to N. and flew SW. 4:30 3,000
 mallards arrived from SW and alighted in main aggregate. Most
 of these mallards are landing on ice bordering the pond and as
 a result the water is relatively free of ducks. Later ^{many} the ducks
 moved into the water. 22 Canadian geese arrived from SW
 and landed in main group. 61 Canadian geese ^{now} left from N
 pond and flew SW. All Canada geese ^{now} left the Gop Point
 pond making a total of 222 which is short of 10 of the original
 number observed there earlier in the day. 4:35 mallards arriving
 to main aggregate and in 3 minutes the aggregate has built up
 to almost its original number (now ^{3/5} original size). The
 group of blue & snows are now arriving back from the S after having

circled over the Low Valley for at least 7 times. The geese separated and 50% continued n out of sight the other 50% are circling the Rock Creek - Gap Point area. ^{4:43} A flock (1/2 mile long) flew from E to W over reservoir at about Gap Point area and estimate 10,000 individuals. 4:45 to 4:50 a period of stable numbers at main aggregate. 4:49 Snows and blues returning from the n. On the entire time I have been in this area have observed only 6 ring-billed gulls and the 1 Glaucous. These gulls are generally singles and just passing by. 4:54 shadows from w ridge about 1/2 way from ridge to main aggregate of mallards. Sun about 10-12 minutes above horizon. 4:59 shadow now at aggregate and placing all mallards in shadow. At this point in time and shadow change, there was an abrupt change in the direction of departing ducks. Up to 4:59 all ducks were arriving and departing from and to the SW. At precisely the time the sun disappeared from the aggregate of mallards, there was a decided change in the direction of departing birds. They now are flying directly n where they gain an elevation of about a hundred feet and then gliding down to the open water in the Gap Point area. This new direction was instantaneous and the ducks left in a continuous flow without interruption. This behavior was in contrast to the flight to the SW when groups would leave as by ~~erratic~~ ^{erratic} external motivation followed by periods of quiescence. In other words the flight after the shadows appeared (or disappearance of sun) seemed a more instinctive behaviorism and not influenced by external influence. These ducks that flew n always appeared to be farther n of ~~than~~ the Gap Point open water than they actually were. The birds appeared to be at least 3/10 of a mile beyond the open water at the time they started their glide to the pond from the S. Although mallards are moving n there is still mallards arriving from the SW to the main aggregate. 5:02 The bald eagle was first seen flying n just beyond the main aggregate but did not investigate the raft. It flew to north pond, inspected it and then flew W. A lone Canada left main raft and flew SW. 5:07 28 Canada geese left main raft and flew SW. Sun now off outlet gates & ridge to E of lobe. 5:10 Mallards still leaving at regular ~~intervals~~ ^{intervals} and flying to north pond. Incoming ducks slowing down. 5:15 incoming ducks about 50 per minute; ducks flying to n in continuous flight. 5:16 approx 1000

ducks from SW. 5:17 now arriving at 100 per minute from SW and all alighting in main aggregate. Departure to N subsiding. Temp 30° F. 5:20 coots still in nearest pond. Ducks still arriving from SW. Main aggregate now with increment from SW building up flock to 4/5 original size of aggregate in spite of exodus of the mallards to the N. 5:22 3000 mallards from SW. 5:25 mallards still leaving main aggregate and flying to pond to north and at this time equally incoming mallards. Left 5:30 P.M. and at this time the mallards were arriving at approx 200 birds per minute while those flying N from aggregate were diminishing in numbers. At this time the main aggregate, in spite of influx from SW, is about 2/5 the original number because of the continuous exodus from this main aggregate here to the pond to the north. The main pond is a shuttle base of ducks coming from the SW to the pond in the Gap Point area. From dam ~~west~~ ^{drove} W over ridge and down to Kaw valley, thence E to Thompsonville and thence toward highway 24. At about 1/2 way ^{between Thompsonville & highway 24}, could see hundreds of ducks rising from fields to the west and flying NE to Reservoir, others were calling in field. It is concluded that the events of today indicated that mallards were using the reservoir as a place to rest in safety, and in afternoon flying SW over dam to feed in field approx a mile beyond. and from late afternoon to dark, returning to the reservoir for resting. The entire aggregate of mallards were involved in this local feeding - resting behaviorism. As evidenced from previous days observations, the timing and precise direction and distance of the feeding grounds was variable but in the main was similar to today's activity. It was also demonstrated that the population of ducks can change rapidly, especially in building up a population on the lake resting areas.

Perry Reservoir, Jefferson Co., Kansas
Jan. 6, 1970

made check on ducks at Perry Reservoir in afternoon. It was reported ^{Jan 4} that the two ponds in ice (one at dam and one at Gap Point) were open and full of ducks. ^{Annette and I} left Lawrence at mileage 41.0, sky clear, 3:55 P.M., temp 18° F. More ice below dam than on Jan 3. Will keep list of all raptors and meadowlarks only. 47.6 redtail, 24 meadowlarks, 47.9 Harlan hawk, 55.7 Perry Turnoff, 59.3 3 meadowlarks, 40.6 SE Entrance Park.

61.0 yellow-shafted flicker. wind from NW. 61.6 E end
dam. 62.3 outlet and point of observations at 4:28 P.M.
will keep track of duck & geese movement for a period of
time. at 4:29 405 Canadian geese left to S, 4:34. 35
mallards left to SW, 13 Boat now in water and approx 250
mallards. ^{see} a fracture system runs directly thru open
water area from SW corner of lake (at point where dam
contacts native ridge) to the S end of ridge on east side of
lake. 4:36 approx 8000 starling flew across reservoir
from E to W at about 1/2 way between dam & Rock Creek area,
and group of approx 2000 paralleling dam and 200' to N,
and one group of approx 800 in Rock Creek area. There were
other smaller groups and all flying from E to W across the
lake. An eagle (immature bald) flew E to W across
lake, inspecting the open water at Gap Point, ducks (mallards)
arriving from the SW and half of them are flying directly to
the pond to the N. Left outlet at 4:49 and will drive
to Gap Point to check the open water at that point. 64.3
SE entrance. 64.5 marsh hawk. 66.7 Slough Creek bridge.
69.4 drainage of Slough Creek area, 2 slate colored juncos. 70.6
brink of hill and now down slope to Gap Point. 70.9 Gap
Point. In orchard and weeds noted 8 cardinals, approx 40
tree sparrows 30 juncos. The open water did not support
american mergansers. There are, however, approx 12000
mallard. ~~500~~ and other ducks, were ~~go~~ arriving from the S.
The open water contributed to the fracture system which
runs SW to boat ramp on W side lake and to near Gap
Point on this side. Left 5:10. 71.9 top of hill. marsh
hawk hunting fields on ridge. 73.0 drainage and
group of 14 cardinals, 80 tree sparrows. 20 juncos. 78.1
SE Entrance, at 5:30 P.M. 5:35 flocks of mallards still
arriving from S and seem to be coming in from S beyond
Kaw valley. Returned to Perry turnoff, thence W. to check
on local duck populations in field but light fading prohibited
vision in the area SW of reservoir.

Perry Reservoir, Jefferson Co., Kansas
Jan 8, 1970

Made trip to Perry Reservoir to check the two remnant open
bodies of water to ascertain if hard cold temperatures had
closed the open water, made & maintained by the geese and ducks.

Left Lawrence at mileage 58.0, 2:55 P.M., temp. 9° F. ^{Law} wind from SSW. Sky clear
 River below dam open for 30 feet, then ice to island. Open
 on W of island and east of island in ripples, but closed
 beyond to sand dredging area where water in river was
 open. I had wondered if this open segment of the river was
 due to deep water of the dredging area. Will keep complete
 census of birds from junction of highway 59-24, at mileage
 61.8. (3:05 P.M.) 62.7 20 starling 63.5 Harlem hawk. 63.9
 3 starling. 64.5 4 meadowlarks. 67.6 2 morning doves.
 70.9 Wellcometown. 71.7 2 starling. 73.9 30 starling in
 grass at base of hill adjacent to stock pens of a ranch. 73.7
 1000 starling. also in grass at edge of trees near pens. 74.5
 Perry turnoff but will continue to W. to check on ducks
 in fields of the Kaw Valley. 74.9 Delaware River and water
 in ice. 76.8 turnoff to Perry dam but will continue to W,
 79.0 leaving highway 24 and now to N, thence E towards
 dam. The fields SW of Perry Reservoir are corn and plowed
 with some stubs and leaves extending above ground. 80.0
 2 starling 80.7 now up canyon to top ridge. 300
 starling in farm area. they flew up canyon just E of
 road. 81.1 200 starling. Overlook Point at 3:48, 81.6.
 Will make some observations from here. The pond of open
 ice is circular from here, whereas it appears linear from
 any point of lake at near lake level. This is a good
 vantage point if 60x telescope is used. On arrival, 6
 snow geese and 2 blues left to dam but returned to
 open water. There are 7 snows and 2 blue in addition
 to the 8 above. 3:41 first group of Canadian geese left. (I
 am of the opinion that they were influenced by my arrival),
 followed by 4 snows and 4 Canadians. There is a large
 number at pond and will count them as they periodically
 leave the open water. 3:43 36 Canadian geese left and flew
 S over dam at about the outlet on dam. 3:46 10 snows
 and 4 blues left and flew S. 43 ^{Canadian geese} left at the same time.
 plus 42 mallards. 3:47 71 Canadian geese and 37
 mallards left. There are approx 70 mallards left at
 the open water which made the original flock 149 mallards.
 3:49 60 mallards left to S. 3:51 88 Canadian geese left &
 flew S. Geese all fly S over dam at about outlet,
 thence S to center of Kaw Valley, thence W for about 1 mile
 where they are landing in fields N of highway 24.

3:55 14 Canadian geese left to S. and 10 mallards. 3:57
 41 Canadian geese left. 4:00 15 Canadian geese left to S.
 4:01 19 Canadian geese flew to S. 4:02 8 Canada geese flew to
 S. 4:15 the open water now supports 305 mallards from
 increment from S. The last Canada goose left at 4:02
 making a total of 337 Canadian geese at open water on
 my arrival at 3:48 and taking 14 minutes to depart.
 They left in the fallows order and numbers: 36-43-71-88-16-
 41-15-19-8. This compares with the census of previous visits
 to the same area. (see notes).

at 4:16 took the
 following photographs (Kodachrome II):

700108-1 telephoto of open water N of dam. The pond
 surrounded by ice is located at a point between the
 Overlook Point and the S end of east ridge (road cut)
 and between the outlet and main promontory on west side
 of reservoir (first point S of boat ramp). This open water
 is actually circular although at lake level ^{appears to be} linear
 and wherever observed at lake level is perpendicular to 90°
 of the observer. The ice ridge extends thru the open
 body of water and runs NE in an undulating line and
 to the SW as a broad curve to SW corner of the reservoir (or
 W end of dam). It is believed that the weight of the
 ducks and geese is responsible for the ice ridge, or at least
 the open water, which is made & maintained by the water
 birds, is responsible. The area around the open water



is marked by a darker surface than the rest of
 the edge, as a result of debris and stain left by
 the ducks & geese. This pattern is probably
 associated with the direction of wind or sun.

700108-2 normal view of open water from Overlook Point
 showing the configuration of the fracture system and the
 position of the pond in relation to other identifying points
 on the east ridges. The ice ridge will be plotted on a map of
 the area. Its orientation is unusual and may have some
 significance in water bird-environment reaction.

700108-3 telephoto of open water to N which is W of Gap Point.
 Details are lacking at this distance. This open water
 intersects a line from highest point on road NW of ramp opposite
 Gap Point to W and Gap Point proper

700108-4 telephoto Gap Point.

700108-5 telephoto view to N showing open water pond. All
 photos from Overlook Point. 700108-6 slate colored junco.

graph of departure numbers.
 and from Slough Creek
 bridge to Canyon first
 N of W end of dam

4:18 watched a robin and red-bellied woodpecker fight at body contact from 10' in air to ground. In area are 28 slate colored juncos. A marsh hawk hovered above dam between outlet and E end of dam. Left overlook Point at 4:20 and drove N along W side of reservoir to check on open water to W of Gap Point in the Rock Creek Bay area. Snow mainly on N exposure. 82.2 leaving main road at W end dam and now to N. 82.6 at weed field and 6 cardinals, 20 tree sparrows and about 15 juncos, 12 Harris sparrows. 83.2 main road. 83.8 redtail and 3 cardinals, 12 juncos. 84.0 18 juncos. 84.3 turnoff to boat ramp and beginning of paved road. 84.4 observation point at highest elevation of road. Will check open water to E. At 4:30 made telephoto of open water to E no 700108-7 and a general view no 700108-8 showing pressure or fracture ridge created by open water. The line follows ~~to~~ SW to boat ramp bay (actually to N end of promontory to S and to E from open water in a wavy line to divide with one fracture to Gap Point (W shore) the other fracture line to N. At 4:30 shadows from W ridge beginning to extend out across ice of lake. In the open water are 49 American mergansers, 21 of which are males, ~~2~~ and 18 ^{2 male + 3 ♀} goldpeneys, but no other ducks. Since my arrival there has been 350 mallards arrive from S in a more or less continuous increment. Upon alighting the mallards swim NW into wind. 2000 starling flew W across lake at open water dropped down to within 5 or 6 feet of the water. This flock extended from open water to W shore where they partially dispersed upon arrival of the shoreline. All but 12 of the mallards are in the water. 4:45 marsh hawk flew by along road. 4:50 another group of 4000 starling flew E to W across lake at boat ramp area. Coppers hawk flew from boat ramp area to trees on west ridge. Mallards rapidly building up in open water from birds from open water to S where they arrive at about 2-3 feet above ice, or from ducks arriving from S at high altitude. In either case the groups alight first at S end of pond and gradually "smearing" themselves over the full length of the open water in somewhat a reverse manner to their departure from bodies of water. This system is the most economical way of placing

the greatest number of ducks in a pond with the least amount of interference with birds either in the air or on the water. The size of the incoming flock is, in a way, an expression of the size of the body of water or raft of ~~the ducks~~ ⁽³⁰⁰⁾ from which the ducks, previously had departed. If the groups completely 'smear' the pond it indicates equivalent size pond; if only a part of the pond 'runway' is utilized it indicates the pond was small and if more birds find it inconvenient to land in the new pond, would indicate the departure pond or raft was considerably larger. This would be based on an average condition as many flocks become divided or are amalgamated in flight. Increment of mallards in Gap Pond ~~are~~ is from both the south pond or mallards flying directly to pond from S beyond the dam. Most starting are crossing at shortest distance across lake. 5:00 ducks ^(mallards) arriving high and in long lines from high over dam and most of them landing in first open water at dam. At this time I would estimate there to be 12,000 mallards in Gap Pond open water and all swimming in water, (none on ice surrounding the pond). I would estimate that there are 36,000 in pond to S, or 48,000 combined. At this time (5:00) there is a steady stream of mallards from S pond and they are arriving or moving N at about 2-3 feet above the ice. This difference of movement of ducks arriving from beyond reservoir and those moving between 2 ponds in the reservoir is in contrast and may have some significance. The former birds move in with considerable action and conspicuousness, whereas the latter groups leave the pond quietly, unobtrusively and uninterruptedly from the S to the N pond, as if attempting to draw the least amount of attention. 5:10 Since I have been observing this afternoon, I have not observed one single duck leave or arrive from any other direction than from the S. Left area at 5:15 and mallards still arriving in great numbers. The shadows ^{sun} now off Gap Pond but still ^{faintly} on ridge to E. ~~5:15~~ The reservoir N of Gap Pond as far as I can see is white with snow whereas the ice to S from Rock Creek Bay to dam is clear ice and free of snow. Did not keep census back to dam but there is more small bird activity along road. Temp still approx. 9° F. 86.5 main road at E W end dam. At 5:30 P.M., at

1970-25
 outlet gate can see hundreds of ducks arriving from the S, generally at a high elevation as if source from beyond the immediate field bordering the reservoir to the S and SW. At this time I would estimate there are 50,000 mallards in pond at dam and 30,000 at pond to N which is a total of 80,000 mallards which is just short of the 90,000 to 100,000 mallards estimate at the highest concentration of mallards in this area (Jan 3). At 5:40 P.M. from a position 1/2 mi S of Thompsonville did not see ducks in area or in skyline to the W so presume that the incoming mallards had reached an impasse.

University of Kansas, Lawrence, Douglas Co., Kansas
 Jan 8, 1970

A white-breasted nuthatch sunned itself on lee side of junipers with temp 4° F below 0. (9:30 A.M). It was on its side and exposed to direct sunshine. I approached to within 2 feet before it left. thick

Lawrence, Douglas Co., Kansas
 Jan. 15, 1970


19 cardinals at feeder at 7:30 A.M. Temp 4° F. 4 slate-colored junco associated. These are the first two kinds of birds to arrive at the feeder in the early morning, shortly after daybreak.

University of Kansas, Douglas Co., Kansas
 Jan 16, 1970

In Fowler grave, N of Bailey Hall, there were robins feeding on the ground and generally distributed at approx. 20' intervals regardless of whether the ground was clear of snow or with snow. These robins were in contrast to 15 starling that fed in a close formation and moved about as a group.

Lawrence, Douglas Co., Kansas

Jan. 17, 1970

18 cardinals (9 ♂ + 9 ♀) fed at feeder at 7:20 A.M. with temp. at 18° F. The ground was covered with a layer of ice and there was snow in the air. The backs, tail and head of some of these birds (both ♂ + ♀) were covered with ice and snow. The head was free of ice & snow from about center of top to bill. The entire neck and back and tail were also covered.  The upper parts of the wings were free of this covering, probably because the movement of the wings dislodged the ice & snow. There has been a greater population of cardinals than in previous years.

Perry Reservoir, Jefferson Co., Kansas
 Jan. 17, 1970

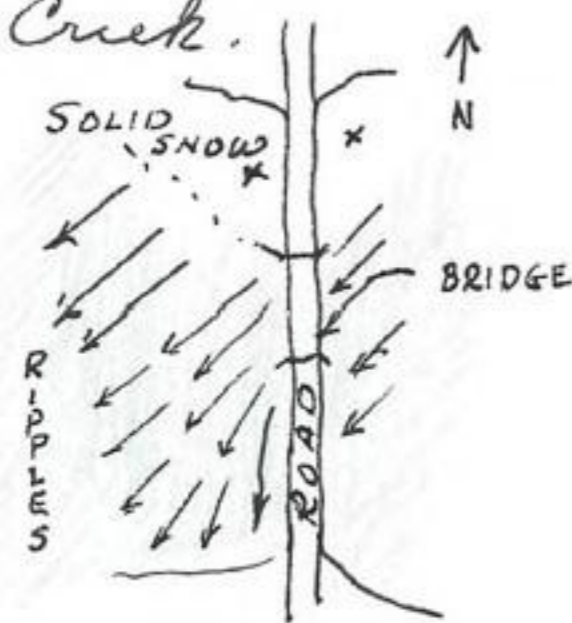
checked Perry Res. for winter populations of ducks & small birds. Left Lawrence at mileage 04.0, 8:25 A.M., temp 10°F, light snow in air, rain of last night created a covering of ice on all surfaces, especially noticeable is the ice on trees and vegetation. Wind from NE and disagreeable to comfort. Water below dam at Lawrence is open on N, S, W of island but closed to N. The sand dredging area is open but now closed beyond to E. From junction of 24-59 will keep complete census to Perry Res. mileage at above is 07.7. 20.6 Perry turnoff. There were

no birds between Lawrence & Perry. 20.8 3 cardinals, 21.1 2 cardinals. 21.9 40 slate-colored juncos. 22.1 12 juncos. 22.7 8 juncos. 22.8 5 cardinals. 23.1 drainage and water open but narrowed by ice. 30 tree sparrows & 10 juncos here. 33.6 SE entrance to Park. 34.6 E end dam. at 9:05 A.M.

Lake surface of ice blown to snow ripple of approx 20' intervals and uniformly distributed. Wind from NE. The road on top of dam is free of snow on right half and snow drift on left half.


35.5 outlet. Open water in some area and supporting 31 dark ducks swimming in water but cannot identify because of blowing surface snow. The nearest duck would be the mallard. Left and returned east. 26.3 E end dam. 8 tree sparrows. 27.3

SE entrance dam & row to N. 28.2 5 bluejays and 8 tree sparrows. 28.4 row to left 28.6 2 bluejays. 29.7 Slough Creek.

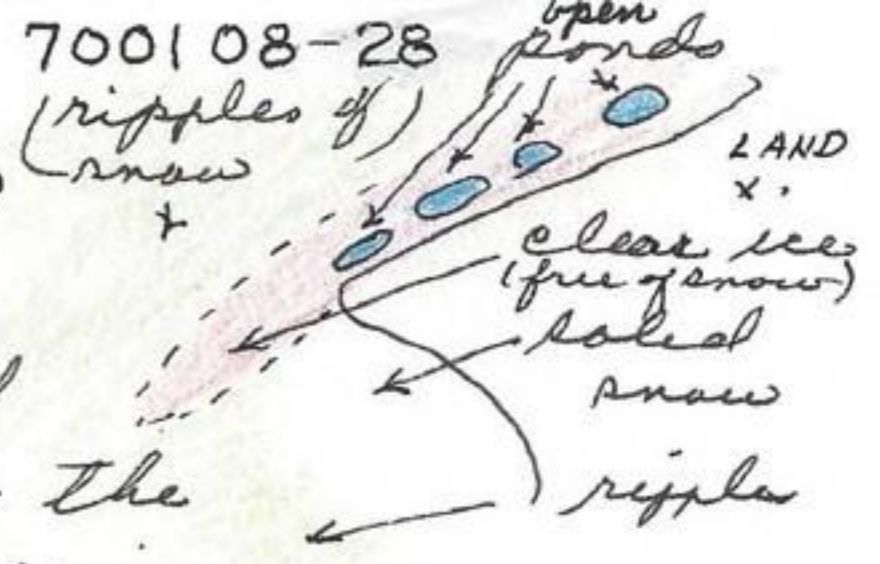


Wind blows thru bridge uninterrupted but on W side parallels N-S dam nearest dam. Ice on lee of land with snow, elsewhere snow ripples of about 20' intervals. On road the interval is 4-6'. 30.7 5 juncos. 31.1 row to left. 31.7 8 cardinals. 32.3 drainage, 50% open and restricted. 33.5 top of ridge and now going down grade to Gap Point, 33.9

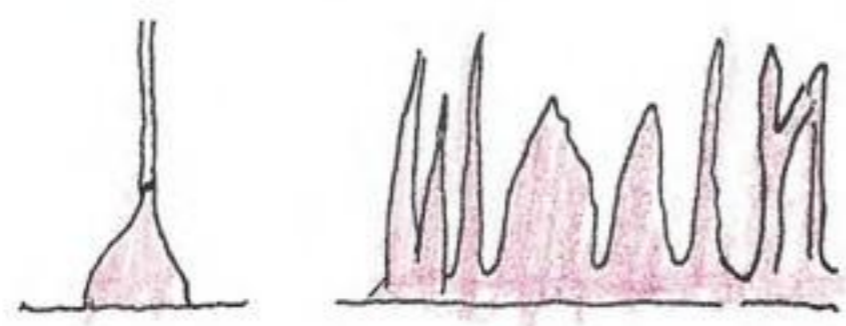
Gap Point. Observed open water W of Gap Point from about 1/10 mile S of Point on road. Water open and is about 1/10th larger than last time observed. On arrival 22 Canadian geese left at 9:35. 30 left at 9:38, 9 left at 9:40 which constitutes the original number of 61 geese. They all flew S down lake. This left 53 mallards in open water and 28 American mergansers. The mergansers were feeding at the NE end of pond. At this time the visibility was favorable up to the edge of the open body of water but clouded beyond. This condition was the result of

Two factors, one) rising steam from water and 2) blowing snow beyond pond, ^(to N + NE) but snow being captured by open water as it blows across the ice. The steam can be seen to move to the SW. It is questionable whether the small numbers of ducks, geese and mergansers can keep this body of water open and there may be other factors involved. At this observation point on road 110 mi. S Gap Point, there are approx 80 tree sparrows and 30 slate-colored juncos. I believe these birds constitute the flock of small birds that have been observed at various other points in the Gap Point area. Returned the Gap Point at boat ramp and left at 10:00 AM to make census of small birds from Gap Point to net point to N at head of bay. Will cover forested slope (lower benchland) and return by ice of bay. Temp 8°F, strong wind from NE but partially barred by east ridge. The middle of lake to W has the strongest winds as evidenced by blowing snow. Light snow in air. 10:05 pond, 1 cardinal which was the condition on a previous trip and 5 eastern bluebirds. 10:08 9 juncos, 10:10 3 fence posts, 10:14 7 bluebirds, they called faintly. 10:18 fence line (E-W). 2 single juncos. 10:22 single juncos. 10:25 drainage right. 1 cardinal, 8 juncos, 1 redbellied woodpecker, 1 yellow-bellied sapsucker. 10:27 drainage ditch or old road paralleling lake. 10:32 major drainage to right. Redtail left and called. The open field beyond drainage to N is in weeds 6' high. In this open area were 9 song sparrows, 1 downy woodpecker. 10:40 end field at large juniper and osage orange. Yellow-shafted flicker called. A second redtail left perch on dead tree and flew N. It called. 10:45 major drainage right. Clearing on bench which continues to N. Weeds in this field are about 4' high and with grasses at base. Small trees are invading this field, some 16-18' high. 10:50 Coyote travelling S in center of bay ice at about old ^{submerged} county road. It would stop occasionally and at some times would run. The driving winds to the west may have diverted his course as he turned east and finally gained shore about 1/2 way distance between Gap Point and point to N. 11:00 last major drainage from right. at the mouth of this drainage is an ice ridge  4 feet high and blocks entrance of small bay. 4 song sparrows. 11:03 3 Cardinals, 4 song sparrows. 11:04 song sparrow. 11:05 at road that ends abruptly at lake (old county road), 8 cardinals 12 song sparrows. Will point of promontory. Just beyond

1970-28



point are 4 small open bodies of water, averaging 10x5' in approx. 120 feet of shoreline. These open ponds are separated from shore by 2 feet or so and one can see the bottom. These ponds were indeed a surprise because all other lake shore contacts are solidly sealed with thick ice and snow. At this point there is a maximum velocity of wind and in pond areas and beyond the point to the SW the ice is free of snow and ripple formation. It would appear that these open bodies of water have been maintained by ^{strong} winds. Could the ² open bodies of water used by ducks and mergansers to the S, be also be maintained by winds? The ducks ^{and mergansers} were unquestionably responsible for creating these 2 main open bodies of water at the time of the original freeze but certainly their ^{few} present number could not be responsible for the continued open condition in face of sub-freezing temperatures. These winds at point are almost unbearable for the small dog (Karl). Returned to Gap Point by following shoreline on ice and will check on activity associated with shoreline. 11:35 Coyote tracks and warration at edge of lake on ice. This is at drainage with open field just to N. 11:45 increase height of ice on shore created by splash of water at time lake was unfrozen. Trees on lake have elephant feet for bases. Bank either lined and surfaced with solid ice or in beautiful stalagmite formations. These increase in height, now 4', as one moves toward Gap Point. It is



Certainly an effective way of completely sealing the shoreline walls. Drifting snow also increasing (up to 1 foot at boat ramp area). 11:55 Boat ramp and car. Except for the coyote tracks, there was not one instance of birds or mammals utilizing the snow covered ice at the shoreline contact (new snow early this A.M.). Temp 7° F and rapidly decreasing. Recorder revolving slow because of low temp. Wind keeps boat ramp divide clear of snow. At 12:20 noted that the mallards had left open water W of Gap Point but merganser still present. One glaucous gull arrived from S and flew full length of open water, sometimes moving backwards because of wind. It alighted ^{on ice} near mergansers. Left Gap Point 12:45 at mileage 34.2. at orchards were 5 cardinals and 8 song sparrows. 34.5 top

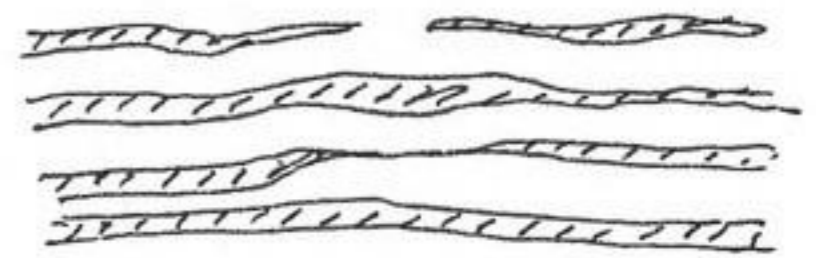
of hill. 35.1 now to right to boat ramp. 35.3 junco.
 35.8 to left to ramp. 35.9 marsh hawk 36.1 boat ramp.
 4 juncos, 8 tree sparrows. 37.2 main rd. 37.8 drainage,
 38.3 bluejay. 38.5 8 tree sparrows, 2 cardinals. 39.0
 main road, 2 cardinals, 18 tree sparrows + 8 juncos. 41.7
 main road, meadowlark. 41.9 3 bluejays. 42.8 SE
 entrance to park and end of census.

Perry Reservoir, Jefferson Co., Kansas
 Jan 18, 1970

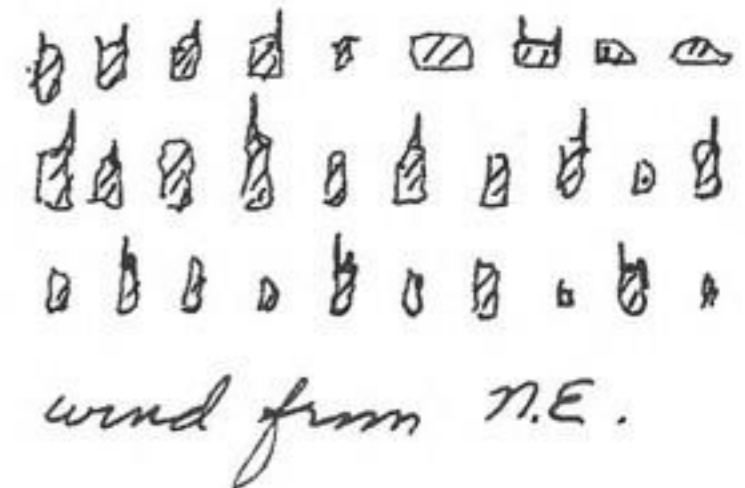
Chris and I made census of ducks, geese and small herds at Perry Reservoir, specifically in the Gap Point area. Will not make census enroute to Reservoir. There were, however, 2 redtails and a Harlan's hawk in the vicinity of Midland. ^{at} Temp 96.5 °F.
 The SE entrance to Park (Reservoir) mileage 95.0. outlet gates on dam. The open body of water (in usual place and extent of surface area) supported 18 mallards. From outlet took photo 700118-1, ^(toward Slough Creek) showing rock slope of dam and the condition of the snow on ice of Reservoir. yesterday, the snow on ice was in ripple formation; today the ripples have been bisected and show a block type segmentation.

The wind, at least for the last two days, has been from the NE. Delaware River below dam is open from a point approx 100 feet beyond exits to 200 beyond. Ordinarily the river is frozen. Left dam

yesterday ↑



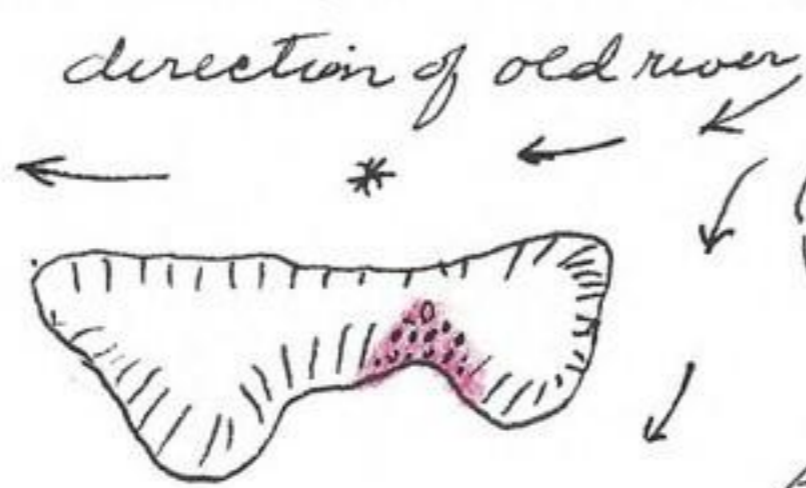
today ↑



and continued E toward headquarters area. at 97.0 3 yellow shafted flichers. South exposure road cuts steaming. Today has been one of the first days of sunshine. 01.3 Slough Creek bridge. 02.2 marsh hawk. 02.5 8 slate-colored juncos. 02.8 now off main road to left, 8 cardinals. 03.5 8 tree sparrows. 03.9 cardinal. 04.0 drainage and creek closed with new ice for first time this winter. 05.2 top of ridge at west side of open field and at beginning of descent. This year there has not been accumulations of snow and thornfares all possible. A great horned owl left tree on right side and flew W for approx 200' before alighting in another tree. This has always been an area of flocks of

1970-30

small birds (equivalent to head of ^a drainage). 05.6 Gap Point. From top (SW vantage point) of Gap Point counted 37 American mergansers feeding in NE part of open body of water. This open area has been extended to the SW by approx. 1/5 its original size. Resting in long linear line and swimming or resting in open water were 748 Canada Geese. They were on the SW and S side of open water. Included in with Canadian geese but in separate group were 31 snow geese (6 of which were blue geese.) Approx. 3000 mallards were generally distributed among the Canadian geese. As we walked across the top of the ridge to the NW point, the mallards were the first to leave. They flew to the S. As we descended to base of point, the Canadian geese left and also flew S. The mergansers remained, while on top a redtail flew by at base ridge. This vantage point on top is a good place for movie of redtails. From point (most NW extension at base of hill) followed main trail at base of ridge to S and thence E to main road. At a point of drainage (concavity in ridge) observed a large group of small birds in rather compact formation including approx 150 tree sparrows, 80 slate-colored juncos, 8 Harris sparrows, 4 black-capped chickadees, 18 Cardinals, 2 downy woodpeckers, 3 yellow-shafted flickers, 2 bluejays, and 1 red-bellied woodpecker. They dispersed in 3 directions upon being approached. These birds seem to remain in the general area of ^{Gap} Point and move from orchard area to boat ramp area to Gap Point. The



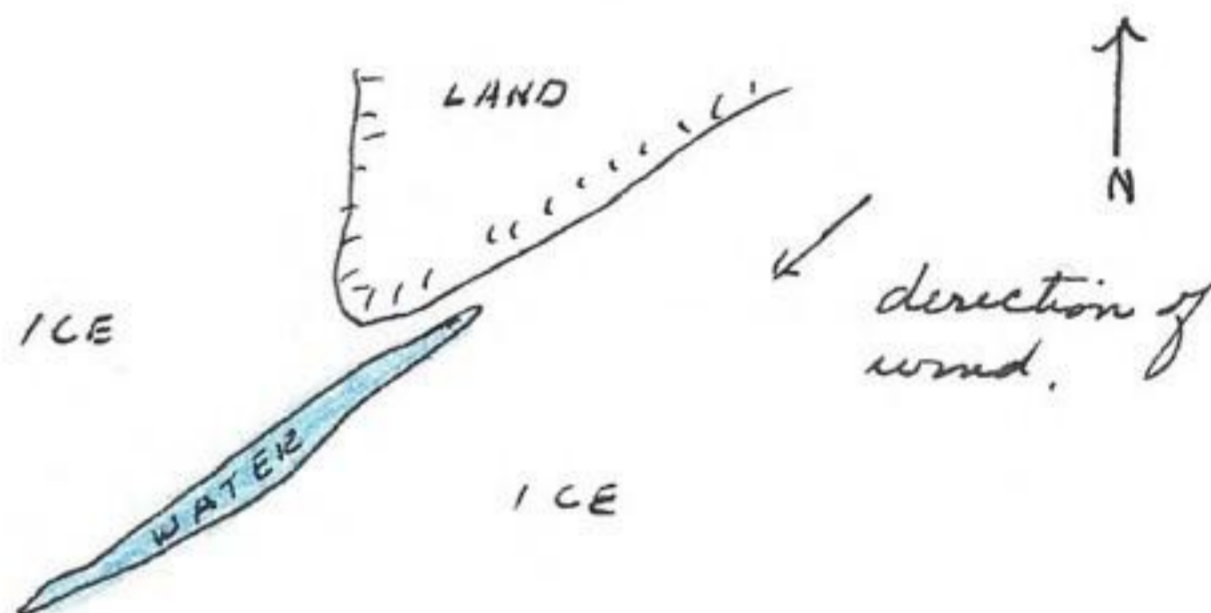
drainage indicated on map is characterized by boulders and outcrop structures that show water erosion of a source of water that could not possibly have originated from the present form of the ridge. It is speculated that at one time the ridge extended N* beyond its present form and that portion has since been eroded by the Pleistocene drainage. It is possible that glaciers could have been a source of water for this highly eroded but short drainage system. This physiographic feature could be aptly named the amphitheater and could also be used as such with the seats already in place. Continued to boat ramp where Chris skated for about 1/2 hour. Since yesterday the snow has increased

from 8 feet out from bank to about 40 feet from bank and increased in depth from 8 inches to 12-15 inches. Some of the ice formations made by waves are covered with snow. The ice of lake is at least 10 inches thick. Photo 700118-6 of design of crusted snow on ice. Left Hop Point at mileage 05.7 at 3:55 P.M. Some of the small birds had moved back into the orchard area. Continued up over ridge and down to boat ramp on east side at mileage 07.7. Across the bay is an open body of water extending SW from main point.

This body of water is approx.

70' long and 6 feet wide, tapering at upper and lower ends. The

axis is the same as the wind of the last few days and is from the NE to SW.



This open water is associated with a promontory and the direction of the wind, which at promontories is, for some reason, of higher velocity. The complete removal of snow from the ice is preparatory to open water formation. Whether the ice is eroded by currents below the ice or by wind over the ice is conjectural. These open bodies of water associated with increased wind velocities should be investigated to see if open bodies of water (pockets in frozen lobes or ridges) are actually maintained by ducks or by winds or some other factor. Ducks definitely created these open bodies but whether they (the ducks) maintain them once formed. (See Jan. 17 for comparison with another open water formation in a lake that is otherwise completely sealed with ice.) It is my opinion that ^{a narrow channel of} wind is responsible for creating these open bodies of water.

Left boat ramp and at 08.6 approx 18 tree sparrows. 08.8 main ridge road.

09.4 drainage.

10.7 main road. Temp 5°F. 12.0

slough creek bridge. 12.9 redtail. 13.3 redtail. 13.4

main road. 13.6 4 bluejay, 18 juncos & 30 tree sparrows.

They follow to end of fence row of trees and then fly across the road to corn field. 14.3 meadowlark. 14.5 SE entrance

to Park and end of census. 34.0 home in Lawrence. Temp 8°F in city.

Perry Reservoir, Jefferson Co., Kansas

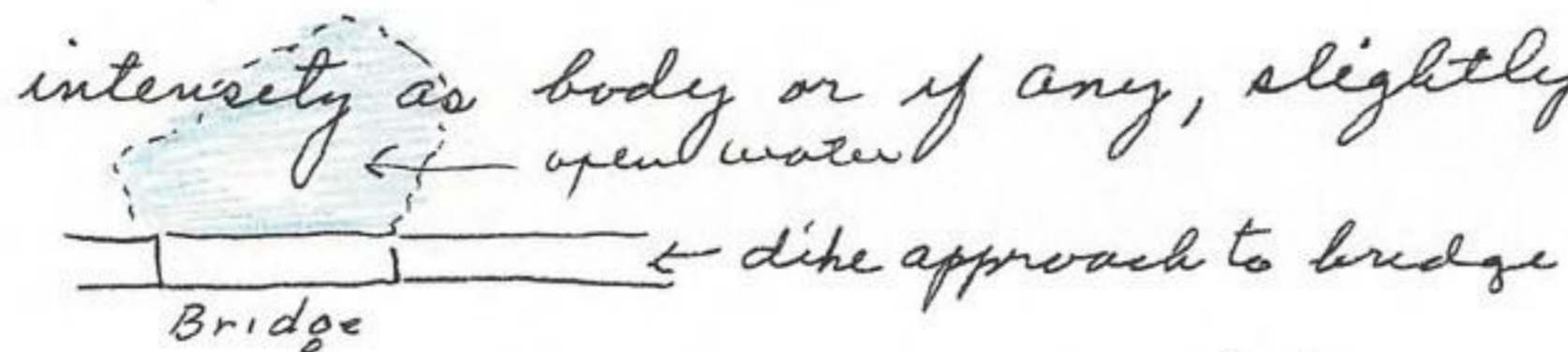
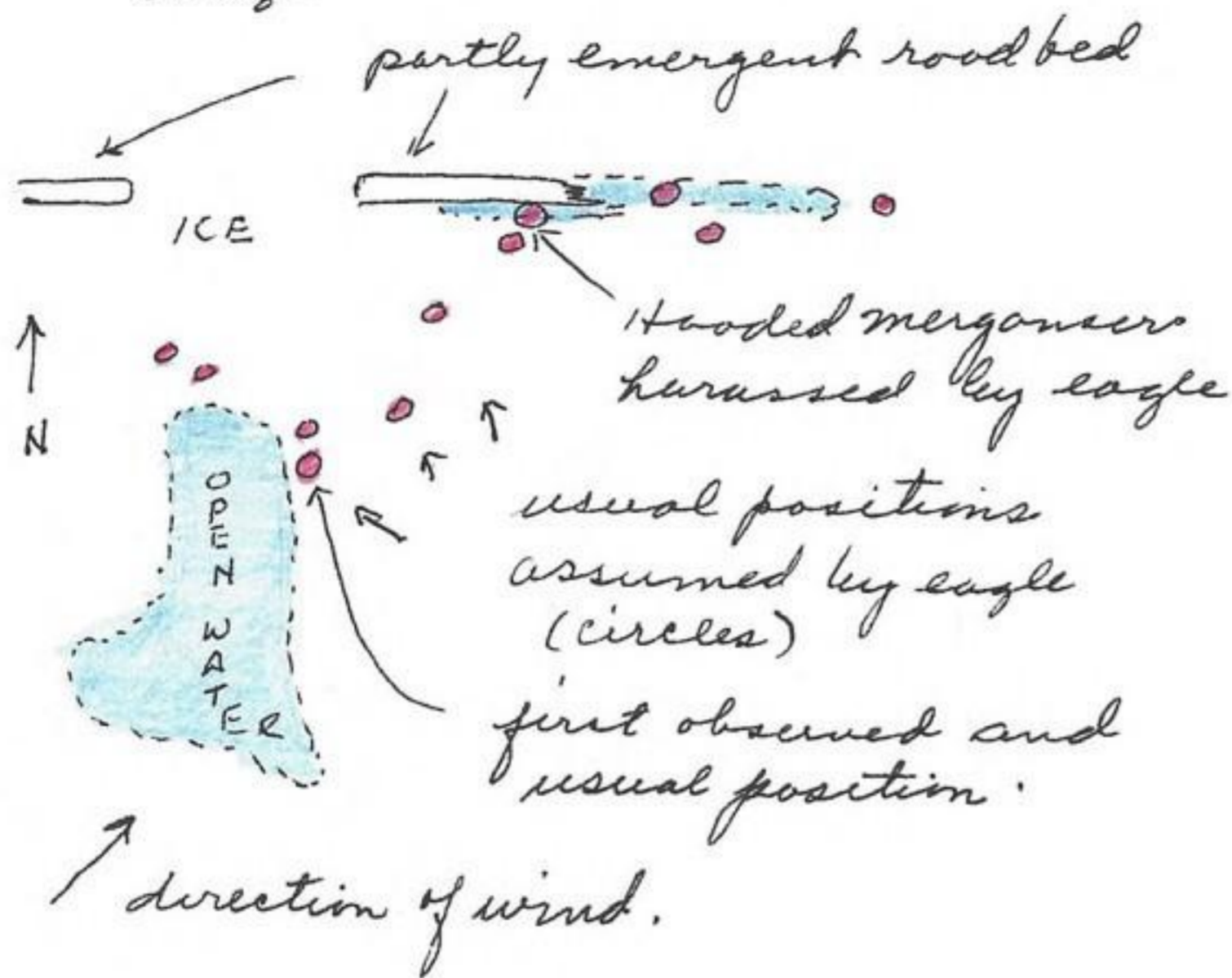
Jan 31, 1970

Checked birds at Ozawie, Gap Point and area of the outlet at dam. Left Lawrence at 9:10 A.M. at mileage 90.0. Sky beginning to cloud over from a clear blue sky with clouds mainly in E. Wind from SW and temp 38°F. At Kaw River bridge, the ice has disappeared from all segments of the river both above and below the bridge. 93.8 junction 24-59 highway and will keep complete causeway to Ozawie via Oshtobosa. 95.2 water at side of road in ice. There is no snow visible in Kaw Valley or sidehills. 96.2 midland and now to N. 98.6 ponds in ice. 00.0 3 crows. 03.4 now on uplands. 03.8 2 starling. 08.1 5 starling. 06.4 approx. 50 starling. 09.2 4 starling. 10.1 7 slate-colored juncos. 13.8 Oshtobosa. (9:37 A.M.). Birds so far have been scarce. 15.7 first redtail, 2 juncos. Creek with ice except ripples. 15.8 meadowlark. 19.4 beginning of Perry Res. jurisdiction. 23.0 Ozawie bridge ^{9:55 A.M.} will make observations from bridge. To the south at a point approx 200' S of old road and as a continuation of what would be the river channel, is an open body of water approx 200' N-S and 60' E-W. An N side of bridge is another open body of water fanning out beyond bridge for 180'. The only other open water is a channel from the promontory at the N end of Ozawie to the area of the road cut thru end of ridge on E side of lake. Part of the emergent dike of the old river is part of this channel. All other areas are closed with ice. The sky is now clouded with a high Ferrus cloud and slightly hazy (30% blue). Temp 42°F. There is an eagle (bold) at E edge of the open water S of bridge. Will keep record of its actions. The plumage of this young bird has a blotched effect with considerable whitish on back and on anterior part of belly where the white is displaced slightly to right side. The tail is blotched with black and white with a suggestion of a dark terminal band. This condition is very noticeable

when bird is in the air and the tail is in fan shape. The white seems to be showing thru the darker part of body. The black of tail is mainly a lenticular block, parallel and between feathers. The head is about the same



intensity as body or if any, slightly lighter.





9:58 eagle left edge of ice, flew out over open water nearest its position, picked up a ^{small} dead fish, and returned to same position. Its position on the NE side of open water is associated with direction of wind and drifting materials. The eagle consumed the strap of material. The wind allowed a graceful ascent (to

6-7 feet and also a graceful descent to surface of water where, with legs extended picked up the dead fish. When descending on the ice, the legs again are fully extended for landing. In all positions, it faced the wind. 10:00 eagle left ice, flew entire length of open water and then returned to some position on ice. 10:01 eagle walked to edge of ice 3 feet beyond, and in water on ice (approx 2" deep) reached out into open water for an object and, not being able to reach this item, raised into the air by flight, picked up the strap of material and returned to some position on ice some 3' from edge of ice. The fact that feathers do not grow to base of toes may be an adaptation of a bird that spends so much time in water at or near freezing temperature. Feathers would be a handicap. 10:03 eagle flew NE 100', alighted on ice, hopped 10' away and started to pick at something on the ice. 10:07 Coyote arrived from over ice at promontory point directly S. It had crossed from W side of lake land on reaching the east side, went directly into weeds rather than following along edge of lake. This animal was in direct sight of eagle but the eagle was not concerned of this object crossing the ice. 10:09 eagle flew out over water and attempted to pick up something from water but rejected it and then returned to usual position. The N end of open water is inspected more than S end. 10:10 eagle flew out over water and then returned. Average height of these inspection flights is 10'. 10:11 a crow arrived from


1970-34

The NW and alighted 20' from eagle and started to feed on some object. 10:12 eagle flew to crow and displaced it. It finished the eating the object left by the crow. The crow flew to emergent road to NE where it was joined by 3 other crows from the NW. 10:14 eagle left, flew out over ice for 100' and then returned. A female American merganser alighted in open water N of bridge. 10:15 eagle flew out over ice for 40' and then returned. Temp. 40°F. 10:17 10:20 eagle jumped into air for 3 feet and then alighted again in same position. 10:23 eagle moved 10' nearer open water. 10:25 crow alighted by eagle some 8 feet away. The eagle did not seem concerned. 10:29 eagle moved 10' now feeding on a short strap of food left by crow. These items inspected by crow are in the immediate area of command of the eagle but it takes the crow to initiate the feeding of the eagle on an item the eagle has inspected on other occasions. 10:34 eagle flew ^{straight} 200' to NE to open water at edge of emergent road and immediately started to harass 3 hooded mergansers feeding in a linear opening 4' wide at edge of road. Whenever the merganser surfaced the eagle would ^{hovered above, and then} drop down from about 12' high to 6-8' high at which time there was a great splash and a submergence of the mergansers. Two of the 3 mergansers left almost as soon as the eagle approached but the third one remained and apparently was caught unaware. After 6 attempts of the eagle to apprehend the merganser, the merganser left and flew directly to the open water at a rapid speed and not over 1 foot above the ice. As it approached the water it flew almost 60° up into the air for 200' and then turned & flew E. The eagle gave chase for 20 or so feet but was no match for the merganser. The eagle returned and alighted ^{on ice} near where the mergansers were harassed. 10:35 eagle left ice, search open water east of road (150' open), then returned to near road and alighted on emergent limb in water, to which he reacted by jumping into the air for 2-3 feet and then alighted on ice at edge of open water. This bird seems to prefer to stand in water rather than on ice proper. Up to this point there has not been ducks in the Ozaukee area except the one Am. merganser & 3 hooded mergansers. 10:44 marsh hawk flew from E to W. along S side of dike and bridge to Ozaukee. 10:50 temp 43°F. Sun has been shining last 10 minutes and wind increasing to produce white caps in open water. 10:52. eagle flew out over open water

east of emergent road, picked up an object and returned to ice where it did not even inspect it but went into its typical dodo profile as if in resting attitude,  and always facing the wind. 11:05 eagle left and flew to east end of open water (extension of road) where it alighted and inspected surface of ice. At this position with sun reflecting ^{on the} ice, the eagle loses its intrinsic size and compares more with the size of a crow. This condition give the optical illusion that the bird is farther away than it actually is. For some birds, this position in the path of sun reflection, may give them adaptive advantage from predators, over birds in other positions. The eagle appears to be feeding on an object imbedded in the ice and partly exposed. 11:05 2 mallards alighted in pond S of bridge. 11:18 eagle left from ice at east end of open water (E extension of emergent road and flew S for 1/10 mile, thence E in circular flight about 50' above the ice. By the time it was at upper bay in Little Slough Creek it was approx 100' above ice. From this position it gained an altitude of approx 100' above elevation of plateau or uplands. From here it moved N above ridge (old Ozawie cemetery ridge) and circled progressively to N to about highway, each spiral gaining ^{to approx 600'} altitude. When at most northern extent of flight it sailed S to Little Slough Creek with minimum wing movement, where it again repeated its upward spiral movement to the north again. At this time 2 redtails ^{and} ~~one~~ a Harlan joined the eagle in close spiral formation and remained for about 1/10 mile distance to N where they returned to part of ridge above cemetery. After the eagle reached its northern position (just short ^{north} of highway going E from bridge) it again sailed S to Little Slough Creek, this time losing altitude down to 400' or less where it was again joined in common flight with the Harlan hawk. At 11:25 it was still circling over the cemetery ridge within the area between Little Slough Creek and the highway. This flight, as far as I could ascertain was associated with increased temperature, increased penumbra, increased wind and a fairly good meal on the fish(?) imbedded in the ice (see 11:05). From my position on the bridge can not see snow of any description, even on N exposure. The snow patches on ice are now saturated and are in fact darker than the ice which is reflecting the light blue of the sky. There

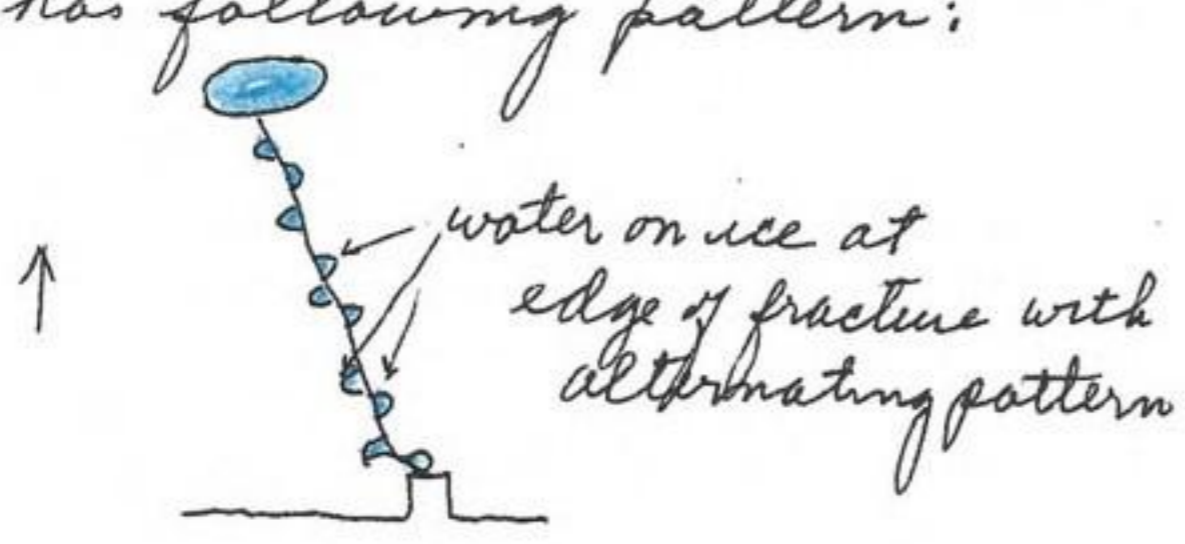
is an open strip of water extending SE from main promontory to SW. Also I see the effects of the wave action of the new lake on the sidehill S of the bay where waves have cut into the slope and in the open cuts are masses of vegetation which have dropped down or slid from upper surfaces.

erosional
cuts



I would not be surprised if some terrace or benchland formation has been created by Pleistocene lake or river erosion. Left 11:25 for Gap Point. 11:36 eagle still circling over ridge to E (Cemetery ridge) and lower than previously. Checked old Ozaukee area and then left at mileage 24.2 at 11:37. 25.3 main road & now to S. 25.6 Little Staugh Creek bridge. Water only open in riffles (80% and on ice) and other flat areas the water was on ice, the entire open water about 80% of creek channel. 26.7 top hill on uplands. 27.3 Longview Turnoff. 27.5 pond to left frozen. 30.5 Slough Creek turnoff at head. 31.8 drainage. Water open and no ice or snow. Instead of a permanent water course of green mosses it is now a silted braided channel and green mosses and vegetation have disappeared. 32.1 red tail on outer branch of tree bordering field. 32.9 top hill and now descending to Gap Point. 33.3 Gap Point 11:55. 2 crows in area. Will circumnavigate Gap Point counter-clockwise at base, leaving at 11:56. 11:57 4 juncos. 12:00 4 tree sparrows. Trail muddy as is soils in general. Entire lake to N is sealed with ice. 12:01 3 juncos. 12:02 60 juncos, 120 tree sparrows, 4 chickadees, downy, 1 yellow-shafted flicker in one group. 12:04 8 juncos 15 tree sparrows, 1 yellow-shafted flicker, 2 song sparrows. Some open water originating at dep in trail near W end and extending to 100' toward the point. 12:06 40 tree sparrows 20 juncos. The lee side of Gap Point is the area of small bird aggregate. When wind is from the N there is seldom small birds here but can be found on S side of Gap Point. 12:09 W end Gap Point. The original fracture systems originating from open water to W are now narrow 3-4 feet open channels of water. The open water to W has extended the surface area to west to within 200' or so of the west shore in long leads. The NE end of the open water is essentially as it has been the entire winter. In this open body of water are 5 groups of American

mergamers, each group separated and generally distributed on n side of open water and totalling 258 birds with males and females of about equally numbers and 2 small groups of mallards totalling 120 birds. There are also 5 common goldeneye ducks and perhaps other ducks that my 20x binoculars cannot quite define, especially those to the west. My opinion is that just the mallards, mergansers and goldeneyes are present. 12:17 3 song sparrows. 12:18 SW point. The fracture system from open body of water and the old ice beach converge at shore approx 150' N of the SW Point of Gap Point. 12:19 2 tree sparrows. 12:21 main drainage from Gap Point. The rocks are more numerous and more rounded than elsewhere and show sign of subaerial erosion from the practically non-existent drainage system above. Left this drainage at 12:25 8 juncoas. Soils and trail dry on the S exposure of Gap Point. Ice open in some places bordering shore in bay immediately S of Gap Point. 12:30 car. Drove road to south for 3/10 mile and made further observations on open pond to W. at 1:17 3 ring-billed gulls arrived from S and remain in area. at 1:20 2 marsh hawks searched leads out to open water from Gap Point, one alighted on ice at edge of water and fed on material while the other search open water 1/2 way across and then left water and flew over ice to west shore. Left at 1:30 at Top Point at mileage 33.4 Before departing noted that ^{95% of} the seal of ice on bank at east + S end of bay N of Gap Point is gone. There is no open water between here and Ozaukee except maybe small openings at contact of shore. 33.6 top uplands, 2 juncoas. 34.7 marsh hawk. 35.0 drainage. 36.3 main road 36.5 Pond frozen at left of road. 37.7 Slough Creek bridge. all in ice. 38.0 2 redtails. 38.9 main road. 4 Crows. 4.0.0 SE entrance, now w to dam. 41.0 east end dam. all ice except open body of water maintained by birds. 41.9 outlet. The open water is the same as it has been all winter. A new fracture system from open water to outlet and has following pattern:



Left 1:55 P.M. Delaware completely open and no ice or snow in area. Fracture system on reservoir at dam run from SWS to NEN or:




arrived SW entrance at 43.8 at 2:00 P.M. End of journey.

1970-37

Univ. ^{Lawrence,} ~~Kansas~~, ~~Douglas Co., Kansas~~

Feb 7, 1970

Potters Lake just beginning to thaw with 6' of open water along dam and 20 beyond NE end dam.  Ice dark and all snow saturated. Some 1 ^{foot} ~~square~~ diameter surface pools of water on top of ice. Observation this A.M.

1620 Tenn. St., Lawrence, Douglas Co., Kansas

Feb. 7, 1970

a red-breasted nuthatch regularly fed at a suet feeder on tree. Because of the behaviorism of this bird, identical approach to suet, part of suet ^{block} used etc makes me believe it is the same individual. There were never more than one bird observed ^{and} ~~but~~ this bird, ^{regularly} ~~regularly~~ ^{visited} ~~visited~~ sometimes on the average of a visitation every 1/2 minute for 10-15 minutes. Cardinals used food earlier in winter, sometimes 20 at feeder at one time, now they visit the feeder only occasionally. The starlings are in larger or at least more compact groups and are feeding on the lawns.

Perry Reservoir, Jefferson Co., Kansas

Feb. 7, 1970

Annette P and I made trip to Ozawie, Paradise Point, Slough ^(Gap Point) Creek area, and dam. Made selective ^{observations} ~~operations~~ only. Left Lawrence about 3:00 P.M. and returned after dark. The positions of hawks, ^{and other unusual bird occurrences} are indicated on map. From the observation point on hill N of the E end of dam, noted that the open water just N of bridge (See Jan 31) had extended N as linear opening to a point about 3/4 distance of the Ozawie (W side) shoreline, but not to the open water beyond the NE Ozawie promontory. To the south of the bridge, the open water of Jan 31 had extended W to shoreline and SW to develop a substantial bay. In addition, the contacts with ramp leading to bridge, and shoreline W of old Ozawie were open. A lead continued SW from SW part of old Ozawie to promontory to SW. This lead was developed from old fracture system in ice that led from promontory to promontory. A second lead conformed to above in that it was untraced from a promontory. All other ice surface in Little Slough Creek bay and from open water described above to the south as far as I could see, is in solid ice. The bald eagle was not in area today and there were no ducks. Continued N to Paradise Point via old county road. The lake is 6" below road just beyond excavated point where road passes by. In the Paradise Point area the open water

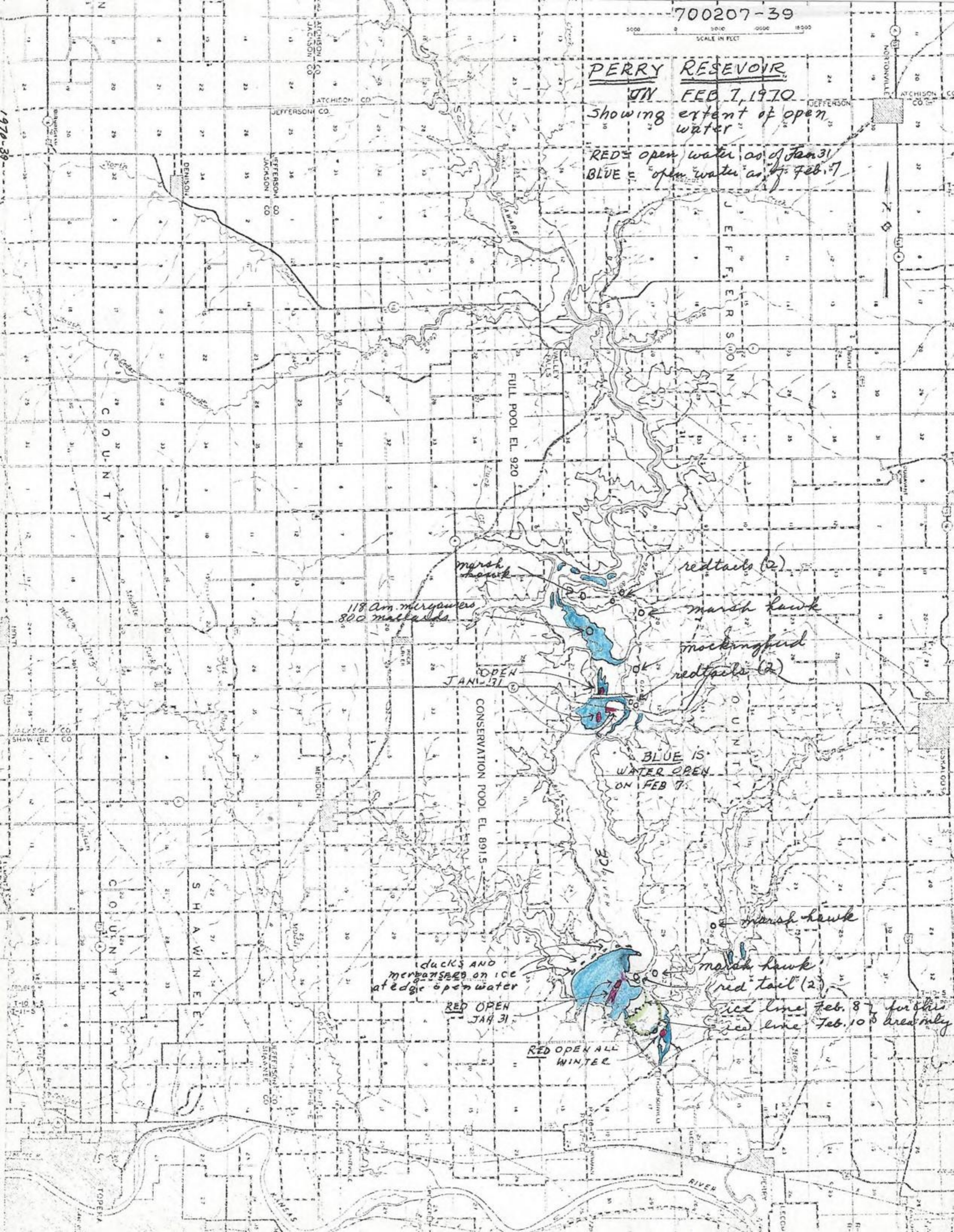
PERRY RESEVOIR

JN FEB 7, 1970

Showing extent of open water

RED = open water as of Jan 31
BLUE = open water as of Feb. 7

1970-39



FULL POOL EL. 920

CONSERVATION POOL EL. 8915

118 Am. mergansers
800 mallards

OPEN JAN. 31

BLUE IS WATER OPEN ON FEB 7

ducks and mergansers on ice at edge open water

RED OPEN JAN 31

RED OPEN ALL WINTER

redtails (2)

marsh hawk

mockingbird
redtails (2)

marsh hawk

marsh hawk
red tail (2)

ice line Feb. 8 for this area only
ice line Feb. 10

C O U N T Y

C O U N T Y

S H A W N E E

J E F F E R S O N

C O U N T Y

R I V E R

NORTONVILLE

ATCHISON CO

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LECCO

1570-40

was associated with the emergent dikes that were originally aligning the Delaware River. Wind action had enlarged the open water to S. but only slightly. The original fracture of ice from the NE promontory of the Ozawiee area to the promontory on E shoreline is now open water. Small leads of open water extended NW to the point where river makes an abrupt turn to the E. Beyond this point the lake (or river channel) is in ice but flooded fields to N are open. In the Paradise Point area there is considerable duck activity in contrast to open water at bridge at Ozawiee. In the Paradise Point area, however, the ducks (including 118 American mergansers and approx. 800 mallards, were congregated in the area of the dikes. There were no other ducks in the smaller leads beyond this area. There were approx 4,000 mallards flying N across the Paradise Peninsula at the E end and presumably from a source farther to the S than Ozawiee area. This winter all mallards were congregated at the Perry dam and Gap Point area and were seldom observed flying N beyond these points. Now the mallards are extending their movements to the north. From here, we moved to the Gap Point area. ^{Little Slough Creek 95% open.} This area of open water is the principal area for duck activity. There are approx 5000 mallards, 80 American mergansers and 50 green-wing teal, 5 common golden-eye. There may be other kinds of ducks but could not determine kinds because of fading light (sundown). The water now had opened to the S and W (see map) and slightly to NE. Mallards were moving in from the S beyond dam and alighting in water on N edge. From here we moved to dam and from observation point on W end of dam recorded the extent of the open water. The N edge of old winter opening was still preserved but wind movement had opened bay to S and SW. The original fracture formed a narrow lead. An open area of water of about 100 linear feet in diameter was approx. 200' NW of the winter opening. There were no ducks in this area but other ducks ^{were} flying ^{northward} ^{over} dam to alight at Gap Point area.

In travelling the Perry Res. area did not see crows, ^{or} blue-jays but did see the usual small winter birds. 12 yellow-shafted flickers were noted. (Raptors on map.) At the Slough Creek bridge, the open water was under bridge and extending NE approx. 100' and also a thin stretch of water on east side of this bay.

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

Feb. 8, 1970

Potters Lake now with 30' of open water bordering dam at 8:00 A.M. also 10' at point where water drainage enters lake.

Perry Reservoir, Jefferson Co., Kansas

Feb. 8, 1970

Made survey of Slough Creek Area. Left Lawrence at ~~8:00~~^{8:10} A.M., mileage 26.5, sky completely overcast, temp 28°F, ^{high} wind from NW. Kaw River free of ice. mileage 30.3. at junction 24-59 (8:15) at beginning of census. Will keep record of all birds to Perry Reservoir. via highway 24. mileage 30.4 2 starling. 31.1 5 starling. 31.8 water at side of road now in ice. yesterday 50% of ~~ice~~ surface ^{of ice} covered with standing water. 33.0 Perry turnoff. Except for the 7 starling did not see other birds between Lawrence & Perry. 35.0 meadowlark. 35.1 2 cardinals. 35.4 8 tree sparrows. 35.6 18 starling in flock. 35.9 SE entrance to Park. Will go directly to Slough Creek bridge. 37.1 road to left to S.C. bridge. 38.3 Slough Creek bridge. open water from E side of bridge out 150-200 ft to NE. and a lead along shore on E side of bay. Will leave car here and survey lake - land contact from bridge to Gap Point, keeping complete census of birds and mammals. (see map). Left bridge at 9:44 A.M. High wind from NW. Temp. 30°F. Sky cloudy. 8 junco (slate-colored) left edge of road. 9:46 12 junco and 30 tree sparrows and 3 song sparrows. At this point is a pond on N of trail, ^(and 20' from lake) which is covered with a film of new ice. water clear and 80% green moss. These birds were associated with pond. 8:51 E point of first bay. upper end of bay with logs in ice. 8:54 N end of bay at dam. The original pond, ^{partially} drained and now in good growth of weeds and grass. There are many microtus ochrogaster trails in grasses on east side of this bay and pond (1 per 8 feet or less). The water in pond is free of ice but the bay of lake is solid ice. The cattails at head of pond have fewer trails than grasses bordering. 13 bobwhite left cattails (they left as a closely formed group). 9:05 W side of dam. Numerous microtine runways on W side of bay. 9:06 2 black-capped chickadees. 9:07 W point of bay. 9:08 beginning of open field. 9:12 convergence of EW and N road at bay. Some open water at mouth of drainage and 450' W along shoreline. Ice in channel to N. 8 junco and 12 tree sparrows. Lake level water up channel to first abrupt "S" bend.

F A I R V I L L E W

Pleasant Valley Sch

ITINERARY OF SLOUGH CREEK AREA. FEB 8, 1970

GRASS
SLOPE
28

RETURN 2:50
LEFT 9144

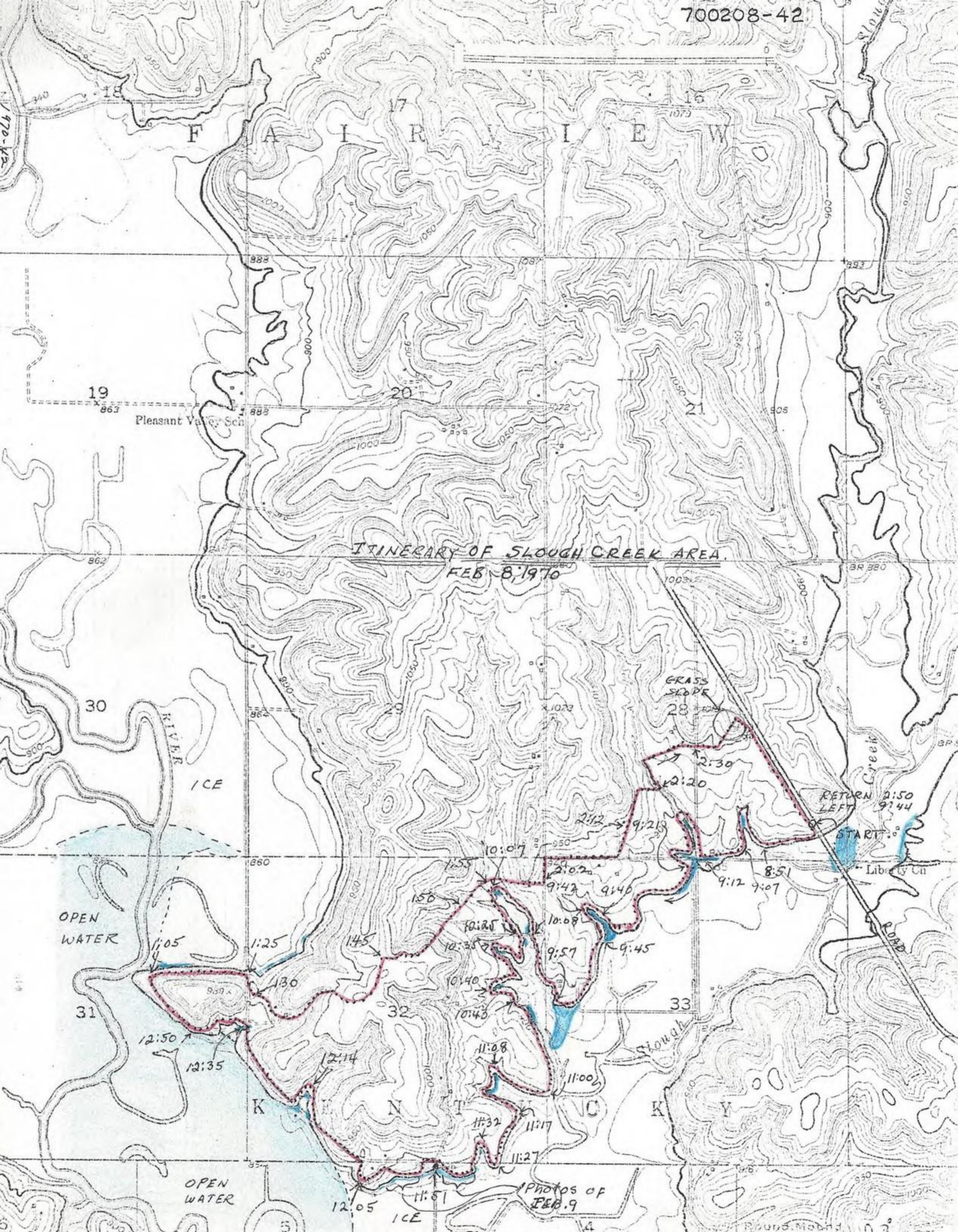
START

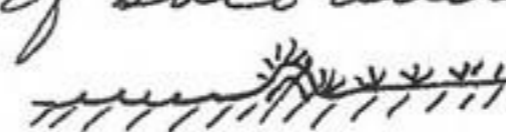

Liberty Cn

OPEN
WATER

OPEN
WATER

Photos of
FEB. 9

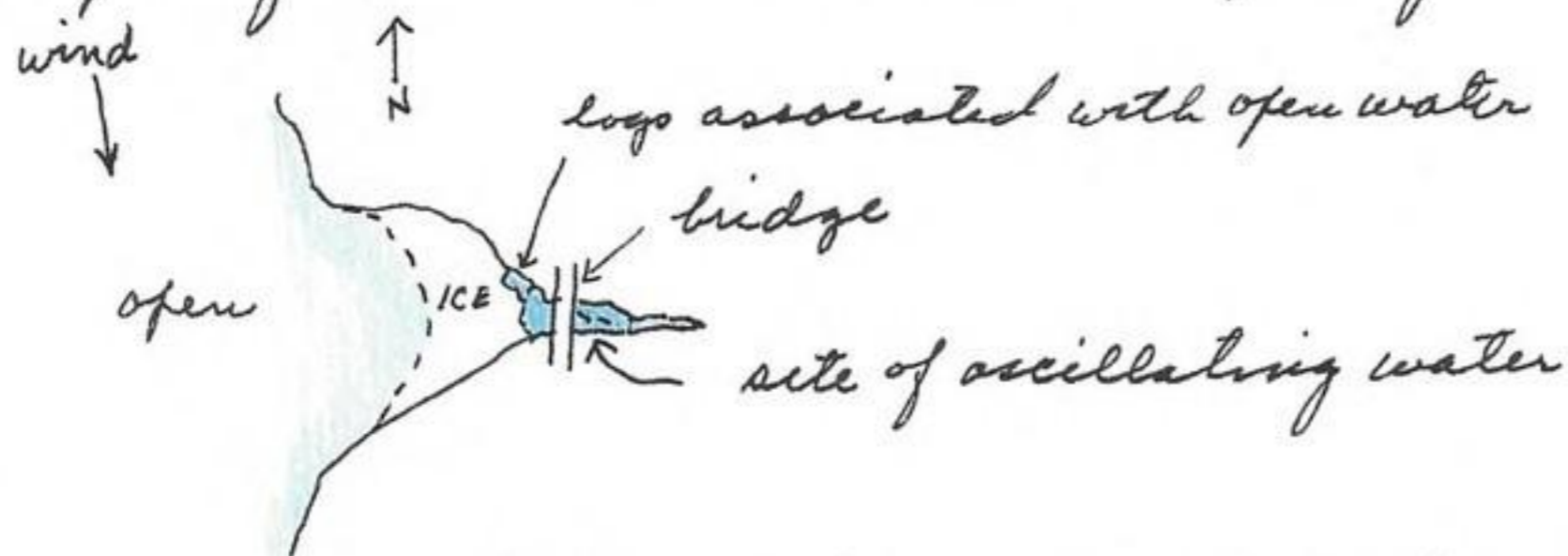
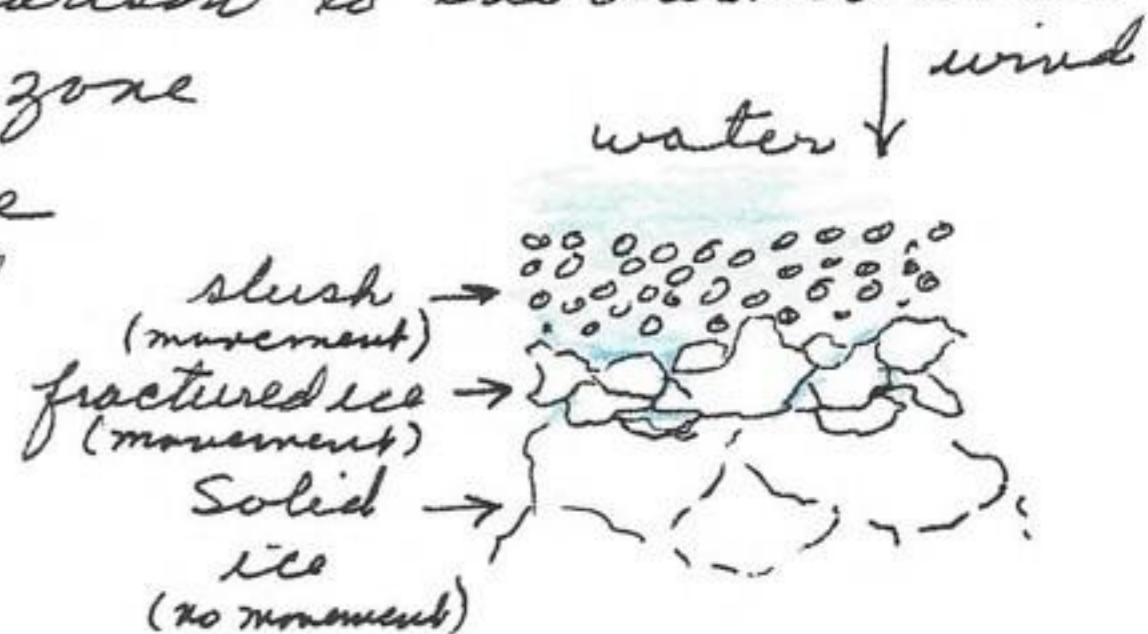


at head of channel of lake water, the water is open for 15 feet. Beyond (up drainage) is damp but free of ice. water is entering the lake water but is from subterranean source. 9:21 west side of drainage at lake contact. 9:25 2 tree sparrows. considerable microtine activity (*M. ochro.*) in 50' strip of weeds between lake and cut grass of open field. 9:30 considerable ice action all along shoreline. It is usually in the form of a single anticline of soil and vegetation and averaging 2 feet from shore . There is considerable variation in anticline from shallow to high arch, from overthrust to collapsed irregular structure. The greatest uniformity is distance from shoreline. Interstices offer good over-head protection to microtines, some with nests. This condition extends all the way along shoreline except in upper parts of side channels beyond the influence of ice action. Source of ice from the S or SSW. 9:40 head of 3rd bay. Lake water up channel to just beyond first "S" bend. water open in this channel and at upper part of bay. Good microtine activity along this channel and grasses beyond. In fact, all areas of grasses, especially those associated with swales, support runways. Beyond the upper end of channel, ^{9:42} is an abandoned (collapsed) windmill and associated cistern. Areas associated with windmill are in good grasses. 9:45 back to mouth of drainage at lake and now continuing to W. The ice action does not extend into bay. The highest anticline is approx 4'; some involving trees . 9:50 first evidence of ice buckling at shore. Thickness 12 inches or more. (9:53) east side of bay (high point) (boat ramp bay). The actual point is beyond on lower ground. 2 yellow-shafted flickers. Large flat rocks at this point. One purple colored erratic associated with flat rocks. *Microtus ochrogaster* in nest under piece of tin. 9:57 low point of E side of bay at lake. Water open from 30' E of point to within 30' of W side of bay and 140' up E side of shore on E side from point. This is the point that was open in winter when high winds excavated the ice. Water clear. no ice action on shorelines of bay. Sun is faintly registering thru clouds. Skies are clearing to N. 10:00 a large flat rock at edge of bay. 18 juncos and a yellow-shafted flicker associated with a small protected side bay. 10:03 fence line down to lake. 10:05 downy, 4 juncos, 3 tree sparrows.

10:08 old county road into water. 10' x 8' open water just to N
 of road and also some amount to S of road on W side of bay.
 4 tree sparrows and flock of 13 bobwhites on leeward side of
 shore. Evidence of ^{old} beaver barking of small shrubs, now in
 ice. As upper end of bay is invaded there is a gradual
 change of green in water and more masses covering obstacles
 in water. Raccoon tracks occasionally observed in mud.
 10:14 upper end of bay. 50' of open water. 10:17 head of
 channel of lake level water where channel turns abruptly to left.
 Beyond the channel is in thick white ice, built by flow
 water. This elevated ice (3-8 inches thick) is in contrast to
 ice & snow free sides of channel. The surface of this ice is
 slick but irregular. No water in creek bed but there is
 underground drainage into lake level waters. 10:22
 2 chickadees, 1 yellow-shafted flicker & 10 juncos, downy
 woodpecker. Evidence of digging of muskrat nests by
 coyotes. 10:25 road on W side bay. ^{dead} northern pike 22" long
 wherever roads lead to lake shore or to a picnic area, one
 finds at least 2 dozen beer cans. At this area counted
 42 cans. Most fishing points are still in grass but con-
 tinued use will trample covering. 10:35 head of lateral
 drainage (leads in same direction as straight road above on
 hill. Lake level in drainage to first abrupt curve in
 drainage (at rock cliffs). Creek ice beyond and 8" thick.
 yellow-shafted flicker & 2 chickadees. 10:40 head of drainage
 immediately N of boat ramp. No evidence of beaver or
 muskrat although favorable habitat for them. Water open
 40 feet at head of drainage. 10:43 boat ramp. Open
 water at point just S of boat ramp and extends S along
 shore for 180'. This is the best fishing area observed so far.
 water clear. 10:46 2 song sparrows. 10:50 8 tree sparrows.
 10:51 large flat rock in drainage upper limit of trees. Grass
 has penetrated forest from 0 to 60 or so feet. 10:54
 crossing new ditch excavation for water. Along this bank are
 young trees, seldom more than 9 inches in diameter. 11:00
 point on E side of bay. Redtail left near nest in tree. This
 bird called several times. Good vantage point for a tent.
 Ice fracture from point to point across mouth of bay.
 11:01 22 tree sparrows and 1 red bellied woodpecker.
 11:02 2 song sparrows. About 100' into bay is a fracture
 ridge on ice. Shoreline modified by ice up to fracture
 ridge but not beyond toward upper limits of bay. 11:05

three song sparrows, 2 chickadees. 11:06 3 song sparrows.
 11:08 head of bay. Terminal truncated with 2 drainage
 channels entering ^{one} on each side. Open water at mouths of
 these drainages. The east one with water silty from
 some kind of disturbance by fish or mammal, and
 flowing. 3 song sparrows in cattails beyond. 11:17
 W side of bay at entrance and good vantage point. Several
 fire pits have been observed along route and it is
 evident that if the area is to be developed into grass,
 there always will be danger of fire. ^{Established} ^{Company} areas
 should be protected by a fire barrier. Dead raccoon
 at edge of lake. The body was missing and the skin had
 been everted over head to nasals, probably by coyotes. Ice
 on shoreline up to 5 feet high. The problem of areas
 immediately adjacent to lake is succession of small
 trees and vine onto the cleared areas, making the clearing
 impenetrable. Climax forests on steep slopes and grass
 on gentle slopes may be the solution. 11:27 point.
 11:28 2 song sparrows. 11:32 ^{head of} small lateral bay (E-W).
 1 song sparrow. An ^{angular} erratic at head of bay measured 26
 inches in length. 11:51 road to point, and converges. Remained
 here until 11:48 and then continued along shoreline. An open
 field of low grade slopes are excellent examples of soil
 disturbance from ice action, all on or immediately adjacent
 shoreline. These will be studied and photographed to-
 morrow. Continued to old road that enters lake from the
 N. arriving at 11:51. yellow-shafted flicker calling.
 11:55 new road at point where old road from W joins old
 road from N. Returned to lake shore at this point. First
 actual gopher observed today (first diggings in fact). These
 are at edge of soil disturbance at edge of lake. Redtail
 on ridge to NE. 11:59 diggery of microtine by coyote. The
 grass in this area is profuse but not native(?). Good
 areas for microtines. 12:00 now back on main road
 which I will follow to Top Point, but with one exception which
 is to examine promontory to left. 12:01 leaving main road
 to make point circuit. 12:05 Point. 12:07 back to main
 road. yellow-shafted flicker. 12:08 water to NW is almost
 a bluish black. Sky now 80% clear and sun shining. Well
 developed white-caps on lake 12:14 head of bay at old pond
 dam. New road circling head of bay. 12:17 left bay.
 Temp. 50°F. Red-bellied woodpecker calling. 12:30 ice

'shoreline' extends from here to W side of lake in a gentle curve. The wave action has created a zone of ice slush 30'-40' wide and is white in comparison to the darker solid ice. The next zone is a fractured zone of solid ice which reacts to the wave action, beyond which is the solid immovable ice. This wave action is an effective way of extending open water. 12:35 drainage at Gap Point. The outer half of bay open and continuous with open body of lake, the remaining part in solid ice except at bridge where the water is open for 10' on west side and open for 20' on drainage side.



at the bridge recorded the movement of water as it fluctuated back and forth under bridge and in opening toward narrow part of drainage to E. Logs and debris in water moved with the oscillation of water and made good markers, travelling approx 10 feet with alternating surges of water. The flow was to bottom of drainage (approx 3 feet). The periodicity is as follows: (starting at 12:36.) in 40 secs; out 30 secs; in 35 secs; out 30; in 20 sec; out 40 secs; in 30 secs; ^{out} 35 secs; in 30 ~~secs~~; out 30 secs; in 25 secs; out 35 sec; in 30 secs; out 30 secs; in 25 secs; out 25 secs; in 30 secs; out 35 secs. The movement out was more forceful than the moving in of water, however, on one occasion the water moved in as forcefully as out. Average time for water moving out = 32.2. Average time water moving in = 29.3. Moving in and out is accomplished by rather forceful surges and then temporary stabilization. The average time for moving out is slightly longer than time for moving in although not statistically important. Open water in main lobe in white cape but ice in bay acted as a barrier to direct influence on open water at bridge. There was no obvious reason for this oscillation. Left bridge at 12:47. and will make circumnavigation of Gap Point. 2 Song sparrows + 2 bluejays. 12:48 18 juncos and 30 tree sparrows, 2 cardinals 12:50

Sw point. Raccoon tracks in mud. These tracks are not as common as along establish rivers or creeks. In open water to W are heavy white-cops. Yellow-shafted flicker calling. Mallards are arriving from S at approx 50 per minute and alighting in open water at N edge of open water. These mallards are from S beyond dam and are not stopping at open water at dam. NW point at 1:05. 2 song sparrows. From this point can see approx 28,000 mallards and 550 american merganser. The mallards are in 12 groups on N edge of ice and equally separated spatially. The mergansers are in 2 groups on ice and others in the water. A bald eagle (not adult and probably the same bird that has been in the area all winter) was on the ice some 200' N of the N edge of ice and beyond the congregation of ducks. It left and flew to ridge to N where it circled about 300' above ridge and finally flying above Rock Creek at bridge area, generally 100' above ground. Left Gap Point (proper) at 1:15. A new feature of ^{open} water is an extension of the water into about the center of Gap Point Bay to N. This is the first time there has been open water in this bay of solid ice. Moss on ground on N exposure near W end of Gap Point. Trail on N side still damp & muddy, whereas on south side is dry. This point is an important position for observing ducks as they fly near shore at this point. 1:18 25 juncos, 60 tree sparrows, 2 chickadees, 1 downy. Although there is a high wind on the exposure, the small birds are here today, probably because of sun. Ordinarily they are on lee side of Point on N windy days. 1:19 3 song sparrows, 5 goldfinch. 1:25 road at E end Gap Point. Water open about 6' at contact of bay ice with S shoreline. 1:30 orchard. There are no nests in these trees nor usual groups of juncos & tree sparrow. They have moved to Gap Point area. Near head of drainage, along road, the wind is almost negligible and reflection from dry slope creates additional warmth. 1:38 top of hill at edge of forests. Sky all blue except some clouds to S. Wind strong on ridge but not as strong as at edge of lake. 1:42 left main road and now to E along edge of field. Redtail (2) in normal plumage and circling in same area. 1:50 main road at drainage at base of hill. Winter wren in cattail just above culvert. 1:55 pond at head of drainage. 2:00 big weed patch of unusual character. Yellow-shafted flicker. 2 chickadees. 2:02 road. 2:12 old barn ^{with} tin roof and incomplete kinder block building. Birdlife across country rare. 2:20 major drainage (deep). Followed up this erosional gulch.

Gopher diggings rare, and have occurred only at the one place indicated. A few mole runs have been observed. 2:30 road. Slope of native andropogon on sidehill on dry, shallow soils. Few microtine runways but most condition is not proper for good habitat. 5, ^{trail} between base of hill & top of hill. 2:50 car and end of census. Left area and at 4:11 SE entrance of Park at 2:55. Length of trip on shoreline $6\frac{5}{10}$ mi; overland $3\frac{3}{10} = 9\frac{8}{10}$ mi

Summary: (Lakeshore route only) (Slough Creek Bridge to Gap Point)

slate-colored junco 8-12-8-18-4-10-18-25 = (113)

tree sparrow 30-12-2-3-4-8-22-30-60 = (171)

song sparrow 3-2-2-3-3-3-2-1-2-2-3 = (26)

downy 1-1-1-1 = (4)

black-capped chickadee 3-2-2-2-2-2 = (13)

microtus ochrogaster - individuals & runways generally distributed

bobwhite 13-13 = (26)

yellow-shafted flicker 2-1-1-1-1-1-1 = (8)

beaver - sign

coon - dead animal and tracks

coyote - diggings & tracks

northern pike

redtail 1-1 = (2)

red-bellied woodpecker 1-1 = (2)

gopher - diggings (one example and active)

blue jay 2-

cardinal 2-

mallards 28,000

American merganser 550

bald eagle 1

goldfinch 5-

375 total (exclusive of ducks & mergansers)

Perry Reservoir, Jefferson Co., Kansas

Feb. 10, 1970

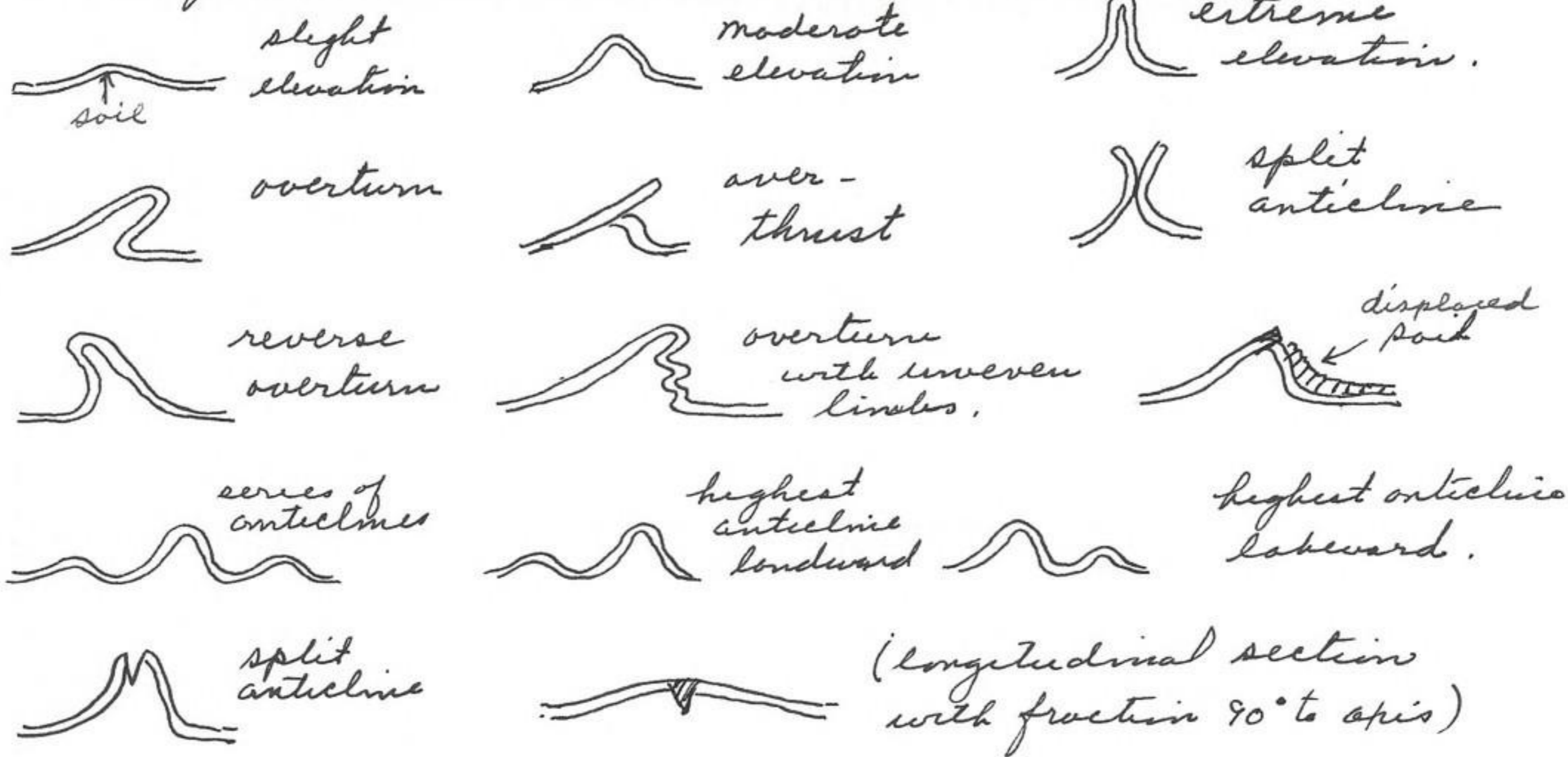
made series of color (35mm) photos of ice action on shoreline in the Slough Creek area at:

between 3:00 - 4:30 P.M. Day clear. This effect on shoreline was

first noticed at 9:20 (see Map of Feb 8) and was present ^{along} the entire route to ^{at least} position 12:05 on same map as above (point of promontory)

Did not ascertain if this same condition was present up to Gap Point. Regardless of angle of slope, whether low angle or steep,

the ice action was present. The ice action on various kinds of soils ^{is} ~~was~~ as follows: (→ direction of compressional ^{not} force)



Some of the problems associated with the above ice action is as follows:

1. Effect of new niche along immediate shoreline, especially as it influences microtines which are already using the new overhead protection for nests and runways. These habitations or communities of microtines are, in some places, removed from their normal community by 300'. This new habitat also would effect many insects, some birds and especially aquatic and semi-aquatic organisms along the shoreline. This condition places a new habitat along the lakeshore.
2. The area immediately lakeward from shore has been planed by the ice into a smooth surface with slightly increasing depth lakeward (average 8'). This new lake bottom should effect the near shore populations of organisms as well as water feeding birds.
3. The obliteration of this ice action should be recorded, especially as it concerns the siltting adjacent to the shoreline. Determine effect of waves, rain, animal action.
4. Barrier (favorable for predator) along lake.
5. Effect of barrier to drainage. Will marsh areas form landward, and what will be the new drainage patterns.
6. Changes in vegetation, especially the grass areas.
7. Contrast the effected & uneffected shoreline in boys.

8. Determine if ice action was from moving sheets of ice or from gradual expansion of ice in lake. As most areas show the same degree of soil displacement would believe the latter to be the causative factor. Ice ridges in bays would also indicate a general expansion of ice rather than a free moving ice sheet.

9. What effect will the variable lake level (and attending contact action) have in the overall erosion of the valley slope. Will the succeeding levels of water erase the ice action.

10. Good problem for succession studies and invasion of organisms into a new habitat niche.

11. Mortality of shoreline-edge organisms at the moment of ice impact.

12. Determine distribution of ice action on all shores of lake and correlate with causation (wind

The following 35 mm Kodachrome photos taken:

- 700210-1 To NW showing general view of results of ice action on shoreline. These shorelines have been maintained at a constant level for most of the winter. Winter ice to left and rapidly melting.
- 700210-2 To NW and in same general area as above. It would be interesting to speculate on the effect this shore barrier will have in trapping runoff water from landward direction. A lake could develop and a sudden breakthrough result.
- 700210-3 To NW showing how ice action adjusts to shoreline curvature. An entirely new niche is established on an otherwise low slope shoreline.
- 700210-4 To SE showing general shore barrier. Sedges should develop landward and many mammals should be attracted to the new soil topography.
- 700210-5 To SE. An anticline with fracture near top on lee side. Some small trees were overridden or displaced.
- 700210-6 To NW. Anticline with fracture on top. Another anticline to left.
- 700210-7 To SE Series anticlines and offset. Axis NW-SE. Compressional pressure 90° to axis of anticline.
- 700210-8 To SE Two anticlines in series. Pressure from right
- 700210-9 To NW. Anticline with perpendicular SW slope. Pressure
- 700210-10 To SE overturn and some thrust.
- 700210-11 To SE Double overthrust.
- 700210-12 To S Slight overthrust
- 700210-13 To S Split at 90° to axis of anticline
- 700210-14 To S formation?
- 700210-15 To SE Karst on top anticline. Large boulders displaced.
- 700210-16 To S School minnows (1/3 of group) on eroded (abraded) bottom adjacent shoreline anticline.

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

Feb. 11, 1970

Potters Lake open. Day cloudy & trace of snow at 9:30 A.M.

1617 Alabama, Lawrence, Douglas Co., Kansas

Feb. 16, 1970

noted 14 crossbills (5 males and 9 females) in top of deciduous tree bordering a row of approx. 20 Scotch Pines. 9 pine skeletons were associated with the crossbill.
Time. 9:00 A.M.

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

Feb. 16, 1970

Potters Lake in thin ice today from last night's low temp.

1620 Tenn. St., Lawrence, Douglas Co., Kansas

Feb. 19, 1970

2 males and 3 female purple finch at feeder and first observed this winter. 3 goldfinch were associated and also observed for the first time this winter. The red-breasted nuthatch is still in area and feeding on a suet feeder. As far as I can tell, this nuthatch has been in area all winter, making ^{daily} trip to suet. The usual ^{daily} composition of birds at feeder are:

starling 8-20

slate-colored junco 3

red-bellied woodpecker 1

Eng. sparrow 5-25

Cardinal 2-6 (as many as 18).

downy woodpecker 1

hairy woodpecker 1

yellow-bellied sapsucker 1 (occasional)

black-capped chickadee (occasional)

These Cardinals seemed more common in early and late winter and few in mid-winter.

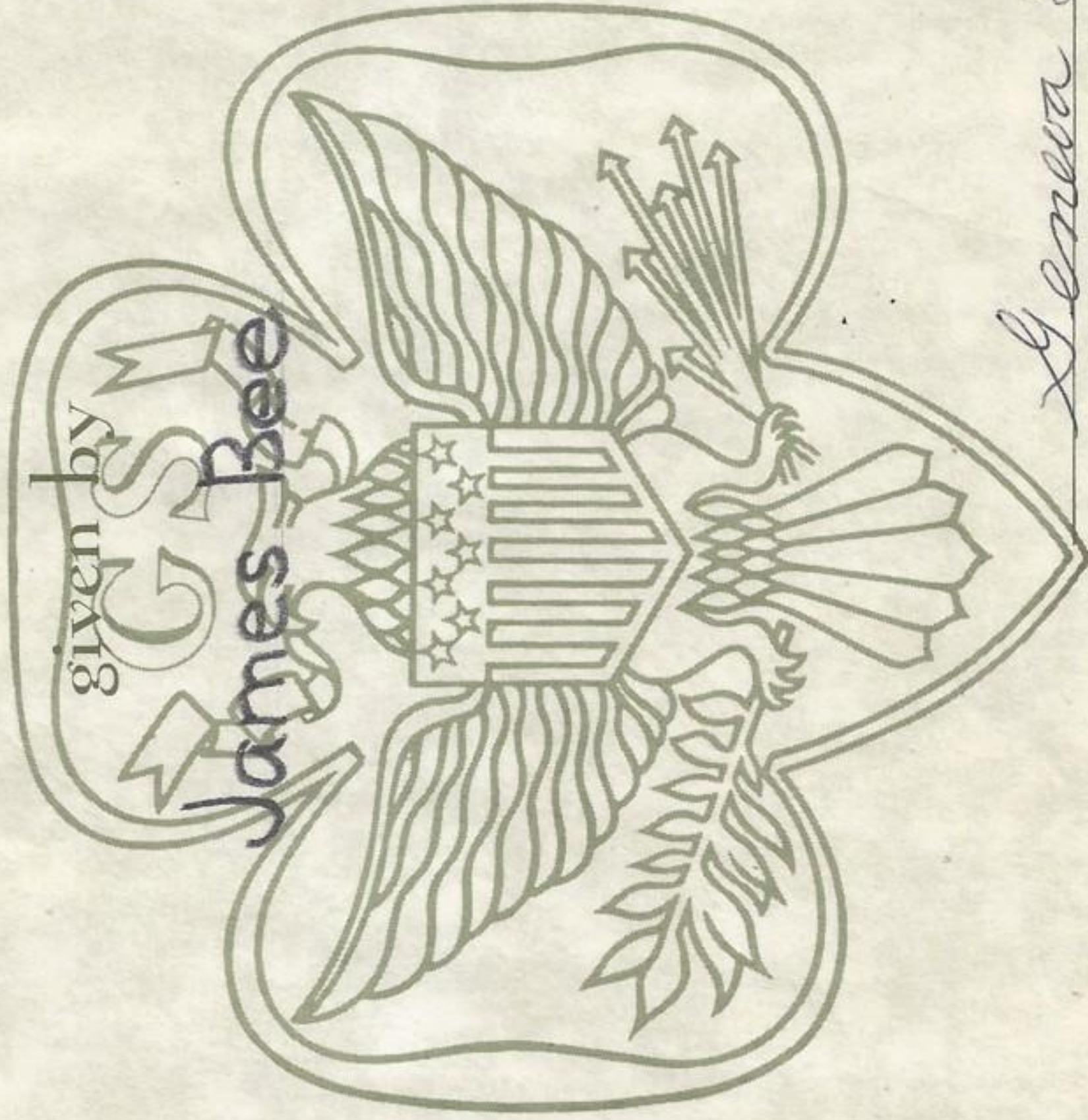
402 Yorkshire Drive, Lawrence, Douglas Co., Kansas

March 1, 1970

moved to new address above. One of the noticeable differences between 1620 Tenn and 402 Yorkshire, is the presence of meadowlarks. These birds are associated with open field adjacent to the area. The Eng. sparrows are present in good numbers and surprisingly so for an area just recently (last 5 or so years) developed. Presence of large trees are not a prerequisite. I have noticed, however, that shrubs surrounding our house are heavily used by these birds.

Kaw Valley Girl Scout Council, Inc.

Recognizes the Services to Girl Scouting



Geneva L. Swartzel

March, 1970

Date

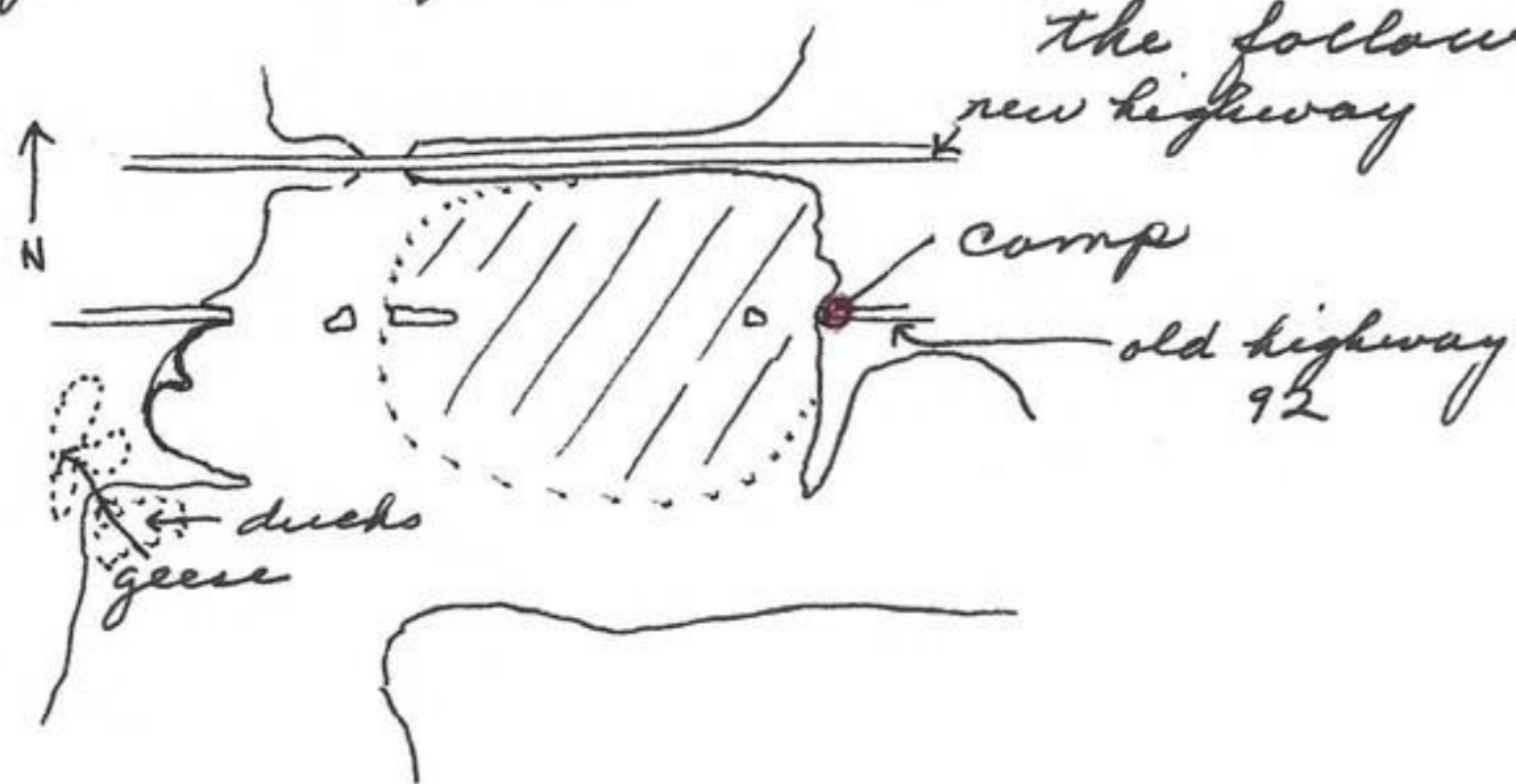
Perry Reservoir, SW corner Old Ozawie, Jefferson Co., Kansas

March 26, 1970

Annette P.M. and I made 3 day trip to the Ozawie area of Perry Reservoir. Used trailer. First camp at above locality at base of east abutment of old bridge (old highway 92). Arrived at about sundown. Lesser scaup ducks and ring-billed gulls were active in immediate area until late twilight and then seemed to quiet down or leave the area. Lake smooth at that time with no wind.

March 27, 1970

Activity started at daybreak with gulls calling and ducks feeding. In the area of the reservoir immediately W of camp from new highway dike to N and as far W as the bridge proper to a point S of the old bridge abutments (old highway 92), recorded



the following birds: The most

common and conspicuous duck is the lesser scaup. These ducks were in localized areas (see map) and numbered approx. 300. They were attracted to within 30' of camp by our dog and at that time

with 20x binoculars could see the most detailed features of the birds. They were all feeding. The ring-billed gulls were associated most closely with these scaup ranging from utilizing plantlife left by the ducks to physical contact and chase of the scaup.

Ring-billed gulls. Approx. 300 birds in area including the resting birds on islands to west (old bridge abutments, the East one with approx 80' of road exposed).

Herring gulls. 3 birds, 2 of them juveniles.

Common golden-eye. 2 males and 2 females.

Shovellers: 8 arrived and feed in area.

Pintail. 2

American merganser. 2 males & 6 females. These birds were individual birds and generally distributed.

Mallards. 2

Godwits. group of 15

Killdeer. 1

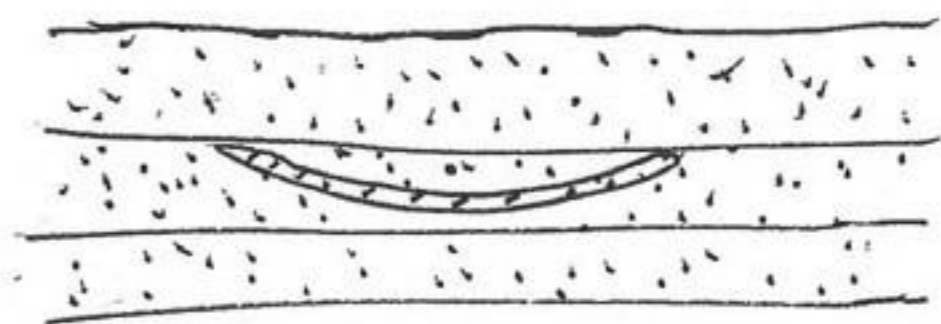
Redhead duck. 4

Canvas back. 20

meadow larks, song sparrows, juncos, mourning doves, red-bellied woodpecker near camp.

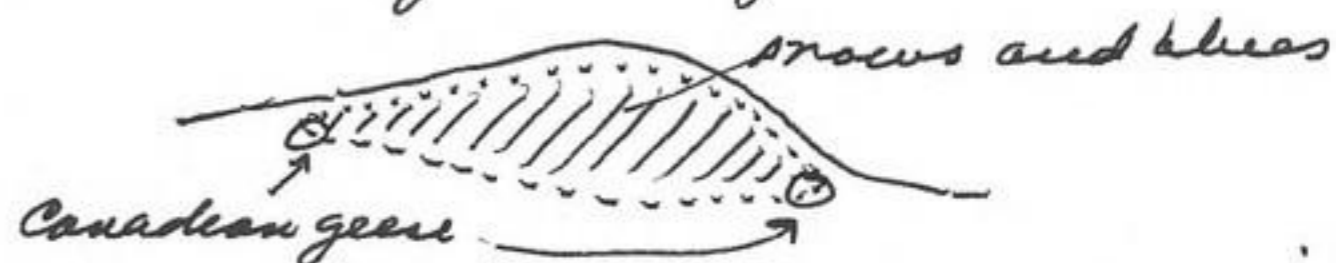
1970-53

On the west side of lake (see map) there were approx. 800 blue and snow geese feeding in fields, 1000 ducks, 250 ring-billed gulls (these are in addition to the ones nearer camp.) Left camp at old town of Ozawie and drove N up over uplands and then down to point where water of lake contacts the road. at this time the water was high enough to cover part of road and made passage by car-trailer inadvisable; other trucks have passed thru the inundated part of road. at this point observed 8 great blue heron in one group. Returned to old Ozawie, thence E to road that goes N to Paradise Point area. The road connecting Paradise Point is under construction. Some exposed cuts should be investigated especially those of loose sandstone, which occurs in stratification and waterlain, and the structures within the sandstones, especially the reddish lenticular layers and other structural inclusions. These are presumably Pennsylvanian in age.



Continued W to the NW corner of peninsula and from here could see approx 60,000 blue and snow geese with percentages of 60 snows to 40 blues. They were directly N across the lake in an inundated field (just S of building (utilily)). They were all in water and resting.

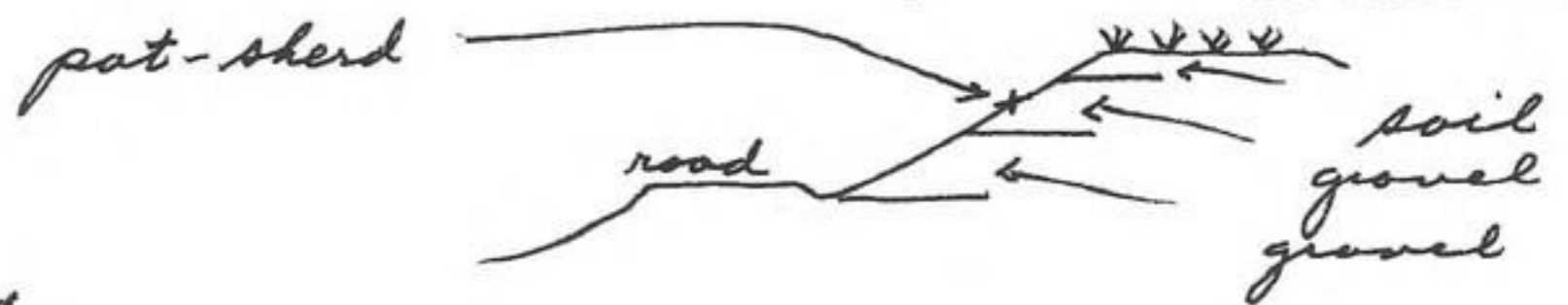
Birds were arriving from the NE, none from the south.



From here we put canoe in water and from a point on N side of old river channel just beyond the N edge, were able to get a close view of these geese. Although partly hidden by weeds, I am surprised that the geese did not leave. They become alerted however. On the two extensions of the flock (W and E) were Canadian geese (approx 50 birds each). Continued up old river channel to Indian artifact site, the top of the bank now about 2 feet above the water. In this area were 28 coot and several hundred mallards (at least 200) in flood field to NW. There is evidence of beaver cuttings but banks too shallow for bank house (underground). There was one bank house of sticks at point beyond artifact site, (down river) in the same position as observed on previous trips down the river. Other birds associated with the river drainage and flooded fields were 30 pintails, 9 shovellers, 18 gadwalls, 2 marsh hawks, 3 crows, song sparrows, meadowlark, 1 flock 26 redwing blackbird and 2 great blue herons. Returned to W end Paradise Point with canoe. On our return from the

river trip there was a change of weather with change of wind from SW to NW with accompanying velocity, and cold temperatures. This change of weather was associated with low scud clouds. Waves on lake to whitecaps. At a point on the W end of Paradise Point at the middle or second turnout circle from the NW point, collected an Indian pot-sherd (no 700327-1) from exposed ^{undisturbed} slope of road grade.

The artefact may or may not have been in place. The top of cut is undisturbed soils.



From this position counted the number of ring-billed gulls flying N-S in lake. It is at this point that gulls reach their northern hunting territory in Berry Reservoir. Some continue N but only a few. It seems that they prefer open bodies of water.

The results are: 2:11 P.M., 1N and 1S; 2:13, 1S; 2:14, 1N; 2:15, 1N; 2:16, 1N; 2:17 none; 2:18 none; 2:19 2N; 2:20 1S; 2:21 1N. At

the SW point of Paradise Point (our old camp site) counted gulls flying up or down lake from the above point to a point NE of Ozawkie (new town). This is the area where many gulls stop and return to main lake to south so many of the gulls listed are repeats. There are, nevertheless many more gulls in this area than W of the W Point of Paradise Point. Starting at

(^{to 2:48})_{2:43 P.M.} (in ^{a 5} minute intervals); SSSNNNSNNNSNSSSSNSSSSNNNS

NSSN SSSSSNNNNNNNNSSNNNNNSSNN 5N SSSSSN or

31 to S and 30 to N. Associated with the ring-billed gulls were

6 Franklin's gulls. Above the lake just S of the main Paradise Point or peninsula were 4 bald eagles, one ^{an} adult and the other 3 in sub-adult plumage. The adult left the other three and gradually dropped to NE part of lake on the shoreline. These birds circled high in the sky. From this point (Camp Point)

noted 2 blue jays, several slate-colored juncos, 2 song sparrows, meadowlark, 2 great blue heron and 2 cardinals. The concentration of ducks were ^{on} the west side of lake SW from our position and numbered approx. 500. Approx. 250 ducks, mainly

lesser scaup were in main bay to S. From here to bridge at Ozawkie could see at least 150 ring-billed gulls flying in all parts of the lake. Left Paradise Point and returned to

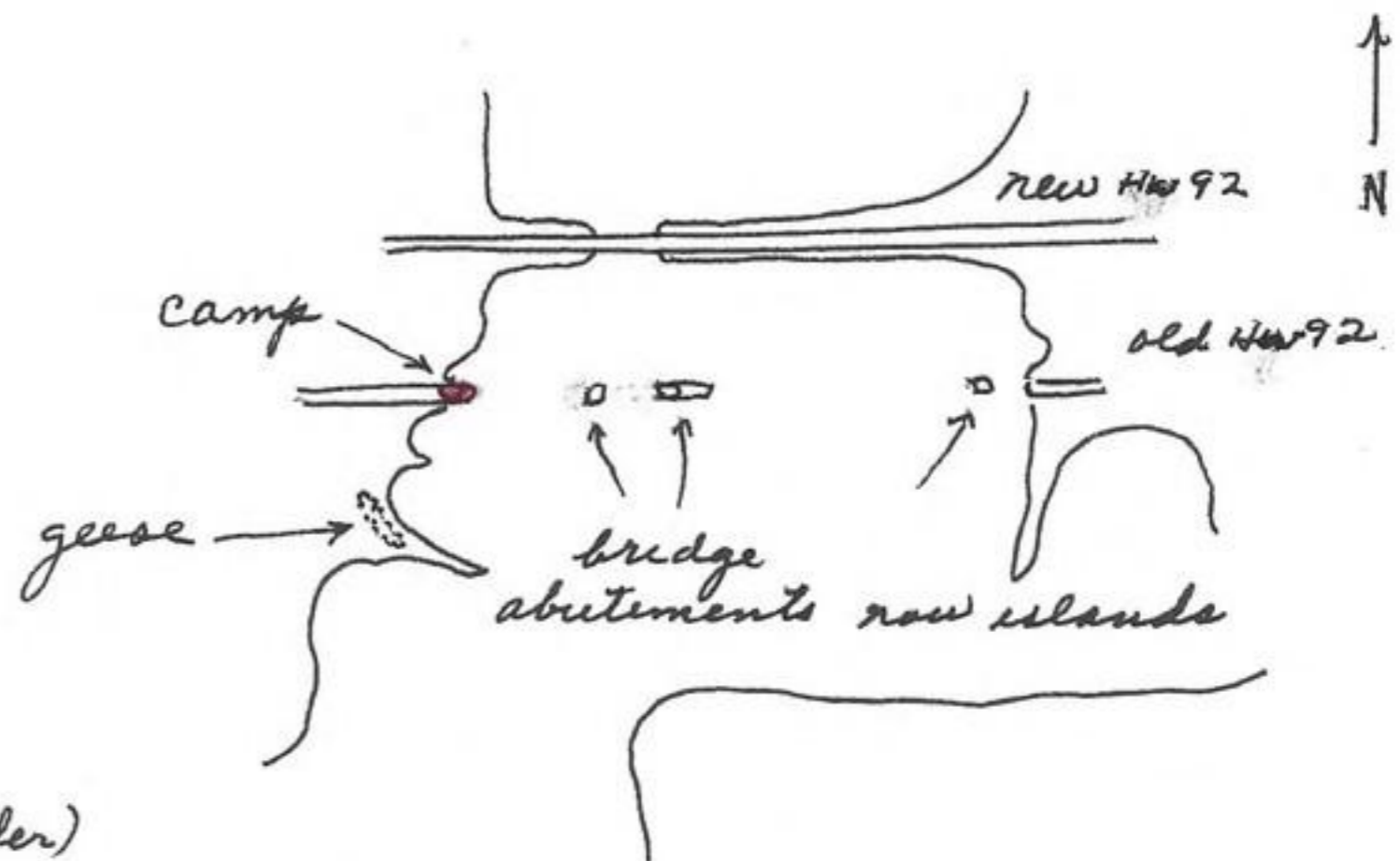
Ozawkie, mainly because of the hazard of being trapping in this area because of pending rain & snow and impassible roads between Paradise Point and the main road to the E. Set up our

camp at the most eastern extension of old highway 92 where road abruptly meets the water of the Lake. at 6:50 P.M., the temperature was 35°F and snowing from NW-N.

The ring-billed gulls left the islands at this time and there was no further activity of the gulls. On the N side of the bridge-dike, the waves were white-cap.

On lee side, the waves were moderate except where wind blew thru (under) the bridge proper.

It was in this area of deeper water over the old river channel and the increased wind action (lee side) that most of the scarp and gull action took place. Snow now just covering the ground.




Perry Reservoir, Ozawakee, Jefferson Co., Kansas

March 28, 1970

Camp as above at end highway 92 where road enters lake. Just shortly after daybreak at 5:50 A.M. (temp 20°F) could hear gulls and at that same time there was an abrupt movement of ring-billed gulls. In every case these gulls were moving N and between 5:50 and 5:51 205 had passed by (all birds counted between camp and ^{to} old Ozawakee across the lake, most birds moving N at about position of bridge). There was a continuous migration and by 6:25, 840 had passed by. Migration ended at 6:30 and by that time 950 had passed. This movement suggested a migration but could have been a movement from some ^{Central} roosting area in Perry Reservoir, to parts of the lake and river to the north. It is questionable ^{whether} that 950 birds were using the lake N of the bridge. Yesterday, at least, gulls did not move south in any numbers as ^{in the case of} the northern movement. By 6:30 the islands immediately E of camp were populated with the usual numbers as of yesterday. The gulls that rest on the island and are the dominant birds in the area are ring-billed gulls. They are characterized by what would appear to be all black primaries (deep black). This condition is more than appearance, and in a majority of cases are actually all black. Those with white markings are inconspicuous and only show under certain flight conditions. There are not many instances of well-defined white spots. These are the dominant group of ring-billed gulls and

1970-56

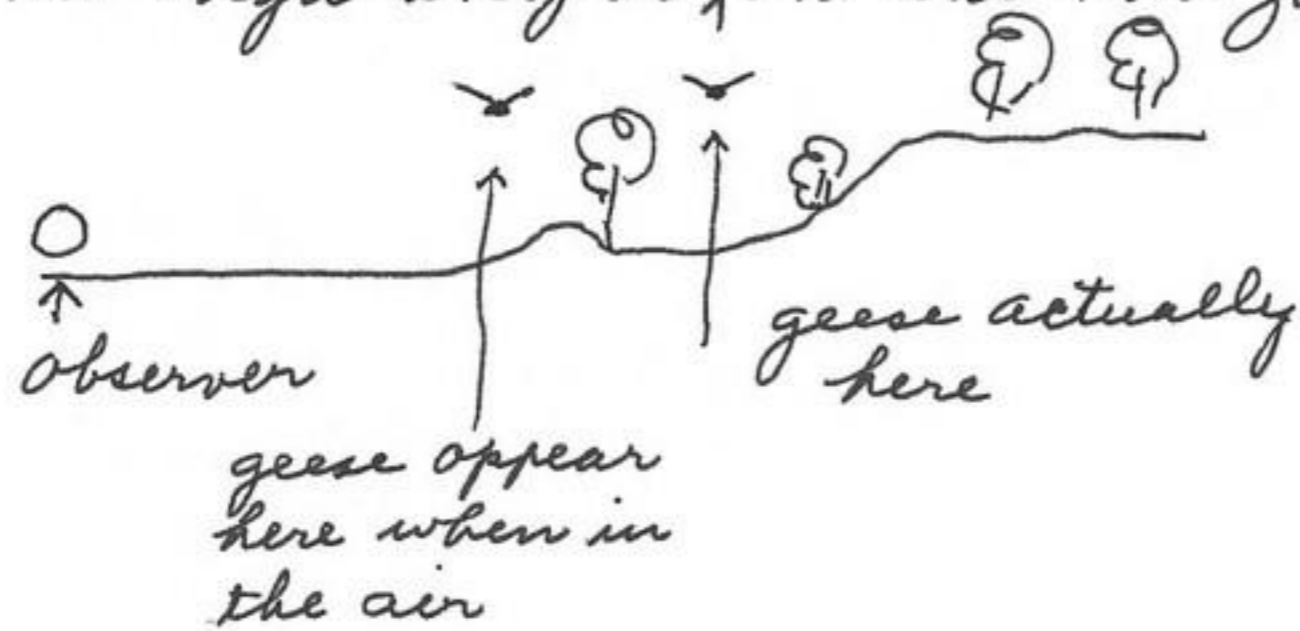
they have adult plumage except the lack of white in primaries, juveniles, of which there are perhaps 2% have lighter intensity of black and definitely without white and with banded terminal bar in tail. There is another group of gulls (10%) that are larger than the dominant gull and they have well-defined white marks in the primaries. These birds are probably full adult ring-billed gulls but at the same time, these gulls merge into the larger adult Herring gull of which there were 6 adults and 4 juveniles. The Herring gull is noticeably larger than the ring-billed gulls and have a tendency to separate from the smaller gulls on the resting islands. They feed with the ring-billed gull ^{over water} without noticeable reaction. I did not see a single Herring gull enter the crowded resting island ^{of the ring-billed} (next to camp) during the period of observation, but other Herring gulls rested on the second island where resting space for gulls was less restrictive. Ring-billed gulls were most closely associated with lesser scaup ducks.

At our camp site counted 1500 separate excreta spots of the ring-billed gull in an area 60' x 20' at the point where the road enters the lake. There were none beyond the 60' length. Spots were separated from each other 

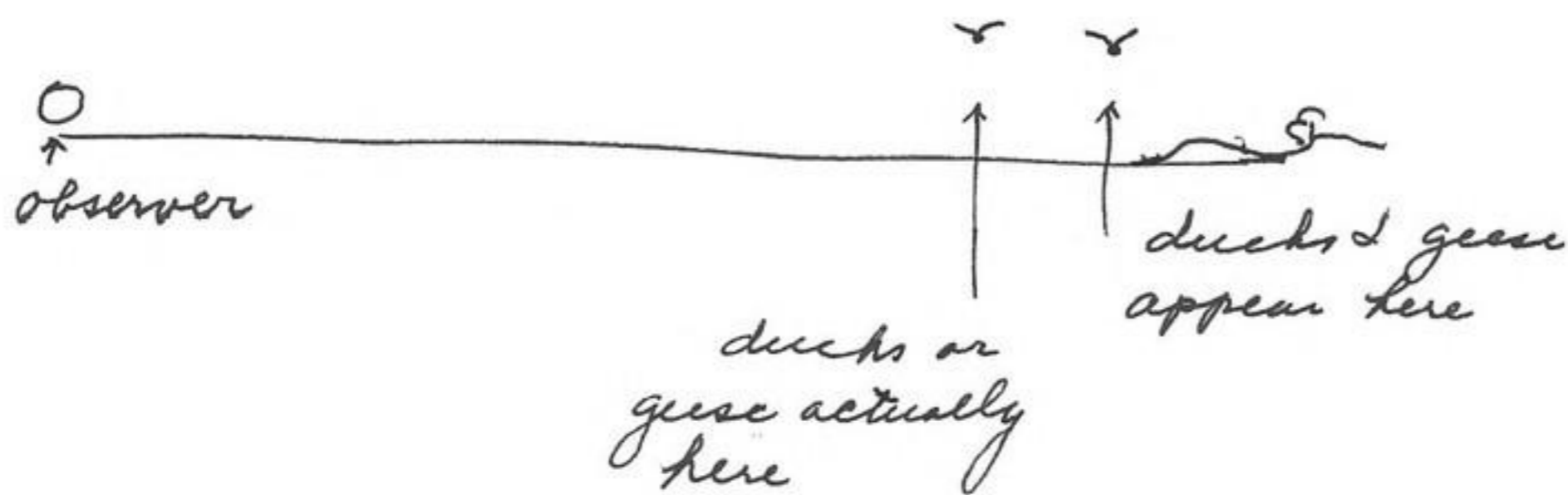
To the west of camp on first island, recorded the number of ring-billed gulls leaving and arriving. I had noticed that there was a constant number of gulls (approx 80) on the island at all times but at the same time, gulls were leaving and arriving. Between 8:50 and 9:05 counted 29 leaving, general as singles or occasional 2 or 3, and 25 arriving, again as ^{single} individual or 2 or 3. at 9:05 the entire gull population (approx 150) left the second island, circled once or twice and then settled back to island. I could not ascertain the cause of this action. The gulls on the first island were not effected by whatever disturbed the gulls on the second island so assume that the disturbance was local and on the lake level rather than from the air. 5 of the gulls that left the second island settled on the first island.

approx 2000
A flock of snow and blue geese, approx 50-50 percentage, rested ~~on~~ in a field SW of camp from early this morning to 10:30 at the time we left. They were mainly resting and on 14 occasions, the entire flock left the ground, circled once or twice over the resting grounds and then settled back again in the same area. In each of these cases, a group of 10-20 Canadian geese initiated the flight and were always the leading geese in the initial flights. As morning advanced the geese would remain longer in the air and move farther beyond the resting

area. at 9:30 the flock left and moved about in a position over Ozaukee. 1/2 of them returned to the resting area and the other 1/2 continued N at a altitude of about 600'. At 9:55 a flock of approx. the same size as the one that moved N at 9:30, returned to resting area. The original flock of 2000 were still in area at 10:30 when we left. At one time 8 Canada geese left flock and alighted in water and swam SE into middle of lake. Red-tail Hawks cause reaction in the flock of geese to the point of warning calls and some air flight. Marsh hawks less so. It is an interesting observation that geese appear nearer than they actually are when relatively near and with a background of trees and hills. It was my experience this winter when observing ducks and geese at a distance and over ice and less contrasting background that the birds always appeared farther away (while in air above the horizon) than the actually were. There may be some relationship of this phenomenon with the relatively size of the moon when viewed in high sky or ^{when} on the horizon.



This relationship is especially true when geese are ^{close} with a skyline background and as soon as they move into a background of trees or hill they present their true position.



In this relationship on a broad exposure of ice or lake and a minimum of background, the birds appear farther away than they actually are and come into proper perspective only when they have a background of terrain below the horizon.

Other ducks and birds in the area include:

Lesser scaup. The common duck and in bay area S of Ozaukee bridge would total approx. 300 birds. They formed loose flocks of about 40 birds, some small groups of 6 or 7. The ring-billed gulls were most closely associated with this duck than

with other kinds of ducks.

Godwall. Approx 80 feed in nest bay to west from camp. Gulls did not seem to interfere with this species.

Coats. 40 mixed with godwalls. They extended their group to small bay next to trailer (5-15 individuals) but then returned to main group. At this time American and European baldpates (3) followed the coats and worked closely with the coats for any plant life brought to the surface. The baldpates, especially the European species trailed the coats about 1 foot behind.

Baldpates. Approx 15 American and 3 European. One one occasion a European male came to within 50' of the trailer and with 20x binocular was able to observe the bud as if in the hand.

Pintail. approx 12 birds in area.

Buffle head. 2 males and 4 females associating mainly with scaup but many times were alone.

Ruddy ducks. 2 males and 3 females in one group remained in the general area.

Mallards. 5 in bay to west with godwalls.

American merganser. 3 single males, 2 group of pairs. They are generally distributed and not flock forming as in winter.

Ring-necked duck. approx 30 in area.

Red-billed grebe 3 individuals in area

Canvas back duck. 6 individuals 2 males 4 females in area.

Shovellers. 2 groups of 6 each.

Crow. 2

Downy woodpecker. flock 12 and 18 killdeer. One robin

marsh hawk. Between daybreak & 10:30 a marsh hawk hunted on peninsula on 6 occasions in somewhat the same pattern. There is probably only 1 marsh hawk in area. The marsh hawk will displace the ringbilled gulls.

It is my estimation that the adult Herring gulls are more of a scavenger and hunt for surface debris, than is the ringbilled gull that has a commensal relationship with other ducks, especially the lesser scaup.

Left camp 10:30 A.M. at a pond between Oskaloosa and Lawrence (Tonganahie turnoff) nat 62 ring-necked ducks and 19 lesser scaup in a farm pond of approx 2 acres in extent. These ducks were the only species in pond. Redtails fewer than in winter at least it is true today. 2 sparrow hawks and 2 loggerhead shrikes also observed between Oskaloosa & Lawrence. This trip the last 3 days has been cold, snowy & windy. Trailer low handle at least 20°F
Lawrence, Douglas Co, Kansas
April 1, 1970 3-5 inches snow & breeze temperature...

Lone Star Lake, Douglas Co., Kansas

April 11, 1970

Annette P and I camped at Lone Star Lake this afternoon and evening. Mary was to sail but wind too strong. In afternoon made trip to E from Camp site on ridge above concessions area to the drainage leading into the east arm of the lake, travelling on top of ridge. Near camp is a relatively deep gulch that parallels the S side of valley.

Several well developed animal trails on N side gulch connecting several holes and is associated with the camp dump site. Under an old boat on top of ridge were

2 ~~egg~~ Blarina. Continued to drainage to E and returned by road.

Only 1 coot in E arm of lake, mainly because of human interference. Conceded to area of Carelatus residence but no fish taking flies (artificial)

April 12, 1970

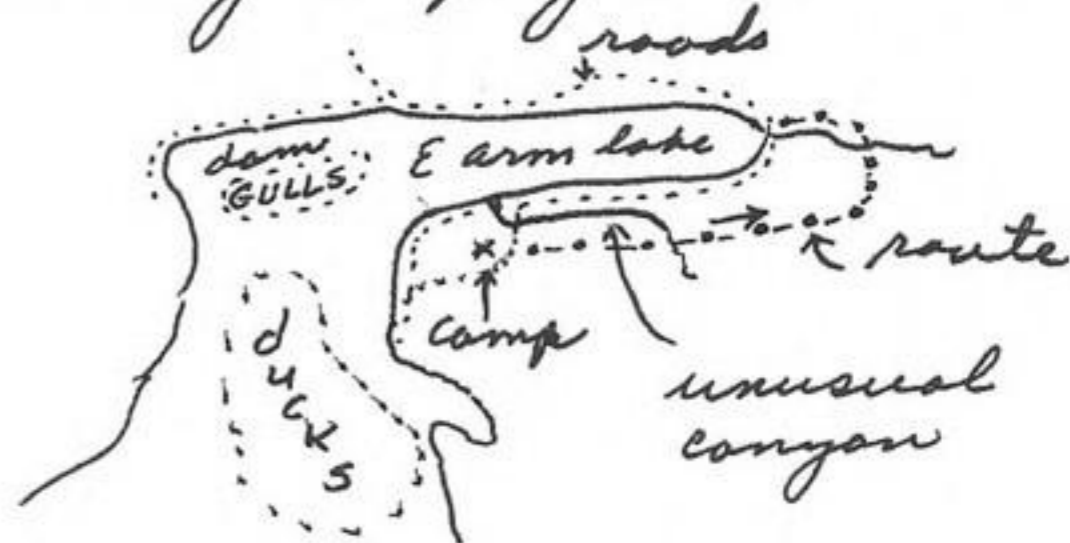
High wind last night and this A.M. (from SE). At 6:30 A.M. checked the duck population on the lake. There were no humans at or on the lake at this time. The ducks were in the center of the lake, as indicated, and some nearer shore on east side.

Lesser scaup. 106 by count of males and females. As I approached the lake, they moved south for 1/10 mile and formed a closer formation. They seemed to be resting rather than feeding.

Red-breasted merganser. Original flock of 2 ♂♂ and 7 ♀♀, later joined by 10 ♀♀ and 11 ♂♂ making a total of 30. These birds were feeding, moving about the general area of the middle of the lake (nearer the west side however, in greater wave activity) and were courting. The last action was noticeable more conspicuous and pronounced than the behaviour of the American mergansers of Perry Res of this winter. The males extend their neck and head upwards at which time the dark band on chest is clearly identifiable. The crest is more conspicuous than is the case with the Am. merganser, especially when the wind blows from their backs. These mergansers maintained their group unity although other species of ducks (notably the gadwall) joined and later left them. These mergansers at one time became a part of the raft of scaup ducks but still maintained their group identity. The gulls were not concerned with these mergansers.

Baldpate. 3 groups totalling 35 birds were in the area. The group population changed from time to time.

Shoveler. 13 birds in 2 groups in area. They mixed with other group



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402 Yorkshire, Lawrence, Douglas Co., Kansas

April 23, 1970

Following photos of James R. Bee before haircut.

700423-1 J.R. and his guitar

700423-2 " " " "

700423-3 J.R. playing guitar.

always recombined to continue as a group.

Green-wing teal. 2 birds on a log near shore.

Blue-wing teal 18 in 2 groups, mainly ♀♀. They spent considerable time with the scaups.

Gadwall. 5 birds of 2 groups of 2 birds each and 1 single that alighted in merganser group but left by swimming toward the roft of scaups.

Crat 1 group 50 and one of 6

The ducks always seemed to maintain their group identity, even though they periodically joined other groups for a short time. For instance the blue-wing teal would merge with the scaups, which maintained the best group formation, and then would reform and swim away as a group.

Ring-billed gulls. 4 arrived from the N at 6:45 and hunted the area just S of dam. Later they were joined by 8 others.

Pied-billed grebes 2 in east arm.

Turkey vultures. Three soared in air just N of dam.

Crows 3 in area.

Redwing blackbirds A few small flocks flew from E to W across lake.

Cardinal, redbellied woodpecker, redheaded woodpecker, robin, goldfinch, Carolina wren, mourning dove, bluejay, titmouse, black capped chickadee, and eastern bluebirds also on land at Lone Star.

Last night a warm temperature was associated with the change of wind from the W to the SE. Also observed that the greatest contamination of Lone Star Lake is from 2 or 3 cattle-stock farms adjacent to the lake, one particular one on E side of lake which is on a drainage that has been completely denuded by pigs and contaminated by cattle as well as the pigs. Except for the trees, the entire drainage has been denuded of vegetation and the shallow root systems of all the plants.

Lawrence, Douglas Co., Kansas

April 19, 1970

Chimney swifts in area (402 Yorkshire) for first time this year. There were approx. 30 in area at 4:30 P.M.

April 20, 1970

← Occasional swift in area but not in same numbers as of yesterday.

Sand Pit Lakes, NE Lawrence, Douglas Co., Kansas

April 26, 1970

Checked these lakes at 9:00 A.M. 26 cars and 4 boats, making these

Lakes intolerable to usual populations of ducks. In lake nearest
turnpike noted 24 American Coot, 4 pied-billed grebes and 7
blue wing teal.

The sequence of grebe behaviorism was to catch and eat a fish,
most fish of a size causing considerable manipulation in eating.
Immediately after swallowing and for about 3 minutes the grebe would
occasionally lower bill into water for 5-10 seconds. minimum activity
for 5 minutes, then a period of preening feathers and then resting
and sleeping in or at edge of emergent vegetation. Grebes hunt
patches of Chara and are constantly moving, thrusting at a fish
with bill and head under water with occasional complete submergence.
Sometime they used feet extended laterally, not so much for swimming
as an organ of disturbing the water to control the movement of fishes.
These birds, when hunting for fish, are constantly moving. The coot
are active but remain at site of Chara collection and feed with bill out of
water. The blue-wing moves more than the coot but less than the
blue-wing grebe and feeds with bill approx. 1/2 submerged.

Lone Star Lake, Douglas Co., Kansas

April 26, 1970

noted approx. 50 dead gizzard shad (*Dorosoma cepedianum*) at
east end of dam; some still alive and moving irregularly thru
the water. Size range from 5" to 16". Spotted sandpiper along
rocks.

Lawrence, Douglas Co., Kansas

April 27, 1970

marked duplicate reprints as follows:

- 1. 35/1 Frogs and Toads of Costa Rica
- 2. 38/11 Contribution Herpetology Thailand
- 3. 44 Lizards of Thailand
- 4. 45 Serpents Thailand & adjacent waters
- 5. 65 Amphibian Fauna Thailand
- 6. 34/1 Brief Review Snakes Costa Rica
- 7. 35/1 Frogs and Toads Costa Rica
- 8. 38/1 Review Lizards Costa Rica
- 9. 36/2 Further studies Serpents Costa Rica
- 10. 36/14 Eumeces
- 11. 34/11 Salamanders and Caecilians Costa Rica.

1970-61

Perry Reservoir, Jefferson Co., Kansas

May 3, 1970

Left Lawrence (402 Yorkshire) at mileage 95.7 at 8:20 A.M. Day clear and cool. Last 2 days have been cold (frost) at night. Slight wind from the south. Will follow highway 24 to Midland, thence right to Ozarkie via Okaloosa. Mileage at junction 24-59 at 62.6 8:30. Will keep complete list of birds between here and Ozarkie. These birds are within 100 feet of each side of road. At junction were 2 starling. ^{62.8}~~62.6~~ 2 Eng sparrows, 1 grackle. 62.9 4 Eng sparrow. 63.4 3 male & 3 female redwing blackbirds. 63.7 ♂ + ♀ redwing. 63.9 2 mourning doves, ♂ ♀ redwing blackbird. 64.0 2 redwings. 64.1 redwing. 64.5 Midland, now to right. 64.5 redwing 65.1 opossum rd kill, 3 goldfinch and 2 redwings, 2 bobwhites crossed road. 65.9 2 cardinals, 66.0 2 starling. 66.8 3 grackles, 2 redwings. 67.2 barn swallow, 2 redwings. 67.6 2 Eng. sparrows, red-bellied woodpecker, robin. 68.2 4 grackles. 69.4 meadowlark, 2 ♂ redwings, cricket frogs calling. 4 turkey vultures soaring above ridge to W, 2 Eng. sparrows. 70.2 dickcissel. 70.7 robin, ♂ redwing, cowbird, 71.3 3 barn swallows, Eng. sparrow. 71.9 top plateau. 73.0 meadowlark, grackle, redwing. 73.5 ♂ ♀ redwing. No ducks on ponds. Bobwhite called. 73.8 meadowlark. 73.9 cowbird, 2 grackle, dickcissel, redwing. 74.4 redwing, meadowlark, meadowlark. 74.9 2 meadowlarks, 2 Eastern Kingbird, robin, loggerhead shrike. 75.3 yellow-stooped woodpecker, meadowlark. 76.0 meadowlark. 76.2 2 Eng. sparrows, 2 grackles, 76.5 2 meadowlarks, dickcissel, 2 mourning doves. 77.0 3 ♂♂ redwings. 77.3 road turnoff to McCloud but continuing w. 2 grackles, meadowlark. 77.9 loggerhead shrike, opossum road kill. 4 Eng sparrows. 78.2 5 Eng sparrows, robin, fox squirrel road kill. 79.3 2 meadowlarks, 2 ♂ redwings, 2 grackles, 79.7 2 grackles, 2 redwings ^{♂ & ♀}. 80.8 brown thrasher, meadowlark. 81.1 junction 16 and 92. meadowlark, 5 grackles, meadowlark, 5 grackles, 2 grackles. 81.7 2 Eng Sparrows. 82.0 Junction 92 at Okaloosa. 82.4 2 grackles. 83.0 ♂ redwing. 83.7 barn swallow, opossum road kill. 84.1 ♀ redwing, meadowlark. 84.5 ♂ ♀ cowbird. 84.9 bluebird (eastern). 86.4 4 Eng sparrows, barn swallow, 87.3 meadowlark. 88.1 ♂ redwing, redwing. 89.8 grackle 90.3 3 Eng sparrows, 2 starling. 91.1 bridge at Ozarkie. There is an increase in water level since last trip here. The old bridge abutments are now restricted to a yard or so area on either side of just above water on E side of the old channel. The road is completely inundated and crowded farther to W. This road, as it enters The lake, is used by the gulls as a resting

area. Continued w. 91.8 2 0' redumps, Baltimore creek, eastern Key-
 bird. 92.0 now to S. 2 cowbuds. now to E and stopping at 92.5
 about 200' w of point where this old road enters the water. From here
 can see a double crested cormorant, 43 am. coot. 21 ring-billed
 gulls, 2 Herring gulls, 4 bluewing, 1 mallard, 2 lesser scaup. ^{3 forest tern}
 2 meadowlarks singing on bridge dike. One spotted sandpiper
 and 2 sandwing feed on road where water was being forced
 on the surface by wave action. From 9:20 to 10:15
 observed a group of gulls at end of road consisting of approx 18
 ring-bills & 2 Herring gulls. They were resting and feeding and
 although gulls were arriving and leaving, the population on the
 resting grounds remained about the same. ^{at any one time} One to two birds (gulls)
 in the group were feeding on small fish (bullheads ^{avg} over 3 inches
 long. These fish, all alive, were picked up either at the edge of
 the water (splash zone) or out over the water where they picked them
 up from the surface and returned them to land. In all cases they
 were alive but could have been in the latter stages of death. In
 winter, gulls are voracious and will rob any other bird or gull for
 food. In spring, a gull can land and walk thru the group of gulls
 at rather close contact without being challenged except only occasionally.
 There are so many dead winter kill fish (mainly small shad but bullheads
 and other kinds) that gulls ^{are not} hungry. A small bullhead is killed and
 softened by repeatedly forcing bill closed in area just back of the head,
 after each time of manipulation the bird is dropped to the ground, prefer-
 ably in shallow or at least a wet surface. One carried a fish 15'
 over dry road to edge of water. The gulls are adept at retrieving fish
 if wave action carries the fish beyond their immediate reach. After
 a period of 6-10 minutes the fish is taken into mouth and placed in
 position for swallowing. If it is not just right the fish is
 rejected and billed several times more and then tried again for
 acceptability. After an average of 5 tries, the fish is swallowed
 whole. Two or three thrusts of the bill into water with head down
 completes the act. The gull will then resume resting position. One
 however, immediately pick up another bullhead and started the feeding
 act. Ordinarily one gull will complete the feeding manipulation,
 but occasionally the same fish will pass from one to as many
 as 3 other gulls, each testing the fish for palatability. Noticed
 one gull leave a fish after 6 minutes. These behaviours were
 were by ring-billed gulls. The Herring gull is more direct in
 feeding and is not as delicate a manipulator as the ring-billed
 gull. Although waves were only about 8 inches high (no white-

Caps, the gulls arrived and departed into the wind. The bill of the herring gulls (juvenile) is like the ring-bill in relation to black band at end. The size of the legs are noticeable different. Out of a group of 36 American coot, generally distributed in area mainly to S, 24 of them were feeding of dead (white & colorless) shad. They would pick up a shad (3-4" long) and shake until fragmented. The head and guts were first consumed, the tail the last. The last 1/3 of fish (tail end) was consumed as one piece. As the operation continued the buoyancy of the fish decreased and by the time the tail was ready for consumption the bird was forced to probe deep into the water. Coot could be seen hunting the shoreline and after picking up the dead fish the coot would swim out 20' into open water before feeding on the fish. The Forster's tern (3) alighted on a emergent log adjacent to the colony of ring-bill gull. At one time a sandpiper left the splash area of road bed and moved into 3' high vegetation along the roadbed where it fed systematically on insects of the weeds. A spotted sandpiper joined this sandpiper. Left at 10:55 because 3 people arrived by car and in inspecting the end of the road, dislodged the gull and coots. At Old Ozaukee there were approx. 35 camping trailers or tents. In winter & early spring there are no campers or people in area. At this time could see at least 5 motor boats in lake. Two redtails circling above ridge just E of Old Ozaukee. Continued N on regular route, leaving at mileage 96.7. Will keep complete record of this segment. 96.8 meadowlark, 3 Eng. sparrow, meadowlark. 96.8 meadowlark. 97.1 2 grackles, mourning dove, meadowlark, meadowlark. 97.4 2 cowbirds and 2 meadowlarks, 2 Eng. Sparrow. 97.6 meadowlark, meadowlark. 97.8 dickcissel, dickcissel, meadowlark. 98.0 dickcissel, 98.1 dickcissel, 2 lark sparrows, Chipping sparrow. 98.5 Pleasant View Grange no 1459. 99.0 3 Eng sparrow, meadowlark, Chipping sparrow. and turnoff to Paradise Point. 30 grackles, meadowlark, 2 Baltimore Oriole. Road bed now graded except for some side slope work. 99.5 meadowlark. 00.2 5 Eng Sparrows. barn swallow, 00.4 meadowlark, 2 Cowbirds. 00.7 main paved road of Paradise Point at point where left hand lateral goes S to turnaround (old county road). meadowlark. 01.5 bluebird. 01.9 dickcissel, cowbird (2), 02.7 meadowlark, 02.4 west end of Paradise Point. American Coot, and 2 forster's terns

1970-6-1

are the only aquatic birds in the area (w end Paradise Pt.) at the Camp Point (our old campsite, SW end Point) noted 43 double Breasted Cormorants flew N past point at some 100' from shore, or close enough for hunting with bow and arrows by early Indians. I have noticed that these point permit close contact with ducks as they pass up & down the reservoir. It is such points as these that Eskimos shoot ^{chipping sparrow} sides at Point Barrow. meadowlarks, ^{chipping sparrow} Baltimore Orioles, ducks and cowbirds most conspicuous birds at Camp Point. At this point noted 18 shad fish kill on rock jetty. 2 bull heads were in this group. The shad averaged 4 inches long. 2 pied-billed grebes, 8 crows and 10 blue wing teal were in adjoining bay just SE of point (this side of old dike which now is just about entirely submerged. Left area at 12:20. Noted that cowbirds are on this peninsula and did not see redwing or grackles. N of peninsula the fields are now flooded but the river maintains its identity as a meandering waterway. I am not keeping complete census on return as it would be duplicate but did not see 2 bluejays & 2 redtail on peninsula. 09.4 leaving at road cuts just east of peninsula checked formation and found the massive sandy rocks are ^{water} stratified. The mica (white) is conspicuous in these sandy soils. Inclusion of synclines are variegated stratifications of colored sandstones with the same frequency of white mica. Fossil stems are in these inclusions.

Continued S to main Ozawie road and at 09.4 (12:50) started S. will keep complete census to dam but with cars about every 1/10 mile and dusty road impossible, doubt whether the census will be significant. The people, for some reason are out with trailers and boats and as joy riders, as if it were one of the special holidays. This impetus is correlated with ^{good weather and} the first change of using the lake since winter and is correlated with the release of winter confinement. This interest generally tapers off before it again increased later in the summer.

10.2 Little Slough Creek bridge, water 1/2 of sandy channel. 11.3 Top of hill, 2 Eng sparrows. 11.8 Jayhawk Camp turnoff. 11.9 meadowlark, 13.0 meadow-lark, 13.9 crow. 15.0 Slough Creek turnoff. 15.7 Cattails on left are 1 1/2 feet high. 16.7 Slough Creek bridge, 18 boats on water to west. Birdlife uncommon on this route today, probably because of heavy and fast traffic.

18.8 dickcissel. 19.1 SE entrance Park area. 19.6 2 dickcissels.
 20.1 E end dam, bobwhite calling to left, meadowlark. From
 here can see 32 boats in lake. 20 coast ln. 2 + 3's between
 E end of dam and gates and feeding on water near shore. 20.6
 cowbird in road on top. 21.0 gate and water now 1 inch from
 making an island. 10 coast between gate (water gate) and W end
 of dam. 21.6 W end dam. Not a single gull in area. 22.7
 hawk at valley level and to E. 23.1 2 barn swallows,
 meadowlark, 3 Eng. sparrows. 22.4 2 grackles. 22.5 4
 Eng. sparrow. 23.6 main road and now E along base of dam.
 robin. 23.7 dickcissel. redtail on top of post, meadowlark.
 24.1 redwing, 2 meadowlarks on dam slope 24.3 outlet,
 dickcissel. 24.6 top outlet. 24.7 meadowlark on dam slope, 25.1
 redwing. 25.6 redwing, dickcissel. 25.3 meadowlark, dick-
 cissel. 25.5 administration turnoff, meadowlark. 26.0 meadow-
 lark, meadowlark. 26.3 SE entrance and end of census.
 On way back to Lawrence noted a mockingbird on Little
 Wild Horse Creek E of SE entrance. Creek low.

Lone Star Lake, Douglas Co., Kansas
 May 15, 1970

Made the following observation at Lone Star Lake from 1/2 hr
 before sundown to 1/2 hour after sundown. Birds in area:

great blue heron. 3 in lake area and 2 flew over from
 SE to NW.

black duck. In south end of bay and may be nesting there.
 coast. 8 on lake.

woodduck. Two at south end of lake at entrance of drain-
 age.

spotted sandpiper. 2 observed.

turkey vulture. group of 5 flew by along top of ridge.

redwing blackbird. 8 in cattails at S end bay. The
 cattails are one-half the height that they will be later this
 summer.

whip-poor-will. 3 calling at various parts of the lake.
 The call is a sharp first note, sometimes inaudible, and two
 notes following, the last accented 't-poor will'

The blue gull and green sunfish are generally distributed
 and seem to be larger than last year.

Baltimore oriole. Common call in area and perhaps
 the dominant one..

Lone Star Lake, Douglas Co., Kansas

May 17, 1970

Saturdays and Sundays at this lake is like a 4th of July. The car traffic is so heavy that dust settles in and on some arms of the lake to make the area uninhabitable, the dust getting in one's eyes and lungs. Paving these roads should be placed on high priority. Because of the great numbers of people using the picnic areas there were none of the larger herds, observed yesterday, in the area. The singing of birds were interrupted considerably.

Lawrence, Douglas Co., Kansas

May 21, 1970

Recorded the following information from an informant who lives in the Elk Creek - Richland area of the Wakarusa valley.

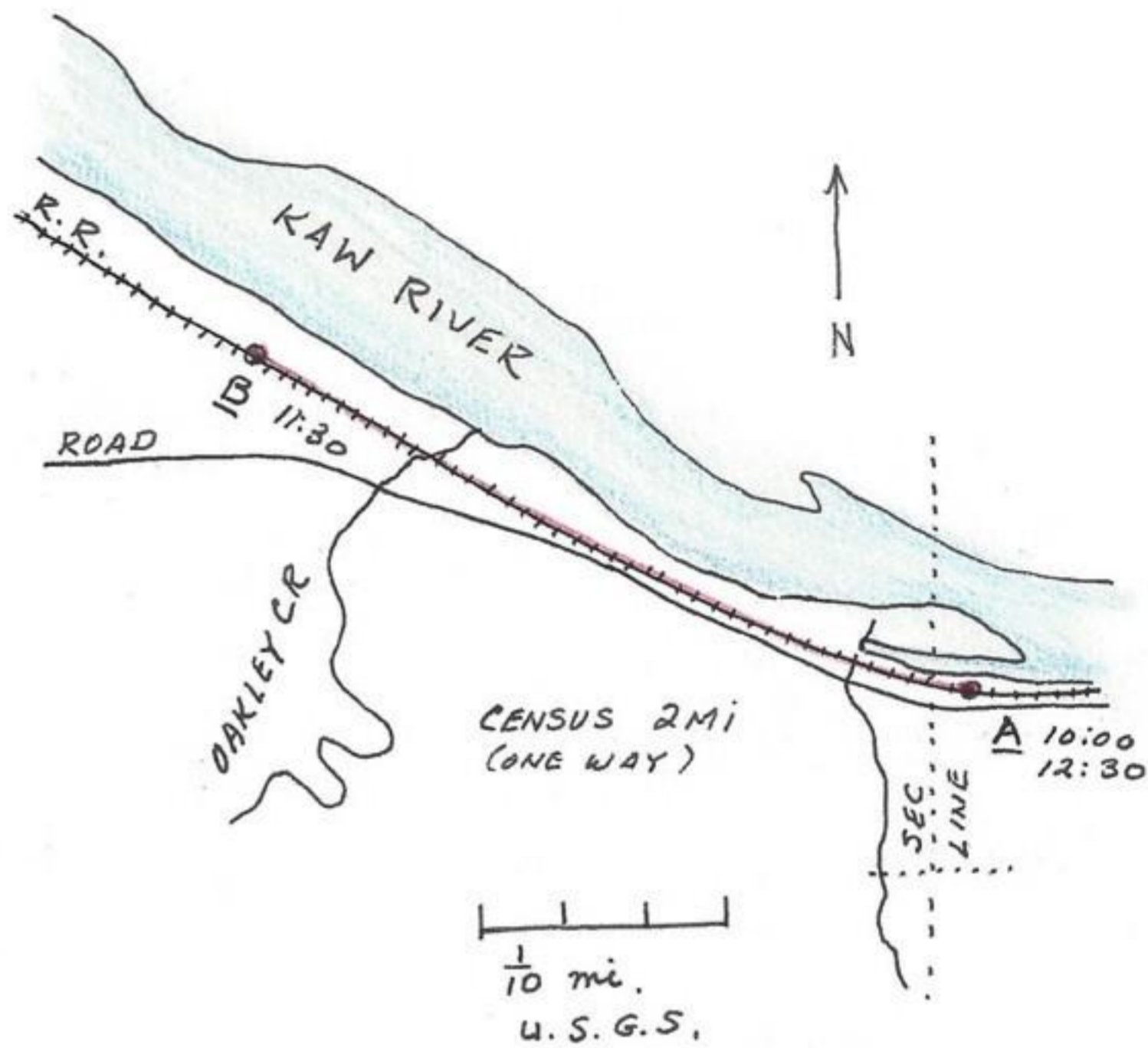
- (as of May 21)
1. Approx. 110 nests of the great blue heron, (usual colony along Wakarusa at the Shawnee - Douglas Co line) support young. Last year he claims the young fell into the creek. There are from 5-8 turkey vultures that roost or rest during the day in the same large sycamore that support the great blue heron nests. When a vulture gets to near a nest, the heron will walk out on the limb toward the vulture and, in some cases, will come into bodily contact with the vulture to drive it away from the nest.
 2. raccoons have young following them along the river.
 3. deer come to water from the north side.
 4. a fox squirrel follows one along the river and appears as if tame.
 5. Approx 3/10 mi up river from colony is a beaver dam across the river. Carp are moving up thru narrow channel thru dam.
 6. Blue Catfish were common in Wakarusa years ago but are rare or even absent but there are a few in Rock Creek and in Stranger Creek.
 7. Gar are rare in the Wakarusa but years ago were common and were found moving up all the small lateral drainages of the Wakarusa.
 8. He has never seen a mud-puppy (neoturus) on the Wakarusa in recent years but did observe one near Lakeview a few years ago.
 9. Channel cats common in Wakarusa and last week caught 60 lbs in one day.

Lakeview area, Douglas Co., Kansas

May 30, 1970

made census of birds along railroad tracks (Santa Fe) from an area w of Lakeview where Kaw River approaches side of valley. Hillside and some valley represented and mainly riparian, deciduous forests on hillsides and open fields. Day hot and sunny. Started from point A on map and included census at point B. Listed kinds of birds and mammals observed between A & B and after trip made an estimate of the numbers. Birds recorded as first observed:

mourning dove	5
cardinal	8
peewee	5
cowbird	20
turkey vulture	6
bobwhite	6
yellow-throated Chat.	1
eastern phoebe	3
indigo bunting	45
yellow-billed cuckoo	4
bluejay	5
Baltimore oriole	25
brown thrasher	2
red-headed woodpecker	4
red-winged blackbird	8
titmouse	4
red-eyed vireo	1
crow	1
Bells vireo	3
blue-sided flycatcher	1
downy woodpecker	1
eastern bluebird	1
house wren	3
red-bellied woodpecker	8
Eng. sparrow	4
black-capped chickadee	1



rough-winged swallow	2
starling	2
goldfinch	3
eastern kingbird	2
barn swallow	1
great-crested flycatcher	2
gray squirrel	1
<u>TOTAL. 32 BIRDS.</u>	

General observations:

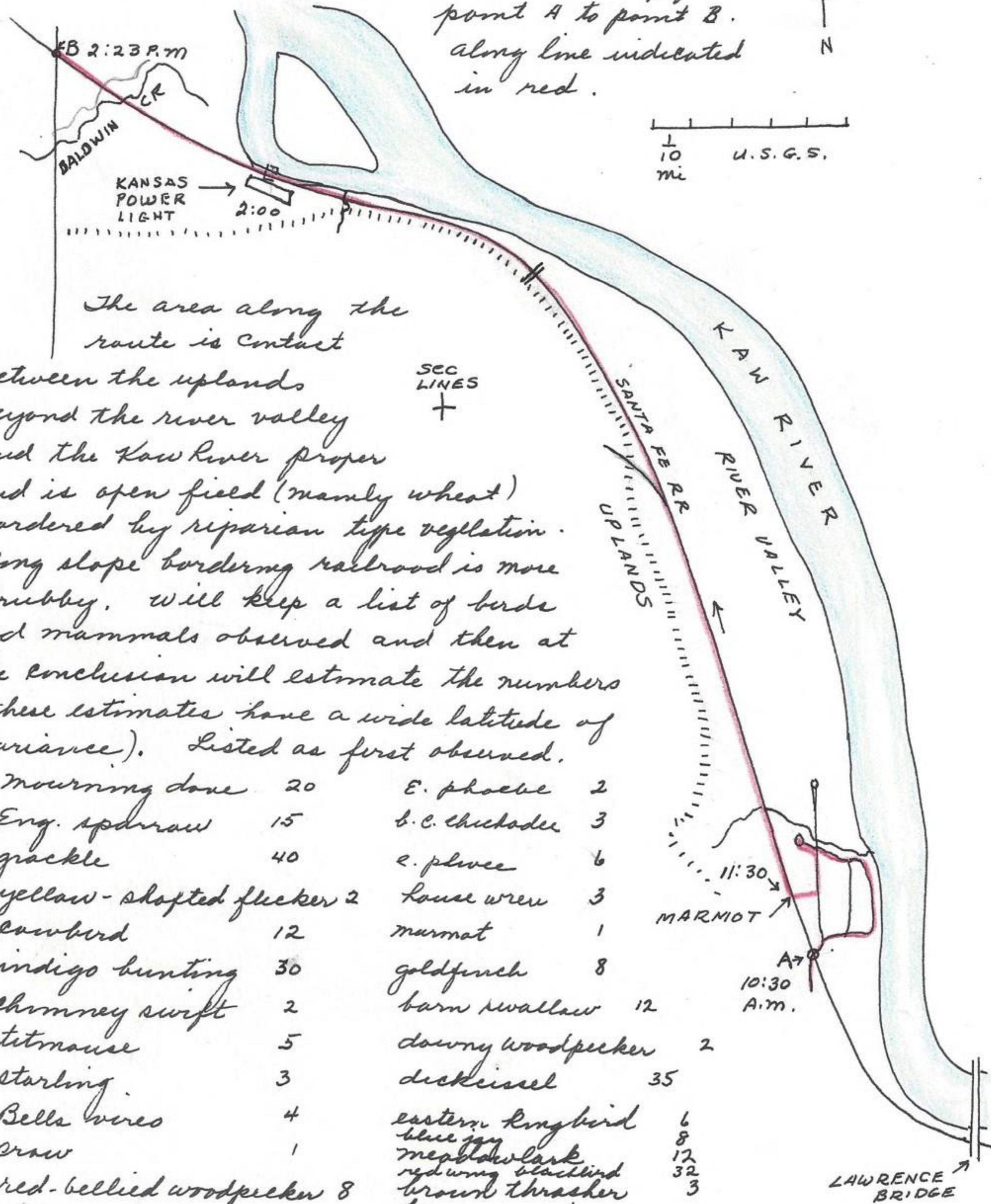
Phoebe feeding young (in nest)
 Birds in mulberry tree and feeding on fruit: goldfinch, Baltimore oriole, indigo bunting. Fruit 50% ripe.
 Indigo bunting has call like cardinal (warning chirp).
 ♂ indigo bunting attempted copulation with ♀ by gradually lowering onto back of ♀ by flight from 2' above.
 One call of yellow-bellied Chat like redwing chirp, one of the varied but distinct calls is whoa. Fewer birds on return. No trains passed during census. Train bells mainly oppressive.

Kaw Valley, Lawrence area, Douglas Co., Kansas

May 31, 1970

made census of birds and mammals from A at Lawrence Water Works to B some 6 1/10 mi w of Kansas Power and Light Co. Census 3 1/2 mi. and 18 1/10 mi return to 402 Yorkshire. Census only from point A to point B.

along line indicated in red.



The area along the route is contact

between the uplands beyond the river valley and the Kaw River proper and is open field (mainly wheat) bordered by riparian type vegetation. along slope bordering railroad is more shrubby. will keep a list of birds and mammals observed and then at the conclusion will estimate the numbers (these estimates have a wide latitude of variance). Listed as first observed.

mourning dove	20	E. phoebe	2
Eng. sparrow	15	b.c. chickadee	3
grackle	40	e. phoebe	6
yellow-shafted flicker	2	house wren	3
sawbird	12	marmot	1
indigo bunting	30	goldfinch	8
chimney swift	2	barn swallow	12
titmouse	5	downy woodpecker	2
starling	3	duckissel	35
Bells vireo	4	eastern Kingbird	6
crow	1	blue jay	8
red-bellied woodpecker	8	meadowlark	12
robin, eastern	4	red wing blackbird	32
Baltimore Oriole	26	brown thrasher	3
Cardinal	8	orchard oriole	3
		great Crested flycatcher	2
		bobwhite	5

field sparrow	1
blue grosbeak	1 ♀
loggerhead shrike	1
yellow throat	4
catbird	2
fox squirrel	2
olive-sided flycatcher	1
redtail hawk	1
great blue heron	1
killdeer	2
eastern bluebird	1
yellow-billed cuckoo	2

TOTAL 42 species birds
3 mammals.

These estimates are to show relative numbers only.

General Observations:

One song of the cardinal is different than the usual with same note repeated and a rough note at end.

Downy woodpecker feeding young in nest hole. Young are not at entrance as yet.

Birds leave telephone lines in this order (at my approach) redwing, eastern kingbird, dickcissel. Noted many instances where birds of different species will alight near each other on lines. The dickcissel gives way to the redwing by moving a few inches down line. Many birds replace each other on lines.

Noted one adult and a young together on the railroad track and both killed by train.

The opossum is most common animal killed by train and occur approx 4 per mile. mostly older remains of bones and dried skin.

There are more birds over weed field than corn or wheat fields.

Robins, Baltimore orioles, indigo bunting, robins, ^{and blue grosbeak} noted eating mulberries. Some fruits of one tree are sweet and other fruit from other trees or ^{different} parts of same trees are not sweet.

Rained continuously on return to Lawrence residence.

Lawrence, Douglas Co., Kansas
June 3, 1970

The weather for the last three days has been unusual in that low clouds have been continuously moving south with almost continuous rain. Uniformity of weather and steadiness of events characterizes the weather. All creeks and rivers are up, almost to flooding levels.

Water Intake area
Raw Valley, Lawrence area, Douglas Co., Kansas
June 4, 1970

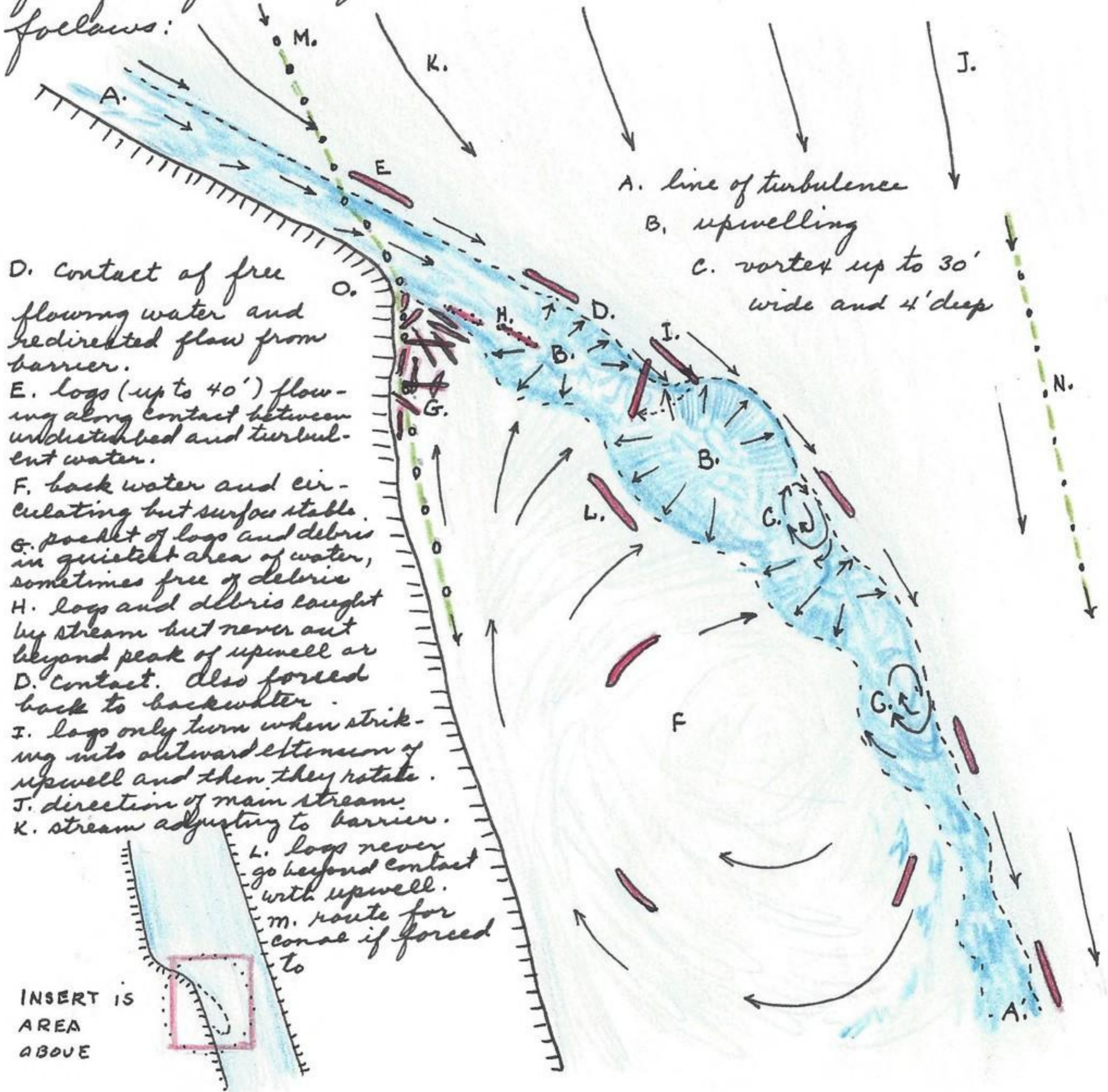
made census of birds and mammals along ~~river at grade~~ ^{river at water}

intake. The storm of the last few days changed and the rain stopped (late afternoon). There was a noticeable increase ^{in bird songs} and anticipation of the end of the rain by about 20 minutes. Usual birds in area.

Lawrence Water Plant (intake), Douglas Co., Kansas

June 5, 1970

Studied current systems of Kaw River at peak of flood, about 1 foot from flood stage in this area. The observations are as follows:



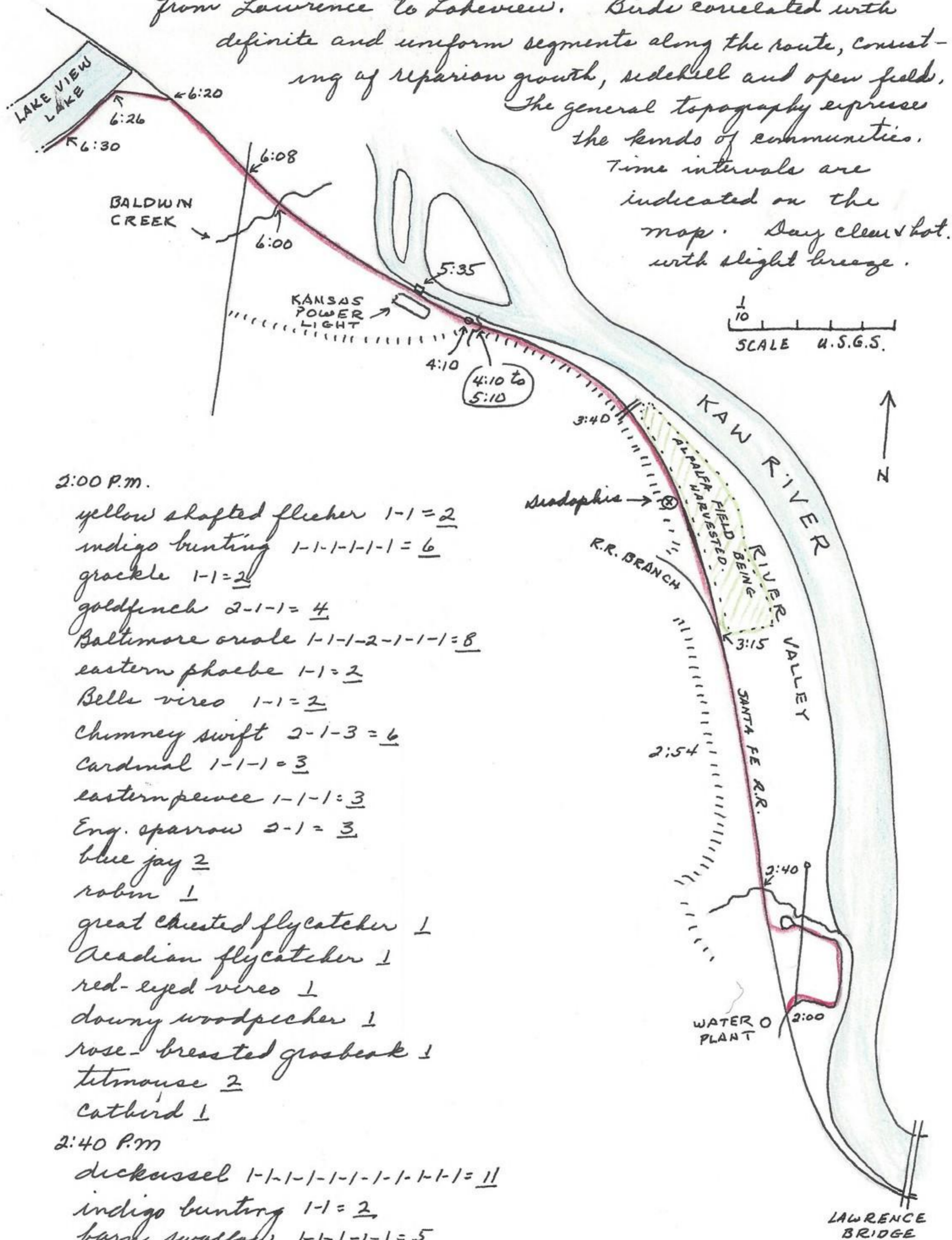
Kaw Valley, Lawrence Area, Douglas Co., Kansas

June 6, 1970

made census of birds and mammals along railroad grade

1970-71

from Lawrence to Lakeview. Birds correlated with definite and uniform segments along the route, consisting of riparian growth, sidehill and open fields. The general topography expresses the kinds of communities. Time intervals are indicated on the map. Day clear & hot, with slight breeze.



2:00 P.M.

yellow shafted flicker 1-1 = 2
 indigo bunting 1-1-1-1-1-1 = 6
 grackle 1-1 = 2
 goldfinch 2-1-1 = 4
 Baltimore oriole 1-1-1-2-1-1-1 = 8
 eastern phoebe 1-1 = 2
 Bell's vireo 1-1 = 2
 Chimney swift 2-1-3 = 6
 Cardinal 1-1-1 = 3
 eastern pewee 1-1-1 = 3
 Eng. sparrow 2-1 = 3
 blue jay 2
 robin 1
 great chested flycatcher 1
 Acadian flycatcher 1
 red-eyed vireo 1
 downy woodpecker 1
 rose-breasted grosbeak 1
 titmouse 2
 catbird 1

2:40 P.M.

dickcussel 1-1-1-1-1-1-1-1-1-1 = 11
 indigo bunting 1-1 = 2
 barn swallow 1-1-1-1-1 = 5
 Baltimore oriole 1

- mourning dove 2
 eastern kingbird 1-1 = 2
 Eng. sparrow 95 in one flock, one of which was a tan or light brown (not white). This bird showed no preferential treatment by the other sparrows in the group.

2:54 Turnpike overpass.

- meadowlark 1-1 = 2
 western kingbird 1 This bird reacted to dog.
 redwing blackbird 1-2 = 3
 indigo bunting 1-1-1-1-1 = 5
 barn swallow 1-1-1 = 3
 Baltimore Oriole 1
 Eng. sparrow 2
 robin 1
 eastern kingbird 1 Ate a mulberry from tree.
 grackle 1-1-1-1 = 4
 black-billed Cuckoo 1
 dickcissel 1-1 = 2

3:15 Railroad branch to industrial area (to left)

- grackle 1-1-1-3-1-1-1-1-2-1-1-6-3-2-1-1-1-1-2-1 = 32 These birds have been common in this area and previously have been noted flying from alfalfa field in lowlands to ridge to ^W and into field beyond, carrying food to young. Today these alfalfa fields are being cut and there is an unusual aggregation along tracks, either because of added feeding attraction from new mowed field or from displacement from their old feeding grounds. These fields have always supported more bird activity than corn fields to the east south
- redwing blackbird 2-1-1-1-2-2-1-2-2-2-1-2-2-1-2-1-1-1 = 30
 indigo bunting 1-1-1-1-1 = 5
 dickcissel 1-1-1-1-1-1-1-1-1-1-1-1 = 12
 meadowlark 1-1-1-1-1-1-1 = 7
 cowbird 2-2-1 = 5
 robin 1-1-1-1-1 = 5
 mourning dove 1
 cardinal 1

Diadaphis no 700606-1
 (see map, 2 4/10 mi N and 9/10 mi S
 Lawrence (PO), Douglas Co., Kansas
 body length 282 mm
 tail length 51 mm

- 3:40 Road from farm house to left (N end of river valley field)
 Baltimore Oriole 1-1-1-1-1-1-1 = 7
 redwing blackbird 1

dickcissel 1-1-1-1 = 4
 robin 1
 indigo bunting 1
 house wren 1
 brown thrasher 1
 acadian flycatcher 1
 eastern pewee 1-1 = 2
 cardinal 2
 field sparrow 1
 orchard oriole 1-1 = 2
 Bell's vireo 1
 yellow-billed cuckoo 1
 yellow throat 1
 mourning dove 2
 yellow shafted flicker 1
 redtail hawk 1

At 4:10 P.M. (200')

At the mouth of a small creek just E₁ of the utility line crossing remained in one spot from 4:10 to 5:10 and recorded the birds in or passing thru an area of a circle with 50 foot radius.

robin 1
 downy woodpecker. ♂ + ♀ and nest. Feeding young in hole.
 black-capped chickadees 2. Removed in area.
 house wren. ♂ + ♀ feeding young in nest.

cardinal 1
 brown thrasher 1
 Baltimore oriole 1
 orchard oriole 1
 catbird 1 Ate a mulberry fruit.
 eastern pewee 2
 eastern kingbird 1
 dickcissel 3 just beyond creek area.
 yellow-shafted flicker 1
 indigo bunting 1
 grackle 2
 great crested flycatcher 1
 cowbird 1
 titmouse 2
 field sparrow 1
 mockingbird 1
 yellow-billed cuckoo 1

mourning dove 1
 red-bellied woodpecker 1
 blue jay. ate mulberry fruit.
 acadian flycatcher 1

It is impressive that there are so many birds represented by one individual.

Left this area along creek at 5:10 P.M. and continued w along tracks.

brown thrasher 1

blue jay 1

robin 2-1-3

eastern pewee 1

mourning dove 1

a few green metallic cicondellids.

5:35 Kansas Power and Light Plant.

Eng sparrow 6

starling 5

Baltimore orole 1-1-2

indigo bunting 1

red-bellied woodpecker 1

robin 1-1-3 = 5

redwing blackbird 2-1-1-1 = 5

dickcissel 1-1-1 = 3

meadowlark 1

mourning dove 1

downy woodpecker 1

cardinal 1

brown thrasher 1

yellow-bellied Cuckoo 1

grasshoppers are rare and approx 2 per mile.

6:00 R.R. bridge

bluebird 3 (2 imm and 1 adult) = 3

meadowlark 1-1

dickcissel 1-1-1-1 = 4

brown thrasher 1.

1/10 mile from trees. In open field ^{of corn}.

6:08 county road. mourning dove 1-1 = 2

meadowlark 1-1 = 2

dickcissel 1-1-1-1-1-1-1 = 7

redwing blackbird 1-1-1 = 3

bobwhite 1

bluebird + bluebird 1

killdeer 1

6:20 County road and now following along this road to lake.

dead mole in road

robin 1

bluejay 3

pewee 1

6 starling

5 Eng sparrows.

6:26 edge of Lake View Lake.

meadowlark 1

yellow-billed Cuckoo 1 Flew NW across lake to trees on other side

redwing blackbird 2

6:30 road leaves lake and end of census.

Summary and total of birds of above census.

	2:00	2:40	2:57	3:15	3:40	4:00	5:35	6:00	6:08	6:20	6:26	6:30 end TOTAL
y.s. flicker	2					1						3
indigo bunting	6	2	5	5		1	1					20
grackle	2		4	32								38
goldfinch	4											4
B. oriole	8	1	1			7	2					19
e. phoebe	2											2
Bells vireo	2					1						3
C. swift	6											6
Cardinal	3			1	2		1					7
e. pewee	3						1			1		4
Eng sparrow	3	95	2			1	6			5		112
blue jay	2						1			3		6
robin	1		1	5		1	3	5		1		17
g. crested flyc.	1											1
Arcadion flyc.	1					1						2
red. eyed vireo	1											1
downy w.	1						1					2
rose-b. grosb.	1											1
titmouse	2											2
catbird	1											1
duckcussel		11	2	12	4		3	4	7			43
barn swallow		5	3									8
mourn. dove		2		1	2	1	1		2			9
e. kingbird		2	1									3
meadowlark			2	7			1	1	2		1	14
w. kingbird			1									1
redwing			3	30	1		5		3		2	44
b. b. cuckoo			1									1
cowbird				5								5
house wren					1							1
brown thrasher					1	1	1	1				4
field sparrow					1							1

1970-76

1970-77

700606-77

	2:00	2:40	2:54	3:15	3:40	4:10	5:30	6:00	6:08	6:20	6:26	6:30
orchard oriole					2							2
y. b. cuckoo					1		1				1	3
yellowthroat					1							1
redtail					1							1
starling							5			6		11
red-b. woodp.							1					1
bluebird, e.								3	1			4
bobwhite									1			1
killdeer									1			1
	52	118	26	98	30	7	34	9	17	16	4	
41 species												TOTAL 410

Lawrence, Intake City Waterworks, Douglas Co., Kansas
 June 9, 1970

Checked edaphic riparian climax of cottonwood bordering river and Santa Fe railroad tracks. Most conspicuous feature is the undisturbed condition so near the city. I know of no other area of equivalent condition between LeCompton and De Soto. There is a surprising number of robins and grackles in this community and a relatively few kinds or numbers of other birds. The dog jumped into a creek bottom filled with mud from recent flooding and required help for extraction. These deep muds may be important traps for large and small mammals.

June 13, 1970

checked riparian community as above at 5:00 P.M. to 7:00 P.M. In the edaphic climax noted only grackles, robins, great crested flycatcher and blue jay. In the cut-over area were the usual birds including Baltimore oriole, warbling vireo, indigo bunting, mourning dove, chickadee, pewee, robin, Eng. sparrow, cardinal and titmouse. while observing a female yellow-billed cuckoo at 50' with 10x50 binoculars, a male arrived, courted the female and then copulated. The male alighted first on the horizontal limb, then immediately mounted the female, both birds on a horizontal axis. The female reacted with vibrating wings. This position and behaviorism was maintained for 8 seconds and then the

moved slightly posteriorly and downwards to a curved but nearly perpendicular repose where it made cloacal contact with the female. At the moment the male moved back, the female stopped vibrating her wings, turned her head around and faced the head of the male, the bills almost touching. The position of cloacal contact and head facing was maintained without movement for approx. 8 seconds which is longer than in other kinds of birds. The male then dropped to side of female on same limb and in 2 seconds flew to a tree 40' away. The female remained in same position on limb, ruffled her feathers, defecated and then followed the male.

The following birds reacted to the dog by flying down to within a foot or two overhead: warbling vireo, blue jay, great crested flycatcher. Two green heron flew over area and a nighthawk called overhead.

Lone Star Lake, Douglas Co., Kansas

June 14, 1970

James Robert Bee and I conoed around lake. Noted black duck, woodduck, 7 great blue heron, 2 green heron ^{spotted sandpiper.} as well as the usual shoreward birds.

Kaw Valley, NW Lawrence, Douglas Co., Kansas

June 19, 1970

made census of birds and mammals along Santa Fe tracks from Lawrence City waterworks N to creek, thence N to turnpike, thence to side service tracks at Chemical Plant, thence lateral to intersection with end of Iowa street.

Observed the following birds between these markers:

Date at waterworks (Left 5:30 P.M.)

Eng. sparrow 5	starling 1
chimney swift 2-1-2-1	green heron 1
robin 1	Baltimore oriole 1
blue jay 2-1	yellow-billed Cuckoo 1-1
red-bellied woodpecker 1	cowbird 5
redheaded woodpecker 1	brown thrasher 1 (this bird has a warning call like the effect of kissing the back of one's hand)
warbling vireo 1-1	chickadee, b.c. 1-1
grackle 1-1-2-3-2-4-5	yellow-shafted flicker 1
indigo bunting 1-1-1-1-1	rose-breasted grosbeak 1.
cardinal 1	
titmouse 1	

mosquitoes very active. At a point some 200' from the bridge over the creek (collected the skull of marmota monax.

length
lower jaw 70



700619-1 marmota monax bunheri. ♂ 560-124-91-29, —. skull only. This mammal had been cut into by train with head, shoulders and front feet between tracks and abdomen and hind quarters and tail on outside of tracks farthest from his den area. A marmot had been seen on previous trips but always approx 150' south of the position of this specimen. It frequently used the rail-road tracks as a place to sun itself in early morning. Along this route were 4 young rabbits.

Catbird 1

Eng sparrow 6

The mosquitoes are annoying along this segment of the census route.

Creek at 5:55 P.M.

town swallows 1-2-1-1-1-2-1

grackle 20-6-3-1

dickcissel 1-1-1

Eng sparrow 3

indigo bunting 1

redwing blackbird 1

At a point approx 200' from creek, a ^{large} female white-tailed deer left the base of the railroad grade and ran E across wide field of wheat, finally entering riparian community along Kaw River. I was surprised to see this deer in such exposed situations. It was at least 200' from the kind of growth usually associated with the whitetail deer.

Turnpike 6:10

meadowlark 1-1

Eng sparrow 1-2

dickcissel 1-1

grackle 1

indigo bunting 1-1-1-1

redwing 1

robin 1

Baltimore Oriole 1-2

R.R. siding 6:30 (can see usual concentration of grackle to N)

starling 72

grosbeak, rose-breasted ♀ 1

grackle 6-14

y. b. cuckoo 1

orchard oriole 1

mockingbird 2

Eng sparrow 2-1

black b. cuckoo

redwing 2-1-1

blue jay 1

dickcissel 1-1-1

great horned owl 1

robin 1-1-1-2-2-1-1-1-1

meadowlark 1-1-1-1-1-2-1-1-1-1

bobwhite 1-1

mourning dove 1-2-2-1-1

N. end Dows at R.R. track 7:00 P.M.

Kaw Valley, Lake View to LeCompton, Douglas Co., Kansas
 June 21, 1970

Census of birds and mammals along Santa Fe railroad from first road crossing E of Lake View Lake to old bridge across Kaw (now raised) at LeCompton. Census divided by geographical units and time. Fauna listed by consecutive observation for statistical reference. Left 8:15 A.M. day cool, and clouds having moved in earlier this morning into a previously clear sky. May be raining in certain areas. Slight wind from NW. Bobwhite, 3 Indigo bunting, eastern pewee, bunting, dickcissel, 2 blue jays, bunting (all bunting, unless otherwise indicated, are indigo), 3 redwing blackbirds, Baltimore Oriole, robin, 8:22 beginning of Lake View Lake at ^{E end} RR dam. Excellent field of cottails in old channel to N and their ^{seed} color is a mosaic of brown and black according stage of development. 28 male & female redwings in this marsh. 2 meadowlark and 2 yellow-billed Cuckoo on dam area. Water slightly milky colored from outlet from lake. 2 yellow-throats, mourning dove, cottontail. 8:30 W side of dam and now continuing to W. yellow-billed Cuckoo flew across lake from E to W, 2 mourning doves, dickcissel, 12 grackles, 2 bobwhites, grackle, chimney swift, bunting, 12 Eng sparrows, robin, 8:39 county road crossing. 8 Eng sparrows, 3 grackles, (cool enough for a sweater), dickcissel, 3 meadowlarks, barn swallow, 2 meadowlarks, 2 bobwhites, 2 grackles, meadowlark, crow, sparrow hawk, 2 grackles, 9 Eng sparrows, 2 horned larks, 3 horned larks, 2 grackles, 2 horned larks, dickcissel, 2 meadowlarks, grackle, dickcissel, e. kingbird, 2 grackles, 9:10 beginning of lake (west end of Lake View Lake oblow). grackles in previous stretch have been flying overhead from NW to SE. In the lake area (dam), are 2 grackles, 2 ^{B.} orioles, 2 redwings, 4 redwings, e. kingbird, 6 redwings, 4 grackles, bunting, mourning dove, 5 goldfinch, catbird, green heron, warbling vireo, 3 cowbirds, great blue heron, robin, grackle, redwing, green heron, redwing, 2 b.c. chickadees, grackle, B. oriole, mockingbird, 9:35 west side of lake, dickcissel, 2 meadowlarks, meadowlark, dickcissel, 2 mourning doves, mourning dove, killdeer, redwing, dickcissel, 2 mourning doves, 2 Baltimore orioles, dickcissel, warbling vireo, redwing, downy, mourning dove, barn swallow,

dickcissel, 2 barn swallows, 9:47 house, 2 blue jays, pewee, red-
 bellied woodpecker, b.c. chickadee, mourning dove, downy,
 3 goldfinch, field sparrow, red-eyed vireo, crow, Baltimore oriole,
 bunting, Carolina wren, red-bellied woodpecker, mourning dove,
 bunting, mourning dove, bunting, red-bellied woodpecker. 10:10
 road from canyon to left. Mesquites present last 300 feet.
 2 eastern bluebirds, 2 blue jays, bunting, bunting, 3 bunting,
 numerous raccoon tracks on floor of drainage to left. east.
 bluebird, cardinal, red-eyed vireo, bunting, 2 blue jays, 2
 buntings, bunting, 2 bluebirds, 2 bunting, titmouse,
 yellow-billed cuckoo, 2 pewees (the yellow colored vegetation
 below pewees is reflected as yellow from the white breasts of
 the birds), mourning dove, 2 mourning doves, 10:32 house,
 area opening up to narrow field. bobwhite, redtail flying to
 n., 2 cowbirds, cowbird, cottontail, red-eyed vireo, 10:50
 drainage at beginning of hill contact. Carolina wren, ♀ & ♂
 red-bellied woodpecker feeding 3 young. Left above drainage
 at 11:03, cardinal, chickadee, 2 bunting, 2 chickadees,
 redtail hawk, Baltimore oriole, bunting, cardinal, bunting,
 2 chickadees, titmouse (temp warmer in protected places than
 across open fields). male redstart feeding and calling
 among cottonwood trees bordering river and at approx.
 1/3^{lower} position of trees. The call is ~~4~~⁵ delicate, ^{single} high notes and
 given in increasing scale. It moved at least 150 feet along
 this riparian growth. 2 cardinals, bunting, 3 Baltimore
 orioles, 11:27 drainage, red-eyed vireo, chickadee, brown
 thrasher, pewee, 2 cardinals, pewee, bunting, bluebird, 2
 blue jays, bunting, bunting, field sparrow, 4 cowbirds,
 small coffee tree with yellow leaves, cardinal, wood thrush,
 bunting, Carolina wren, cardinal, 2 chickadees, bunting,
 g. crested flycatcher, bunting, bunting, cardinal, 2 blue jays,
 cowbird, field sparrows, long-tailed chat, 2 cardinals, Baltimore
 oriole, bunting, 12:05 drainage (Kaw River high enough to
 back into these drainages) 5 cowbirds, phoebe, Baltimore
 oriole, 2 mourning doves, bunting, flicker, yellow-billed cuckoo,
 2 bobwhites, Baltimore oriole, yellow-billed cuckoo, bunting,
 bunting, yellow-billed cuckoo, bunting, chickadee, Carolina
 wren, red-bellied woodpecker, bunting, cardinal, titmouse,
 cardinal, 2 bunting, red-bellied woodpecker, cardinal,
 bunting, bunting 12:45 drainage (Oakley Creek), pewee,
 B. oriole, cardinal, bunting, e. kingbird, kingfisher

yellow throat warbler 2-1 = 3
 mourning dove 1-2-1-2-2-1-1-1-1-1-2-2-1-2-2-1-1-1 = 25
 cottontail rabbit 1-1-1 = 3
 grackles 12-1-3-2-2-2-1-2-2-4-1-1 = 33
 chimney swift 1 =
 Eng. sparrows 12-8-9-8 = 38
 barn swallow 1-1-2 = 4
 crow 1-1-2 = 4
 sparrow hawk 1 =
 horned lark 2-3-2 = 7
 eastern kingbird 1-1-1 = 3
 goldfinch 5-3-2 = 10
 catbird 1 =
 green heron 1-1 = 2
 warbling vireo 1-1-1-1 = 4
 cowbirds 3-2-1-4-1-5 = 16
 great blue heron 1
 black capped chickadee 2
 mockingbird 1 =
 killdeer 1 =
 downy 1-1-1-1 = 4
~~eastern phoebe 1-2-1-1~~
 red-bellied woodpecker 1-1-1-5-1-1 = 10
 black-capped chickadee 1-1-2-2-1-2-1-1-1 = 12
 field sparrow 1-1-1 = 3 = 4
 red-eyed vireo 1-1-1-1-1-1-1 = 7
 Carolina wren 1-1-1-1-1-1-4 = 10
 eastern bluebirds 2-1-2-1 = 6
 raccoon (tracks)
 cardinal 1-1-1-2-2-2-1-1-1-2-1-1-1-1-1 = 19
 titmouse 1-1-1-1 = 4
 redtail hawk 1-1 = 2
 redstart 1 =
 brown thrasher 1 =
 wood thrush 1 =
 great crested flycatcher 1-1-1 = 3
 long tailed chat 1 =
 e. phoebe 1 =
 y. s. flicker 1 =
 kingfisher 1 =
 red headed woodpecker 1-2 = 3

muskrat 1 =

orchard oriole 1 =

loggerhead shrike 1 =

lark sparrow 2 =

snapping turtle 1 =

black-billed cuckoo 1 =

~~field sparrow 1 =~~

Total 53 birds

Kaw Valley, Lawrence, Douglas Co., Kansas

June 23, 1970

Census of birds from ⁿ end of Indiana Street at tracks ^{Santa Fe} (Lawrence City waterworks) to ⁿ end of Iowa Street via Santa Fe railroad tracks. Start. 5:23 P.M. Day clear, hot, no wind. 28 Eng. sparrows, yellow-billed cuckoo, warbling vireo, mourning dove, Baltimore Oriole, grackle, mourning dove, indigo bunting, 2 brown thrashers, 2 grackles, ♂ rose-breasted grosbeak, 2 great crested flycatchers, grackle, 2 robins, bunting, 2 Balt. Orioles, grackle, Titmouse, robin, 2 eastern bluebirds, 2 robins, 2 grackles, grackles, 2 mourning doves, remains of marmot (see previous notes) gone, Baltimore Oriole, 19 Eng. sparrows, 2 bluejays, black-capped chickadee, Baltimore Oriole, yellow-billed cuckoo, Baltimore Oriole, 2 downy, 5:50 R.R. bridge over creek, 27 Eng. sparrows, 2 grackles, bunting, barn swallow, 2 mourning doves, Eng. sparrow, yellow-shafted flicker, mourning dove, green heron, mourning dove, 8 Eng. sparrows, 2 mourning doves, 2 grackles, dickcissel, 12 Eng. sparrows, yellow-throat warbler, 3 grackles, dickcissel, bunting, Turnpike overpass 6:10. Eng. sparrow, mourning dove, meadowlark, meadowlark, mourning dove, bunting, bunting, yellow-throat, 6 Eng. sparrows, mourning dove, bunting, Baltimore Oriole, grasshopper, 6 Eng. sparrows, dickcissel, aerial flight of dickcissel suggestive of longspur, dickcissel, redwing, mourning dove, 2 dickcissels, grackle, 4 Eng. sparrows (these birds, as well as mourning doves, are attracted to tracks because of wheat spilled from trains), 6:33 siding railroad to left. robin, 2 mourning doves, dickcissel, 2 Eng. sparrows, 2 grackles, dickcissel, 2 mourning doves, grackle, meadowlark, Baltimore Oriole, dickcissel, meadowlark, meadowlark, meadowlark, Balt. Oriole, robin, mourning dove, killdeer, grackle, robin, mourning dove, meadowlark, 3 redwing, robin, 7 starling, meadowlark, robin, robin, robin, 2 bluejay, mourning dove, Bobwhite, black-billed cuckoo, chimney swift, Balt. Oriole, sparrow hawk, grasshopper, downy, meadowlark, robin, robin, Cardinal, arrived ⁿ end Iowa Street 7:15 ^{P.M.} and end of census.

Kaw Valley, Lawrence, Douglas Co., Kansas

June 24, 1970

Census in same area as above. Left 6:10 P.M. Day clear, Temp 88°F. yellow-shafted flicker, 2 mourning doves,

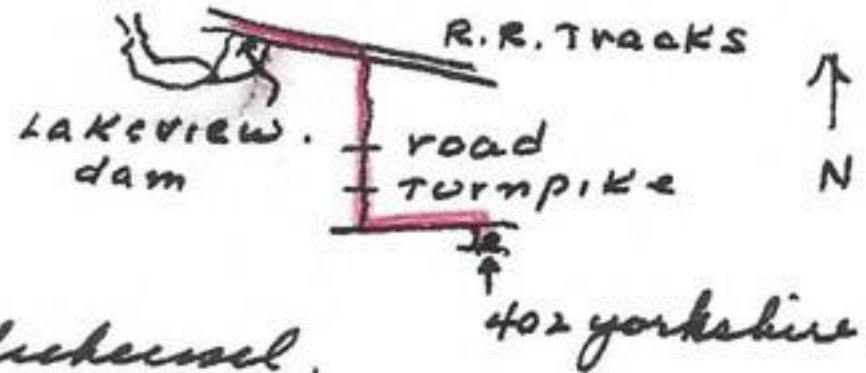
2 grackles, warbling vireo, 13 Eng. sparrows, wind approx. 7 mi per
 hour, cottontail, bunting, 15 Eng sparrows, 2 meadowlarks, cotton-
 tail, Baltimore Oriole, warbling vireo, 25 Eng. sparrows, grackle,
 robin, bunting, grackle, grackle, dead box-turtle inside tracks,
 3 grackles, m. dove, robin, eastern pewee, 8 Eng. sparrows,
 Cardinal, 12 Eng. sparrows (many of them are young), green heron,
 bunting. 6:22 P.M. Baltimore Oriole, 2 mourning doves, 2
 Eng. sparrows, fewer mosquitoes because of increased wind,
 bunting. 2 mourning doves, grackle, grackle, 6:30 bridge across
 creek, grackle, dickcissel, bunting, 3 mourning doves, dickcissel,
 grackle, dickcissel, starling, yellow-throat warbler, 12 mourning
 doves, bunting, 6 Eng sparrows, mourning dove, dickcissel, 8
 mourning doves, dickcissel, yellow-billed cuckoo, 8 Eng sparrows,
 5 starling, dickcissel, 2 mourning doves, 5 Eng sparrows, 6:42
 at Turbopike overpass. The deer tracks under bridge are
 40 mm and 69 mm in length. meadowlark, grackle, grasshopper,
 2 robins, 2 robins, loggerhead shrike, bunting, dickcissel,
 dickcissel, yellow-throat, 5 Eng. sparrows, 12 Eng. sparrows,
 orchard Oriole, dickcissel, mourning dove, 15 Eng sparrows,
 robin, mourning dove, Cowbird, dickcissel, grasshopper,
 3 mourning doves, dickcissel, 7:07 piding to left. dickcissel,
 dickcissel, meadowlark, 5 Eng. sparrows, 2 grackles, grasshopper,
 grackle, redwing, dickcissel, Cottontail, eastern Kingbird, blue-
 jay, 5 starling, 2 redwings, Cowbird, Cowbird, meadowlark,
 meadowlark, eastern bluebird, redwing, mourning dove,
 5 starling, meadowlark, robin, mockingbird, robin, Balt.
 Oriole, meadowlark, robin. 250 cowbirds, meadowlark,
 7:25 beginning of trees on left side. eastern pewee, Baltimore
 Oriole, robin, Baltimore Oriole, meadowlark, mourning dove,
 starling, Balt. Oriole, 3 goldfinch, redhead woodpecker, sparrow
 hawk, yellow-billed cuckoo, meadowlark, robin, bobwhite,
 dickcissel, redwing, black-capped Chickadee, yellow-billed
 cuckoo, 8:00 N end Iowa Street where R.R. trail Cross. End
 of census. It would be of some value to correlate the
 occurrence of birds in a consecutive way with time or
 distance. This would give a factor of association
 of one particular bird with its nearest neighbor according
 to kind of bird association and space interval. A
 statistical measure ~~not~~ could be made to relate one
 particular bird with all other birds observed during the
 census period.

Lakeview, Douglas Co., Kansas

June 25, 1970

Made trip on foot from 402 Yorkshire, Lawrence to Lakeview via county roads. Will keep record of consecutive occurrence of birds between known landmarks:

Eng sparrow 3-2, martin, chimney swift 3-1, bobwhite, robin 2, killdeer, meadowlark 1-1, Bell vireo, meadowlark, dickcissel, meadowlark, dickcissel, mourning dove, meadowlark, dickcissel, mourning dove 2, meadowlark, dickcissel, yellowbilled cuckoo, indigo bunting, dickcissel, w Kingbird, redwing, dickcissel. 5:58 turn, now to N. meadowlark, bunting, redwing, goldfinch, killdeer, dickcissel, dickcissel, mockingbird, dickcissel, dickcissel, meadowlark, bobwhite and 8 young, meadowlark, barn swallow, loggerhead shrike, meadowlark, dickcissel, dickcissel, meadowlark, mourning dove, mourning dove, redwing, grackle, cowbird, Eng. sparrow 2, house wren 1, dickcissel, meadowlark. 5:55 turnpike. Eng. sparrow 2, redwing, dickcissel, brown thrasher, dickcissel, meadowlark, barn swallow, meadowlark, dickcissel, dickcissel, dickcissel, one dickcissel approached dog to within 3 feet, meadowlark, barn swallow, meadowlark, cowbird, bank swallow 1, meadowlark, redwing, robin. 6:06 County road. 2 Eng sparrows, dickcissel, meadowlark, redwing 2, dickcissel, dickcissel, bobwhite, Titmouse, robin, pewee, robin, dickcissel, Eng sparrow 5, dickcissel, cowbird 6, redwing. 6:18 onto river valley proper. redwing, meadowlark 5, dickcissel, meadowlark, Eng sparrow 4, meadowlark, redwing 3, dickcissel, house wren, meadowlark, robin 2, redwing 2, Baltimore oriole, robin 2, house wren 2. 6:25 bridge, robin, redwing 2, dickcissel, bluebird, cowbird 2, meadowlark, bobwhite, 6:35 R.R. tracks loggerhead shrike?, meadowlark, meadowlark, mourning dove 2, bobwhite 1 6:43 road crossing tracks, robin 2. meadowlark, dickcissel, redheaded woodpecker, Cardinal, grackle, pewee, Eng sparrow 3. 6:50 beginning dam of Lakeview Lake. 38 redwings in meadow of cattails to N., grackle, robin, indigo bunting. Along dam (R.R. grade) on S side from edge of dam to 150 leeward, counted 1280 carp, swimming at surface with fin above water and mouth working surface of water. These fish were reacting to hot day and low oxygen in water. Other carp could be seen beyond but most of them congregated near the dam and, presumably, deeper waters.



Kaw Valley, Lawrence, Douglas Co., Kansas
 June 26, 1970

made census of birds and mammals from Lawrence City waterworks (on Santa Fe tracks) to n to siding and finally to end of Iowa street. Will keep records by segments of route and time. Day 50% clouds, hot, windy. Time 6:05 P.M. at start of census. Kinds of birds will be recorded as observed. Indigo bunting, bunting, Baltimore oriole, flicker, grackle, 3 grackles, 5 mourning doves, cardinal, 4 grackles, hairy woodpecker, grackle, bunting, 2 cottontails (young), robin, warbling vireo, flicker, grackle, grasshopper, rabbit (cottontail), robin eating mulberry, 2 eastern bluejays, grasshopper, grasshopper, cardinal, 6:20 R.R. bridge across creek, bunting, redtail hawk, no mosquitoes but on previous trips were numerous in same area, grasshopper, grasshopper, bunting, 2 barn swallows, mourning dove, grasshopper, 2 mourning doves, wheat recently cut to height, redwing, redwing, 2 mourning doves, bobwhite, bunting, mourning dove, 6:40 Turnpike overpass. The deer tracks under overpass and noted on previous trip are the only ones present. Additional underpasses might solve the deer-automobile collisions so common on the turnpike. mourning dove, 5 mourning doves, dickcissel, bunting, 4 barn swallows, 5 grackles, Baltimore oriole, dickcissel, 2 mourning doves, 12 Eng. sparrows, 2 goldfinch, bunting, mourning dove, mourning dove, 2 mourning doves, dickcissel, dickcissel, 4 mourning doves, grasshopper, dickcissel, 7:00 R.R. siding to left and will follow to Iowa street. 2 grackles, cowbird, dickcissel, grackle, redwing, dickcissel, eastern kingbird, robin, redwing, mockingbird, dickcissel, cowbird, dickcissel, cowbird, meadowlark, 2 loggerhead shrike in same small (3' high) bush. 4 cowbirds, mourning dove, 2 mourning doves, starling, mourning dove, meadowlark, meadowlark, mourning dove, grasshopper, warbling vireo, robin, meadowlark, mourning dove, robin, robin, cowbird, sparrow hawk, starling, grasshopper, bluejay, robin, robin, red-bellied woodpecker, 5 robins, 4 robins, bunting, robin, 2 mourning doves, robin, mourning dove, 2 starling, 2 grackles, 2 chimney swifts, purple martin, Baltimore oriole, brown thrasher, meadowlark, 2 downy, these woodpeckers and perhaps other kinds have completely removed bark on

Jacomo Lake, Missouri
~~June 21, 1970~~

July 2, 1970

Annette and Martha Faehl in racing flying junior. Their boat is US 781. This is an approx. date entry.

- 700702-1 general group of sail boats
700702-2 " " " "
700702-3 Annette and Martha being towed. 700702-6 Annette's boat
700702-4 " " " " passing by 700702-7 general group
700702-5 " " " " " "

8 1/10 mi. W and 9 1/10 mi N Clinton, Douglas Co., Kansas
~~June 21, 1970~~
July 6, 1970

Collected the following bat from road among deciduous forests bordering Wabasha River. Found dead, but fresh, in middle of road. Overhanging trees above.

700706-1 *Lasiurus borealis borealis* 118-52-10-12-14 gms
♀. suckling, wing spread 320 mm.

~~Keowood Camp W of Ottawa, Kansas~~
~~June 21, 1970~~

certain sections of the dead elm tree, other areas ^(40%) partly effected, 21 grackles, cardinal, bunting, young of grackles almost same size as adults and are closely following adults and soliciting food. Another good example of bark removal by woodpeckers from dead elm. Redwing, duckcussel, barn swallow, 8 grackles, 7:30 end of census at N end of Iowa Street where R.R. siding crosses road. This trip can be made in 1 1/2 hours. In summary would say that the wind had a definite influence on numbers of birds observed. Grasshoppers show slight increase in numbers, but no evidence of a decisive increase in numbers.

[← see opposite page for July 6]

Wakarusa River - Kaw River, Douglas Co., Kansas

July 8, 1970

Made canoe trip, as part of a Field Techniques course, from Dingman's Crossing to mouth Captain Creek on the Kaw River. Mrs Ruth Bartels and Mrs Janet Mertz accompanied me. Will keep notes on selective observations. Left 12:45 P.M. Sky clear, no wind, temp 97° F air. Bird calls recognized: bobwhite, b.c. chickadee, ^{observed} turkey vulture, myrtle warbler, red-eyed vireo, red-bellied woodpecker, cardinal, pewee, yellow-bellied cuckoo, indigo bunting. 1:20 from riffle picked up 4 species of Unionids. Other birds observed were duckcussel, bluejay, robin, meadowlark, great horned owl and great crested flycatcher. 1:40 outcrop Tonganovic sandstone, one stratum with concretions. Nest of eastern phoebe with 4 eggs 1/2 incubated. 1:50 unusual aggregate of millipeds. Saw both the black and yellow-bellied cuckoo. Holes in bank at water edge created by carp. Many damselflies depositing eggs on log. 2 great crested flycatchers fought over water. Carolina wren called. Fox squirrel. 2:00 water temp 3" below surface 84° F. Killdeer, barn swallows. Phoebe nest on cliff with 3 eggs more than 1/2 incubated. Raccoon tracks in mud at base of cliff. Left at 2:20 Honey bee nest in locust tree overhanging river. Great horned owl and scarlet tanager. Redtailed hawk. 2:30 cow bird at water level. 2:30 highway bridge 10. Eng sparrow have nests here. Approx 20 long-nosed gar at 1/10 mile upstream from R.R. bridge. 2:45 20 gars on surface in one restricted area. muskrat at RR bridge. 2:55 temp water in shade 84° F. yellow-bellied cuckoo. 5 large carp sucking on surface ~~skin~~ scum. Logjam of 80' at Eudora

Portaged canoe. 3:15 bridge N Eudora. dead skunk in river. Baltimore oriole singing. Eudora sewage effluent. A fisherman said gars are breeding. Below here the green algae is increasing. Eastern Kingbird and great crested flycatcher. Black willow ^{and cottonwoods} more common as we approach the Kaw River. Estimated 60 long-nosed gars in about 300' of river approx. 2/10 mile up Wakarusa from junction of Kaw River. Beyond this point they became generally distributed. The largest was approx. 30". Most of them were oriented with anterior end pointed down stream. Spotted sandpiper flew across river. Water temp 85°F, air 88°F (in all temps, the reading is always in shade.) in Kaw River which we entered at 3:52 P.M. Many Baltimore orioles in large Cottonwoods and more than along Wakarusa. Wind from NE at about 15 MPR. 4:00 Bank swallow colony of about 180 nests. Spoonbill? Great Blue Heron. Current speed approx 3 MPR. Killdeer, Muskrat. 4:38 apex of meander at N end. Yellow-billed Cuckoo flew across river. 4:58 beaver in bank house. Yellow-throat singing. 4:59 Now SE. Passing anticlines & synclines. 2-horned larks flew over river. Warbling vireo. At log jam were redwings, grackles and cowbirds. Redwings increasing. 5:25 Arched bridge just beyond Captain Creek. Water about 1 foot below apron of bridge.

Univ. Kansas, Lawrence, Douglas Co., Kansas

July 22, 1970

(Egyptian spiny mice)

Prepared 2 adult (♂ & ♀) Acornys _____ and recorded the reproductive information accumulated so far.

700722-1 Acornys calirhinus ♂

700722-2 " " ♀

Presented to me by Clark, Director of Topcha Zoo in March of 1970. They were specimens used by E. P. Walker in his mammals of the world. Walker preferred live specimens for photographing. From this pair of animals the following young were produced:

April 3 2 young born (Removed from parents May 1)

May 12 1 young born (Removed from cage June 12)

May 13 Adults copulated.

June 20 2 young born

The periods of gestation of ~~three~~ ^{east two} sets of young are: 39 days, 38 days,

Lawrence, Douglas Co., Kansas

July 22, 1970

Prepared for summer vacation to Alaska.

2 lightweight chairs ✓	valve for water jug
hatchet ✓	shoes ✓
hand saw ✓	butane torch ✓
shovel ✓	traps ✓
bucket ✓	watch ✓
5 gal can	cotton ✓
hydraulic jack ✓	wire ✓
knee boots ✓	pins ✓
car registration ✓	labels ✓
portable radio ✓	scales ✓
binoculars ✓	pin board ✓
scope ✓ and holder, tripod	gun ✓
journal ✓	shells ✓
paper ✓	corn meal
ink ✓	oat meal ✓
pens ✓	small note book ✓
camera ✓	recorder & tapes ✓
st. meter ✓	fish equip. ✓
film ✓	batteries
skinning equip. ✓	reference books ✓
emergency light for trailer.	dep. notes on petroglyphs ✓
extension cord ✓	ear syringe
glasses ✓	plumbers tape
electric shower ✓	

Lawrence, Douglas Co., Kansas

July 23, 1970

Left 402 Yorkshire at 12:55 at mileage 41725.7 Wind approx. 3 mph, sky 98% clear. Temp. 88°F. Will follow 24 to Topeka, then W on Interstate 70. Objective will be to keep complete census of meadowlarks and hawks and other area selective for other birds or complete census. No meadowlarks between Lawrence & Perry. Other different kinds of birds will be listed according to first occurrence. English sparrow, chimney swift, dickcissel, cowbird, barn swallow, blue jay, mourning dove. Second to dickcissel Eng. sparrow, the dickcissel is dominant bird. 761. Topeka

41768 Wauwassee road. 779 Wabause Co line. redwing
 blackbird, grackle, eastern kingbird, 2 meadowlarks,
 781. typical prairie land, trees mainly in river bottoms,
 grass greenish-yellow. meadowlark, 2 meadowlarks,
 792 Mill Creek. 3:00 P.M. Purple martin. 802 Wabau-
 see road, w. kingbird, meadowlark, 806 sparrow
 hawk. 813 manhattan turnoff. 829 junction City.
 842 scissortailed flycatcher. 843 Chapman. 847
 4 crows, meadowlark, 849 redtail, meadowlark, meadow
 lark, meadowlark, 854 Abilene - Clay Center turnoff,
 meadowlark, 866 Salamon River, meadowlark 877
 Salina River. 878 Salina - Minneapolis turnoff. 5:00 P.M.
 Left Salina 5:38, meadowlark, 2 eastern kingbirds, usually
 in families of 2 to 4, From Salina will keep complete
 census of kingbirds to W as well as the meadowlarks and
 hawks which, the latter two will continue throughout
 trip. The numbers will be western kingbirds except
 as indicated otherwise. 2-3-1-3-2-3-1 (killdeer), (mead-
 owlark), 1-2-1-1-1-(meadowlark) 3-1-(scissortail flycatcher),
 1-3-(eastern kingbird), 1-(meadowlark) (grackle), 1-1-(2
 meadowlarks) (meadowlark) 1-2-1-1-1-1-1-(meadowlark),
 (meadowlark), 1-1-(meadowlark), 1-2-1-1-1-1-1-(905 ~~Elk~~
 Elkhorn Co line), (meadowlark) (meadowlark) (mead-
 owlark) (908 Elkhorn River), end of western flycatcher
 census. From here on will make complete census of all
 birds. w. kingbird, 2 w kingbirds, 2 redwings, meadow-
 lark, mourning dove, 3 w kingbirds, eastern kingbird,
 meadowlark, meadowlark, mourning dove, mourning
 dove, meadowlark, mourning dove, 2 meadowlarks,
 w kingbird, 3 w kingbirds, barn swallow, mourning dove,
 2 meadowlarks, meadowlark, 3 w kingbirds, meadowlark,
 east kingbird, meadowlark, 9 meadowlark, meadowlark,
 w kingbird, kingbird, dickcissel, meadowlark, kingbird,
 meadowlark, meadowlark, (cloud cover 70% and 88° F),
 w kingbird, meadowlark, w. kingbird, w kingbird,
 dickcissel, w kingbird, east kingbird, w kingbird,
 w kingbird, w kingbird, w kingbird, w kingbird,
 w kingbird, 2nd kingbirds, barn swallow, horn lark,
 w kingbird, 2 barn swallows, meadowlark, 2 barn
 swallows, 2 mourning doves, grackle, 2 w kingbird,
 w kingbird, dickcissel, w kingbird, 2 kingbirds,

3^w Kingbirds, 2 eastern Kingbirds, 3 redwings, 2 w King-
 birds, 2 w Kingbirds, meadowlark, w Kingbird, w Kingbird,
 3 w Kingbirds, w Kingbird, barn swallow, w Kingbird,
 2 w Kingbirds, 2 w Kingbirds, w Kingbird, w Kingbird,
 w Kingbird, (area of stone fences) 2 barn swallows,
 3 barn swallows, meadowlark, 12 barn swallow over
 pond, mourning dove, meadowlark, 2 w Kingbirds,
 grackle, meadowlark, w Kingbird, 3 w Kingbirds,
 2 w Kingbirds, w Kingbird, w Kingbird, w Kingbird,
 3 w Kingbird, w Kingbird, dickcissel, w Kingbird,
 meadowlark, have seen at least 5 meadowlarks
 caught by feet or neck in fence lines, night hawk, 2
 cowbirds, 4 grackles, barn swallow, w Kingbird, w
 Kingbird, 3 w Kingbirds. 930 Russell Co line, 6:45
 meadowlark, mourning dove, there is a stretch just
 w of above Co line where there are ^{only} few w Kingbirds,
 meadowlark, w Kingbird, 2 meadowlarks, eastern King-
 bird, 3 w Kingbird, meadowlark, meadowlark, 935
 Dorrance, ~~meadowlark~~ end of complete census.
 meadowlark, 937 marsh hawk, 5 meadowlarks, 2
 meadowlarks, 2 meadowlarks, meadowlark, meadowlark,
 meadowlark, meadowlark, meadowlark, 2 meadowlarks,
 meadowlark, meadowlark, ibid, ibid, ibid, burrow-
 ing owl (ibid. indicates, same as previous), 953
 foot jack rabbit, 2 meadowlarks, Last 3 or 4 miles
 (950 is oil drilling country). The rabbits seem to be
 associated with this kind of human activity, perhaps
 because of lack of predators because oil operation
 keeps coyotes, foxes etc. away. meadowlark, ibid,
 ibid, jackrabbit, ibid, 962 Ellis Co line, meadow-
 lark, jackrabbit road kill, 4 meadowlarks, 969 at 7:40 P.M.
 w Kingbirds occurring about as usual. all along way.
 meadowlark, ibid (ibid, ibid, ibid, 980 Fort Hay,
 at 8:00 P.M. meadowlark, ibid, raccoon on wooden
 support of fence line, 2 jackrabbits, jackrabbit meadow-
 lark, ibid. 993 Ellis. 8:10 P.M. and end of census because
 of light fading. ^{along way} Saw to west. Have seen, approx 8
 flocks of redwing from 20-40 flying south. message
 at 5 miles E of Wakeeray 42007 at rest area where
 we stopped for the night. Arriving at 8:30 P.M. Birds
 in this area are Eng. sparrow, brown thrasher, mourning

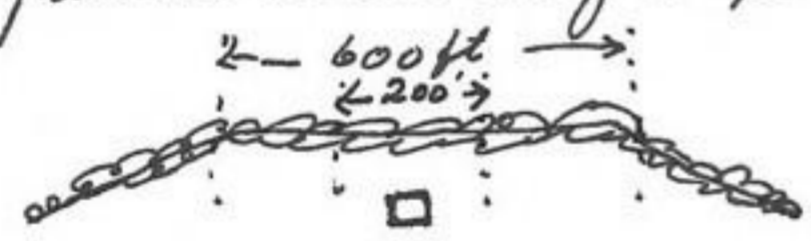
doves and W Kingbird. One of two families of western Kingbirds being fed by adults and only slightly smaller than adults. These birds called until late twilight at 9:00 P.M. Thirteen-lined ground squirrels holes in buffalo grass. Two sets of 2 eggs each of mourning doves fresh. One nest of 2 young 3 1/2 inches long. Approx. 30 Eng. sparrow nests in junipers, Russian olive and other trees adjacent to main area. Will count these tomorrow morning as they represent a rather congested nesting area. Rained slightly in evening. Set min-max. thermometer at 10:00 P.M.

5 mi. E Wakeeney, Trego Co., Kansas

July 24, 1970

Sun up 6:58 A.M. last night min temp 59°F, max 80°F (at 10:00 P.M.), temp at 6:58 A.M. 60°F. Rained several times last night. Strong wind at daybreak. No wind at 8:00 A.M. Rain clouds S and E. at this rest stop counted Eng.

Sparrow nests in juniper + tamarisk wind break in 200 feet nearest main building as 36 (from 3 1/2 feet high to 9 feet high). also 3 families W. Kingbird, brown thrasher, 9 grackles. In this



same area counted 8 nests of 2 eggs each of mourning doves and 1 with 2 young. ^{W. Kingbird on nest in elm.} These birds & nest were congregated in 200', a few other nests beyond. ^{Locust, tamarisk, juniper, main trees.} ^{meadowlark, swainson hawk, sharp-shinned.} Left 8:40, mileage 42007.1. 0 1/2 Mileage at Wakeeney.

The swainson was at 08. mileage (that is 42008. Complete census from Wakeeney, meadowlark, m. dove, W Kingbird, W Kingbird, ibid, 2 redwing, redwing, 6 W Kingbirds, redwing, 020 Voda road. meadowlark, ibid, 4 barn swallows, redwing, barn swallow, 2 barn swallows, 025 Collyer, horned lark, meadowlark, 028 Cove Co line. ♀ pleasant and 6 young (young on top fence rail), W Kingbird, horned lark, W Kingbird, ibid. Quarter 033, 9:15 A.M. W Kingbird, 3 meadowlarks, horned lark, meadowlark, W. Kingbird, meadowlark, 2 ibid, 2 ibid, 2 W Kingbirds, W Kingbird, 042 North Park. meadowlark, eastern Kingbird, meadowlark, ibid, 046 N Granfield. Sky 100 clouds of low nimbus type since 1 hour ago. Temp. 66°F. W Kingbird meadowlark, ibid, ibid, 3 W. Kingbird, meadowlark, m. dove, 3 W Kingbirds, 2 Kingbirds, 1 Kingbird, meadowlark,

meadowlark, ibid, 3^w kingbirds, E. Kingbird, 2 w kingbirds,
 w kingbird, 2 redwing, 2 lark bunting (first observed for
 paschis), lark bunting, redwing, ibid, 3 w kingbird,
 063. Campus road, 2 redwings, 3 w kingbirds, 4
 redwing, 3 cowbirds, redwing, 3 redwing, 2 redwing,
 redwing, (these redwings are generally distributed along
 highway). 068 Oakley Turnoff. 4 w kingbirds, 3 ibid,
 3 ibid, 2 ibid, 069 Thomas Co line, 3 w kingbirds, 3
 w kingbirds, 070 fresh bodgee hell, m. dove, considerable
 yucca, meadowlark, horned lark, 3 meadowlarks, 073
 Rufford, 3 meadowlarks, 071 marsh hawk, 3 w king-
 birds, meadowlark, w kingbird, 2 w kingbirds, 2 w
 kingbirds, 2 ibid, more tumble weed growing along
 fences, barn swallow, 2 w kingbirds, 2 w kingbirds,
 2 barn swallows, 080 S Fork Salomon River, 081
 Mingo Rd, 3 w kingbirds, 2 w kingbird, 1 w kingbird,
 1 w kingbird, w kingbirds (nearly all w kingbirds on
 fence lines or in flight near fence lines), 2 w kingbirds,
 5 w kingbirds, w kingbird, ibid, 2 w kingbirds, 4
 w kingbirds, 090 Colby, 3 w kingbirds, 2 w kingbirds,
 meadowlark, w kingbird, 1 ibid, 2 w kingbirds,
 095 burrowing owl (10:55 A.M.), 3 w kingbirds, (country
 very flat), redwing, 2 meadowlarks, 099 East Levent
 Rd. mourning dove, redwing, redwing, 2 ibid, 1 ibid,
 (the last entry means 1 redwing as above or preceding
 and not 2 redwings), redwing, meadowlark, pheasant,
 w kingbird, barn swallow, 108 mileage marsh bank.
 closed by 2 barn swallows, 3 w kingbirds, (groups of
 w kingbirds are generally distributed along fence in a
 100-150 linear distance), 111 Sherman Co. line,
 kingbird. (there seems to be a decrease in w kingbirds
 + meadowlarks the last 20-30 miles), 5 kingbird, 3
 kingbirds, 3 redwings, 2 lark bunting, meadowlark,
 119. Edson, lark bunting, meadowlark, lark bunting,
 lark bunting, lark bunting, 5 cowbirds, w kingbird,
 lark bunting, w kingbird, redwing, lark bunting,
 127. E. Goodland w kingbird, main Goodland
 129 main Goodland exit. w kingbird, ibid, ibid,
 132 marsh hawk, 2 redwings, 135 Caruso. w kingbird,
 138 Ruleton, 2 kingbirds, temp 67°F., w kingbird,
 3 w kingbirds, 147 Colorado, 12:25, Temp 68°F and

sky still cloudy, 146 Colorado State line, badger road kill,
 3 w kingbirds, 2 crows, 3 w kingbird, 160 Burlington
 Rose Avenue, w kingbird, meadowlark, 170 Bethune Rd,
 12:55 sky cloudy & cool. Lark bunting, killdeer, 180
 Stratford. Stratton. 183 sage brush occurring, 189 Vona.
 From here continued w on old highway until meeting with
 Interstate Highway. Practically no traffic. mourning dove,
 w kingbirds in city among trees but uncommon in open
 prairie in this area, lark bunting, 3 lark bunting,
 2 lark bunting, 5 lark bunting, meadowlark, meadow-
 lark, meadowlark, 4 lark bunting, meadowlark, 196
 Siebert. 2 w kingbirds, 2 bunting, horned lark, 8
 lark bunting, 4 cowbirds, meadowlark, 199 Sand
 Creek, lark bunting, meadowlark, ibid, 204 Republican
 Rwa, 2 barn swallows, lark bunting, sky clearing &
 high cirrus clouds, 207 Flagler, 2 w kingbirds in city,
 w kingbird, lark bunting, meadowlark, Temp 80°F,
 lark bunting, 213 Lincoln Co., bank swallow, 2
 lark bunting, 220 Arriba, w kingbird are related
 in abundance to prairie as trees are made available
 to them, w kingbird, 5 lark bunting, 2 ibid,
 2 ibid, bunting, 233 Genoa, 234 leaving
 plateau to lowlands. 2 lark bunting, w kingbird,
 lark bunting, ibid, 243 Simon, w kingbird,
 horn lark, meadowlark, lark bunting, ibid,
 ibid, meadowlark, 265 Agate, swallow, horned
 lark, 2 mourning doves, meadowlark, lark bunting,
 m. dove, ibid, lark bunting, meadowlark, m. dove,
 meadowlark, w kingbird, lark bunting, ibid,
 m. dove, 278 Deer Trail. 282 first major stream
 in valley. at 3:22 P.M. 284. crossing second stream bed.
 285 Peoria interchange. w kingbird, ibid, m.
 dove, meadowlark, redwing, 297 Strasburg. 301
 Kiowa, 303 Bennett, lark bunting, meadowlark,
 309 Manila Rd. w kingbird. 313 Walkers. 3 mead-
 ow larks, meadowlark, lark bunting, m. dove,
 321 Aurora interchange east of Denver and end
 of Complete Census. From here checked airport in
 Denver, thence n on 35 to Cheyenne. Birds uncommon
 and to Fort Collins turnoff included. Franklin gull,
 Calif. Gull, grackle, Brewer's blackbird, redwing, w kingbird,

lark bunting, meadowlark, mourning dove. Proffie
 terrific and ~~various~~ effects bird populations. Beyond
 Fort Collins the land in grazing and minimum of human
 habitation. Birds uncommon. The census of today
 and of yesterday should be plotted against linear distance
 across the prairie from Lawrence to Aurora, especially
 the meadowlark (all birds have been recorded for this
 species as well as hawks and owls) and the W kingbird
 in areas where information is available. There should
 be a definite increase and decrease across the prairie
 from E to W. I am confident that time of day in-
 fluences bird distribution and whether fence lines are
 present or absent. Country roads have more birds (in
 numbers) than Interstates. At Cheyenne visited
 Frontier Rodeo and camped just N of area. The
 Temp at 11:00 ^{P.M.} is 65°F. Set Min. Max.

Cheyenne, Wyoming

July 25, 1970

7:30 A.M. Temp 63°F Min 53°F, Max. 65 Left
 Cheyenne ^{for Custer (highway 25)} 8:40 A.M. Mileage 42446. Citellus (armatus
 in size) in City Park. This park is large and can
 accommodate many people. Rodeos should be left down
 to hearing within 3-4' only. will keep ^{complete} only selected notes
 to first part. 42452 Swainson hawk, 2 horned larks,
 lark bunting, 3 horned larks, 1 ibid, cliff swallow, 460
 Atlas Rd, 2 horned larks, 1 ibid, cliff swallow, horned
 lark, 3 ibid, 8 cliff swallows, 4 horned larks, 465
 Whitaker Rd, area mainly prairie but some shrubs toward
 mt range to W, 2 horned larks, meadowlark, 2 horned larks,
 1 ibid, 9 meadowlarks, horned lark, 469 Swainson
 hawk, lark bunting, night hawk rd. hill, 3 cliff swallows,
 Minno Rd at 470, 2 lark bunting, 20 redwings, horned
 lark, ibid, cliff swallow, porcupine rd. hill, horned lark,
 horned lark, lark bunting, lark bunting, meadowlark, swallow,
 482 Two adult golden eagles, one on top of telephone pole
 and one circling about 150' beyond. These eagles were
 150' from the road. This is the area at the beginning
 of wheat growing in alternate strips in limited areas.
 483 Platte Co. line. Horn lark, cliff swallow, horned lark,
 horned lark, shrubs are cliffrose, mourning dove, 490

Swainson hawk, 491 Chegwater, cliff swallow, mourning
dove, 3 mourning doves, mourning dove, cliff swallow,
494 TY Basin Rd, 2 cliff swallows, horned lark, ibid,
mourning dove, mourning dove, 'killed deer, horned lark,
lark bunting, meadowlark, 502 Slater, meadowlark,
mourning dove, horned lark, cliff swallow 506 Antelope
Rd, cliff swallow, mourning dove, 2 lark bunting, horned
lark, mourning dove, horned lark, ibid, 518 Wheatland,
10:25 A.M., mourning dove, 523 Laramie River, striped
skunk rd. kill, horned lark, 527 N Laramie River,
2 cliff swallows, lark bunting, mourning dove, lark
bunting, 2 mourning doves, mourning dove, meadow-
lark, ibid, 532 Torrington, meadowlark, 537 Cotton-
wood Creek, 2 mourning doves, 8 swallows, mourning
doves, 2 Brewer Blackbirds?, 540 Ponderosa pine to right
for first time, 541 Cassa Rd, mourning dove, 545
Swainson hawk, 2 meadowlark, rock wren, horned
lark, 550 Sibley Rd, lark sparrow, 550 Horse Shoe Cr,
lark bunting, swallow, 553 Glendo, mourning dove
(birds are not included from Ctie), cormorant, turkey
vulture, gull, 560 Leaning reservoir, meadowlark,
mourning dove, ibid, great blue heron, 562 Converse Co.
line, w. kingbird, redwing, cliff swallow, ibid,
ibid, 8 redwings, 567 N Platte River, 5^{cliff} swallows,
cliff swallow, 2 swallows, 6 antelope and first observed on
trip at 570. 581 Mogpie at Douglas. End of census.
at 12:10 at Douglas. Weather 88°F, 20 percent sky in
series, wind from N. Night hawk active. Birds across
to Casper scarce and include, meadowlark, mourning dove,
lark bunting, cliff swallow. At 601 at Boulder Creek,
noted a badger rd. kill. 605 first ducks since Lawrence,
meadowlark, 610 Swainson hawk, sage hen (♀ and 6 young),
632 badger rd. kill, Casper 637. at 3:25 will make
complete census from Casper to Sheridan. lark bunting, lark
bunting, ibid, ibid, ibid, ibid, 2 ibid, 1 ibid, Temp. 88,
lark bunting, ibid, 2 lark bunting, ibid, lark bunting,
ibid, 3 horned larks, lark bunting, meadowlark, horned lark,
2 horned lark, lark bunting, horned lark, marsh hawk
at 653, 5 lark bunting, 2 meadowlarks, lark bunting,
lark bunting, 2 lark bunting, lark bunting, ibid
3 Brewer blackbirds, 5 cliff swallows, lark bunting,

cliff swallow, meadowlark, cliff swallow, 665 Teapot rocks, the lark bunting up to now have been localized but groups generally distributed, they were more common in the first 2/3 of way. 668 Tea Pot Creek, 5 cliff swallows, 2 cliff swallows, horned lark, lark bunting, ibid, ibid, 679 Salt Creek 680 Mid west. 689 Dugout Creek, no birds since Salt Creek, 2 cliff swallows, 692 Tisdale mountain Rd. 2 cliff swallows, 2 meadowlarks, lark bunting, Cowbird, 3 lark bunting, 2 lark bunting, 2 lark bunting, loggerhead shrike at 695, 2 lark bunting, 4 lark bunting 3 cliff swallows, 704 S. Fork Powder River, cliff swallow, 707 5 antelope, 4 cliff swallows, 2 cliff swallows, meadow-lark, 711² antelope, lark bunting, 712 Middle Fork of Power River and Kaycee, 515 rd hell badger, w. kingbird, 716 N. Fork Power River, 718 2 magpies, 8 cliff swallows, 724 Reno Rd, 2 lark bunting, mourning dove, 728 marsh hawk, lark bunting, m dove, lark bunting, 2 m doves, lark bunting, loggerhead shrike, meadowlark, 2 bunting, 2 lark bunting, 2 ibid, 2 ~~lark~~ lark bunting, meadowlark, cliff swallow, lark bunting, mourning dove, 739 middle fork rd, m dove, lark bunting, meadowlark, 2 lark bunting, cliff swallow, 750 jack rabbit rd hill, 3 lark bunting, 2 lark bunting, 751 Trading Rd, Brewer blackbird, lark bunting, 757 3 miles out of Buffalo to S, and end of complete census. Continued thru city toward Sheridan. 761 porcupine rd hill, 767 7 antelope, at De Smet Lake, 28 nighthawk in one group, 771 8 antelope; some small ones in group. 772 Swanson and porcupine rd. hill, 773 Piney Creek Rd. 775 Piney Creek, 778 first mule deer, 780 meadowlark, 783 Prairie Dog Creek, meadowlark, 789 Golden eagle circling 200' above ridge, at 7:15 P.M. 790 2 Swanson hawks, 791 Sheridan. 801 Big Goose Creek. 807 Tongue River. Camped about 3 miles W of crossing of Tongue River. At camp noted meadowlarks, Brewer blackbird, mourning dove, red fox and 1 rattlesnake. Set thermometer at 1000 P.M. at 72°F. 5 mi wind from N. at 42810

Tongue River, Highway 87 and 90, N Sheridan, Wyoming

July 26, 1970

Temp 6:00 A.M. 59°F. Last night min. 58, max 73°F Left 8:30 at 42810, Day clear. will keep record of meadowlarks

as usual to montana border. meadowlark, ibid, ibid, ibid, ibid, ibid.
 Valley is dominated by Brewers blackbirds, meadowlark,
 22828. montana border. Will keep complete record across state.
 8:25 A.M. meadowlark, considerable montane influence of
 grasslands. meadowlark, 2 Brewers blackbirds, 832 Pass Creek,
 8 Cliff swallows (these resting under bridges), Brewers black-
 bird, ibid, goldfinch, 10 Cliff swallows, 2 redwings, Brewers
 blackbird, redwing, 2 ibid, redwing, redwing, 2 ibid,
 3 ibid, redwing, 2 redwings, 2 redwings, 2 redwings, redwing,
 2 redwing, 30 Cliff swallows associated with bridge, redwing,
 redwing, red-shafted flicker, Brewers blackbird, Wyo. Co. line,
 838, Brewer blackbird, 2 redwings, 2 redwing, Brewers blackbird,
 redwing, 2 redwing, east Kingbird, B. blackbird, 2 redwing,
 mourning dove, redwing, cliff swallow, 2 mourning doves,
 mourning doves, mourning dove, redwing, m. dove, m. dove,
 nighthawk, nighthawk, redwing, redwing, nighthawk, 4 cow
 birds, B. blackbird, redwing, redwing, hedges road kill, redwing,
 redwing, 2 redwing, redwing, redwing, redwing, redwing,
 2 redwing, east. Kingbird, 2 redwing, redwing, redwing, 40
 cliff swallows, redwing, redwing, redwing, magpie, 2 redwing,
 2 m. doves, 852 Lodge Grass, ducks in pond but cannot identify
 because of distance (small bluewing size), m. dove, 2 redwing,
 redwing, redwing, 4 redwing, 2 redwing, m. dove, 15 Brewers,
 redwing, 3 redwing, redwing, redwing, redwing, Kingfisher,
 redwing, 2 redwing, great blue heron, east Kingbird, 2 east.
 Kingbird, meadowlark, 2 m. doves, m. dove, B. blackbird,
 859 Little Bighorn River, m. dove, redwing, meadowlark,
 magpie, m. dove, east. Kingbird, Chat (?), 2 redwing, redwing,
 nighthawk, redwing, striped skunk rd. kill, This area is
 upland grasslands and broad river valley of cut hay and
 riparian community of dominant Cottonwood, the very fertile
 part in Montana had more of a montane influence of springs
 on slopes and brushy swales. 2 w. bluebirds, Brewers black-
 bird, 866 Little Bighorn River, 2 redwings, B. blackbird, 2
 redwing, redwing, 2 redwing, 2 redwing, meadowlark, redwing,
 2 redwing (in most cases male and female on telephone wires
 above marshy spots of cattails, m. dove, 2 redwing, redwing,
 2 redwings, 3 redwings, redwing, east Kingbird, meadowlark,
 spotted striped skunk rd. kill, cliff swallow, 872 Little Bighorn
 river, redwing, 872 leaving main road for Custer Battle Field
 of the Little Bighorn. Impressed with extent of the Battlefield

and the wide dispersal of casualties. My impression is that these men died in a retreat of a blunder of ^a poor military judgement of Custer. Comanche and several other horses survived and were found near river in cottonwoods. All horses were shot except Comanche which was shipped east. Of the field maneuver was to kill the horses from ^{the} ~~the~~ ^{under} the soldiers and Indians. ~~Why~~ ^{Why} were so many horses left alive but all soldiers killed. Returned to main road at 880. ^{10:50} Redheaded woodpecker, w. Kingbird, red-shafted flicker, 881 Crow Agency, Cliffswallow, m. dove, redwing, magpie, western Kingbird, meadowlark, redwing, m. dove, meadowlark, 888 Dunmore, 8 Brewer blackbird, m. dove, Cliffswallow, redwing, 893 Big Horn river, 2 redwing, Gardin 895. As is true with any city, the birds are not included in the census because they are not typical of the grasslands communities. Redwing, horned lark, this area is all in wheat and country flat, lark bunting, sage thrasher, 902 raw native prairie, 904 sparrow hawk, lark bunting, meadowlark, meadowlark, redwing, striped skunk rd. kill, porcupine rd. kill, cliff swallow, meadowlark, B. blackbird, bluewing teal, lark bunting, m. dove, lark bunting, redwing, lark bunting, redwing, redwing, redwing, B. blackbird, lark bunting, lark bunting, striped skunk road kill, killdeer, cliff swallow, m. dove, m. dove, ducks, 920 Yellowstone Co., meadowlark, ducks, B. blackbird, ducks, 2 meadowlarks, meadowlark, 2 lark bunting, 2 cliffswallows, 935 Taylor, redwing, 2 cowbirds, mourning dove, 937 2 magpies, meadowlark, w. Kingbird, 947 Billings (unusual skyline drive on N side city. New college. 947 Yellowstone River, 12:40. w. Billings, highway 3. lark bunting, 955 2 sparrow hawks, horned lark, cliff swallow, east. Kingbird, 961 Dusty Cr., mourning dove, 966 Acton, lark bunting, redwing, lark bunting, 4 lark bunting, upland plover, ducks, cliff swallow, lark bunting, B. blackbird, 2 lark bunting, upland plover, lark bunting, coot, shoveller, mallard, bluewing teal, cowbird, pied-billed grebe, 8 Brewer blackbird, killdeer, redwing, striped skunk rd. kill, redwing, 3 redwing, redwing, 2 east Kingbird, lark bunting, 3 yellow-headed blackbirds, redwing, meadowlark, m. dove, 2 m. doves, cowbird, 2 cliff swallows, redwing, cowbird, meadowlark, cowbird, lark bunting, meadowlark, lark bunting, 3 redwings, redwing,

982 Broad View, east kingbird, cliff swallow, lark bunting,
 m. dove, redwing, striped skunk rd. hill, 40 cliff swallows,
 m. dove, meadowlark, lark bunting, redwing, cowbird,
 cowbird, cowbird, 6 Wilson phalarope, 984 Golden Valley Co.,
 lark bunting, lark bunting, meadowlark, ducks, 3 cliff
 swallows, m. doves, lark bunting, m. dove, upland plover,
 996 Big Coulee Creek, 4 lark bunting, 996 Musselshell River,
 997 Lavina, 2:25 998 Highway 12. 003 Cushman, 2 m doves,
 4 cliff swallows, east. kingbird, 008 striped skunk rd. hill, lark
 bunting, east kingbird, cliff swallow, B. blackbird, redwing,
 2 redwing, 016 Lyeburg (Lyegate?), road down broad valley
 of river, trees, cut grass but birds rare, 50 cliff swallows,
 temp 85°F, meadowlark, 021 Barber, 5 cliff swallows,
 027³/₄ Wheeland Co. line, redwing, 8 cliff swallows, redwing,
 cliff swallow, 3 redwings, 029 Shawmut. redwing, redwing,
 redwing, 033 ideal for birds but rare. B. blackbird,
 redwing, m. dove, magpie, 2 redwing, 036 sparrow hawk,
 redwing, redwing, magpie, redwing, 4 cliff swallows, red-
 wing, yellowheaded blackbird, 046 ~~Hartem Co. line~~
 Harlawton, left 3:52 w kingbird, horned lark, meadowlark,
 horned lark, horned lark, horned lark, horned lark, horned
 lark, horned lark, meadowlark, horned lark, horned lark,
 horned lark, cliff swallow, bluewing, horned lark, Citellus.
 area of grasslands and low hills, 058 marsh hawk, 3 horned
 larks, horned lark, horned lark, horned lark, B. blackbird,
 2 lark bunting, 063 marsh hawk, 064 Judith Gap. 066
 Fergus Co. line, Citellus. 068 Ross Fork Creek, 2 m. doves,
 redwing, B. blackbird, 2 cowbirds, meadowlark, B. black-
 bird, m. dove, redwing, east. kingbird, 070 Garneil,
 cliff swallow, cliff swallow, B. blackbird, meadowlark,
 2 Brewer's blackbird, lark bunting, lark bunting. 076
 Buffalo. m. dove, meadowlark, 078 straw, 2 cliff swallows,
 redwing, redwing, redwing, meadowlark, 081 Judith Basin
 Co. line. 8 cliff swallow. 084 Fergus Co line, cowbird,
 086 Sun (?) Creek. 087 junction with 87. 088 Judith Basin
 Co., cowbird, 090 Ross Fork Creek, 2 horned larks, 094 Hobson,
 cliff swallow, 098 Moccasin, 102 Benchland, horned lark,
 horned lark, horned lark, redwing, horned lark, 111 Windham,
 striped skunk rd hill, Wilson phalarope (4), 114 Willowcreek,
 horned lark, 117 Skull Creek, 2 redwing, 118 Stanford,
 meadowlark, mourning dove, east. kingbird, 123 Bon (?) Creek.

2 horned lark, meadowlark, meadowlark, 125 Fox Creek,
 meadowlark, 2 horned lark, horned lark, meadowlark,
 meadowlark, horned lark, 134 Teyser, B. blackbird, ibid,
 2 ibid, B. blackbird, 2 Brewers blackbird, 145 Otter Creek,
 146 Raynesford, song sparrow, this is an area that should
 support birds but they are rare, meadowlark, 149 Cascade Co.,
 magpie, magpie, 157 Belt Creek, B. blackbird, meadowlark,
 174 Junction 227, -228, 178 Great Falls, 7:00 P.M. Birds rare
 from last ~~notational~~ notation. Continued n to Vaughn
 and camped there. mil. 43200

Vaughn, Cascade Co., Montana

July 27, 1970

Left 10:15 A.M. will keep complete record to Calgary, Canada.
 meadowlark, cliff swallow, striped skunk rd. kill, cliff,
 swallow, meadowlark, east. kingbird, shrike, 11:13 Teton Co.,
 some wheat still green and relatively short, meadowlark,
 3 Wilson phalarope, meadowlark, 18 Brewer blackbird,
 redwing, cliff swallow, 226 Sutton, meadowlark, 230
 sparrowhawk, meadowlark, ibid, 8 cliff swallows, 236
 Pondera Co. line, photo (700727-1) of clouds preceding
^{at 240} rain, 11:25 241 Brady turnoff, heavy rain moved in. Temp.
 end of census. 253 Conrad, Temp. 60°F heavy rain all
 the way, 257 300 Calif gulls in long linear flight pattern,
 n of Conrad. Brewer blackbird, 254 Valier turnoff, 271
 Table Co., ~~At~~ ^{Marais} River, at 274, 280 Shelby 286
 Bornkin Rd, 300 night hawk, beldeer, 309 Sunburst.
 clearing to w but continuous rain since started, meadowlark,
 horned lark, 318 Sweetgrass. 318 Canadian border,
 meadowlark, ibid, cliff swallow, striped skunk rd. kill,
 120 Calif gulls, 2 horned larks, mourning dove, 3 horned
 larks, cliff swallow, 4 mourning doves, east. kingbird,
 Calif gull, 2 cliff swallows, ♀ and 7 Gray partridge,
 meadowlark, 3 cliff swallows, meadowlark, 342 Swanson
 hawk?, redwing, 343 Warer 344 lunch by side of lake.
 Following birds here: 28¹ Franklin gulls, 25 lesser
 yellowlegs, 3 Western sandpepers, 3 beldeer, 2 families
 mallard ducks (8 each), 2 pintails, Coot, 8 blue-wing
 teal, 6 redwings, 29 Avocet, 1 Calif gull, great blue
 heron, 1 east kingbird, left 1:45 3 Franklin gulls,
 Franklin gull, Franklin gull, 70 Franklin gulls,

Franklin gull, ¹⁴ Franklin gull, Egg Pyrrhuloxia Lake at 351, Sharp-tailed grouse, 362 Raymond, meadowlark, ^{cow} blackbird, meadowlark, m. dove, meadowlark, 365 Sterling, meadowlark, horned lark. 369 Lethbridge Co. 8 ducks, east kingbird, B. blackbird, 375 Raymond turn off, meadowlark, ibid, B. blackbird, 386 Lethbridge, at 2:30, temp 78°F, B. blackbird, Calif gull, east kingbird, Franklin gull, 8 Calif gulls, Calif gull, 2 m. doves, cliff swallows, horned lark, 413 Pearce, meadowlark, redwing, Calif gull, 423 Fort Macleod, 425 Old Man River, water clear, m. dove, meadowlark, ibid, east kingbird, 2 cliff swallows, 432 Willow Creek, Brewer blackbird, ⁹⁰ ~~30~~ Franklin gulls, photo 700727-2 of sky and storm at 435, (beyond Willow Cr and '500 see in car) 438 Grainoma, B. blackbird, east kingbird, crow, striped skunk rd. hill, crow, starling, mourning dove, 4 crows, 1 crow, B. blackbird, meadowlark, ibid, Claresholm, at 448 at 4:20, 2 photos 700727-3 and 700727-4 of colored grain elevators, 445 Calif gull, horned lark, marshhawk at 458, Calif gull, ibid 460 Staveland, 2 cliff swallows, redwing, redwing, ibid, ibid, ibid, meadowlark, 466 Parkland. Cowbird, B. blackbird, cliff swallow, 8 B. blackbird, ducks, redwing, ibid, ibid, 475 ⁿ ~~Manitou~~, B. blackbird, Calif gull, Forster tern, ducks, 4 Calif gulls, redwing, Citellus, cowbird, cliff swallow, ducks, ducks, 12 starling, 8 B. blackbirds, 4 cowbirds, river valley more and more showing characteristics of montaine influence, 492 Vulcan, Cliff swallow, 5 Brewers, Calif gull, Citellus, Citellus, meadowlark, 501 Highwood River, 2 Calif gulls, Citellus, weasel rd. hill, quillies montaine, Citellus, 504 Sheep River, Citellus, crow, 4 crow, ⁴ 509 first evidence of trees and willows extending beyond river channels. Aspen and willows common, Crow, Citellus, 2 crows, field of native vegetation & flowers, ducks, Forster and black tern, Calif gull, porcupine rd. hill, meadowlark, Citellus, redwing Citellus, Citellus, Citellus, redwing, crow, ducks, east kingbird, Citellus, Citellus, 521 Citellus, Citellus and outer city limits of Calgary. End of Complete Census. at a point east of Calgary (4 miles) counted 45 crows passing by one point on return from feeding at ~~6:45~~ 6:45 P.M.

Other birds noted on way w to Banff are: spotted sand-piper, night hawk, killdeer. Continued w to Bow Camp and stayed there overnight. Temp at 10:00 P.M. 58°F. 43585

Bow Camp Provincial Park, E of Calgary, Canada
July 28, 1970

7:55 A.M. Temp 54°F. Min 50, max 55°F. Fog to near base of mountains. Birds in area. Red-stuffed flicker, ^{yellow} Canada jay, white-crowned sparrow, Bohemian waxwing, barn swallow, hummingbird, song sparrow, Lincoln sparrow?, Common loon flew by calling, barred flycatcher of phoebe size, nighthawk, Tennessee warbler?. Continued toward Banff. Low fog a blue skies showing. 2 photos (700728-1) and (2) of Eisenhower Peak below Banff. Lake Louise. 2 photos (700728-3) (4) and (5) of glacial with telephoto. 689 golden eagle. Clark's crow and pine grosbeak in area. Only one gull ^{calif?} up to Thompson ⁷⁰⁰⁸²⁸⁻⁶ and ⁷⁰⁰⁸²⁸⁻⁷ near here. Turnoff to new dam. Temp at divide 57°F. At Columbian Fields Glacier took three photos 700728-8-9-10, ¹¹⁻¹²⁻¹³⁻¹⁴ one of which was Mary. 777 photo ^{#15} 700728-7 of Ericophorum and ^{#16} 700728-10 of a red fox tail grass (light fading). ~~777~~ Continued to Athabasca Camp grounds on old road for camp at 43612 and 7:00 P.M. thru Banff National Park to near Jasper (Camp) noted only 5 marmots, 7 mantled ground squirrels, 2 citellus, no deer, elk, moose, chipmunks, 5 Clark crow, eagle, 7 pine grosbeaks (along shoulder of road), 1 gull, no ducks, 2 spotted sandpipers, 11 Tamiasciurus and a remarkably few small birds. A factor may be the 60-80 miles per hour speeds of a continuous line of cars. Reduction in speed may help but the great numbers of cars will never be reduced as a factor unless restricted by reservation. Slows moving cars and fewer cars may solve the problem. Roads of this character are not compatible with wildlife, nor, for that matter scenic values.

Athabasca Park Camp, Jasper National Park, Alberta, Canada
July 29, 1970

7 ~~Sciurus~~ Tamiasciurus only mammals in area. Noted several bone scale middens of approx. 4 ^{cubic} meter in volume. Did not notice a single bird in camp area except a hummingbird and a family of spotted sandpiper. Many trees have been blown down from winds from the SW. Left camp at 10:21 A.M. at 43612.

Continued to Jasper and after touring the village left at 12:00 at 827. Will keep complete list of birds to Prince George. Temp. 61°F. 844 British Columbia line at 12:15. 2 cliff swallows here. 858 crow. 864 redwing blackbird, in this same area above the lake noted 2 adult and 2 young (family group), red-necked grebes and one bird that looked like a loon with a reddish bill and a backward-forward movement of its head and neck as it moved across the water. 864 beginning of Moose Lake. 873 Red Pass at lower end of lake. Small bird. Birch tree with reddish leaves in contrast to greenish gray of aspens. These birch are equally mixed with aspen in areas where they both occur. Along road right-of-way at edge of forests, the aspen trees and other conifers, bend in a varying degree of an arch toward the open and, at least, the aspens at every or at least 1/10 to mile intervals. On edges of natural cliff outcrops aspens do not so arch. In one area it appeared as if tornadoic winds from mt. slopes had blown off the tops of aspen trees or bent them over. These areas were not associated with snow slide areas. 896 Junction 16 and 5 at ~~1:50~~ ^{1:50} 2 crows, 2 cowbirds, 912 sparrow hawk. Temp. 56°F, 2 bluebirds, 925 sparrow hawk, crow, 2 small birds. Aspen increasing in size. 20 crows, 9:35 ² sparrow hawk. Crow 938 ~~Fraser~~ Fraser River Crossing. Just west of McBride approx. 60 rusty blackbirds. At McBride the Fraser River valley is 3 or 4 miles wide and about 40% under cleared fields. The canyon is just undergoing clearing of forest for cultivation and about in advancement of the U.S. in 1870. These new cleared areas, some old, should show interesting small mammal communities. 12 rusty blackbirds, small bird, 951 trees becoming larger and more associated with trees, small bird, 955 tree are larger (cedar) and aspen present but rarely. 958 trees ^(cedar) now up to 3-4' in diameter and dominant. 959 West Twin Creek. 3 crows. 967 Gate Run. 973 Snow-shoe creek. New exposed covered with a matted green plant. 979 Catfish creek. 980 sharp-shinned hawk. 012: Arises? Creek. Birch trees becoming common. Dragon fly occasionally observed. 015 Lunate Creek. raven, 029 Kenneth Creek, crow, 037 Purden Lake. at 6:00. The local informant say the animals are shy and do not come to roads. 031 Bowron River, 3 small birds, cowbird, 055 Willow River, small bird, aspen again appearing. Crow, 075 Junction 16 + 97.

44078
 078 Prince George, 082 Leung Prince George at 9:00 after
 leaving wheels of trail packed and visiting part on top of hill
 that commands a vantage point for all of Prince George.
 Continued west and camped at upper mud creek road turnoff
 at mileage 44102 at 9:30 P.M. It has been interesting
 today to have counted all birds from Jasper to Prince George
 on a new highway thru almost virgin wilderness and found
 the numbers unbelievably small. Small mammal such as
 chipmunk were absent. Weather has been cool, as usual, and
 marked by occasional shower of short duration. In one
 area of 90 miles there was practically no habitation. Man's
 destructive influence is in proportion to distance from areas of
 aggregations from total logging, ^{second growth} & fires near cities (Prince George)
 to climax forests at the most distant point of human aggregat-
 ion. The human influence is pushing into these new climax
 areas but should be stopped by governmental proclamation. There
 is no need for total destruction of these pristine wildernesses.

18 miles W Prince George, British Columbia, Canada

July 30, 1970

Temp 54°F at 8:15 A.M. Last night min. 50, max 54°F. Rained
 several times last night and now overcast and occasional
 sprinkle. mileage 44102. will keep complete list of birds
 and mammals to the east. 103 Chilako River, small bird,
 killdeer, Redstart. 124 3 feet of snow is average for winter.
 10 feet is a bad snow 1964 last bad winter, and temp 60°F
 below, usual temp 40°F. Once snow is on ground there is
 little thaw. Informant that fished 200 miles to north report
 lakes poor but rivers good. Caught grayling, arctic char,
 132 osprey at Beaver Camp. Steller jay. 134 ducks,
 136 sparrow hawk, 144 2 Steller jays, Finkeut River, 145,
 146 sparrow hawk, robin, 154 Vanderboof 10:30, 2 cliff
 swallows, 157 4 rusty blackbuds, 30 rusty blackbirds, open
 grass fields and deciduous trees (sycamores) conifers dominant,
 small bird, 171 8 rusty blackbuds, 174 robin, 180 Fort Fraser,
 mainly a lumber town. Fraser River just beyond, clear water
 and mosses on edge. small bird, Wechako. 186 5 cliff
 swallows, swallow, 192 sparrow hawk, 193 Town of Fraser
 Lake. Left 12:00 195 Stelako River. 4 barn swallows,
 swallow, 209 Watkins Creek, swallow, cliff swallow,
 219 Erikato River, interesting country thru here. 222


sparrow hawk, 231 Puntagee Creek, rusty & blackbird, &
 sparrow hawk, 2~~38~~⁴⁰ Burns Lake, crow, 246 Decker Lake,
 2 swallows, 246 2 sparrow hawks, sparrow hawk, 248
 Common loon, 2 rusty blackbirds, small bird, 250
 sparrow hawk, 254³ sparrow hawk, these birds are associated
 with clearing but occasionally right-of-way thru short
 stretches of forests but not far from clearings. 257 2 sparrow
 hawks, 257 sparrow hawk, 261^{adult} golden eagle circling 200'
 above trees, wings both primaries & secondaries frayed, in area
 of conifers, aspen & lakes. 265 sparrow hawk, sparrow hawk,
 swallow, 273 Topley. 3 Cow birds. Lunched at 274 a
 hooded merganser in small lake. Also 4 crows^{and song sparrow}. Left 3:00
 4 barn swallows, 282 sparrow hawk, kingfisher, 283
 sparrow hawk, 286 10 crows, robin, spotted sandpiper,
 cottonwood (black) trees along river mixed with cedar &
 hemlock. Small bird, crow, ducks. 289 2 sparrow
 hawks, 291 2 sparrow hawks (these pairs are frequently
 separated by 200-~~400~~³⁰⁰ feet. 294 Houston 3:20. 294 2
 sparrow hawks, barn swallow, hummer, 300 sparrow
 hawk, swallow, 59°F, robin. 313 Deep Creek. 314
 Wakefield Rd, sparrow hawk (had just captured a mouse),
 blackbird, small bird, 314 sparrow hawk, 317 sparrow
 hawk, 2 rusty blackbirds, 2 swallows, 323 sparrow hawk,
 sparrow hawk, 325 sparrow hawk, Temp 59°F, Telkwa?
 at 326, sparrow hawk, small bird, Bulkley River just before
 entering Smithers, 339 Smithers, swallow, 2 swallows,
 swallow, 12 barn swallows, robin, small bird, small
 bird, barn swallows. 347 sparrow hawk, 348 sparrow hawk, small
 bird, small bird, Tobogaw 350, ~~353~~³⁵³ sparrow hawk, 355 sparrow
 hawk, all sparrow hawks are in telephone lines, small
 bird, 357 John Brown Creek, cascades in Skeena River just below,
 small bird, 358 sparrow hawk, 2 cliff swallows, swallow,
 small bird, robin, small bird, 368 photo 700730-1 and 2
 of river gorge, latter showing upwelling^{at} (Bulkley River),
 robin, 2 small birds, 369 small bird (a Townsend warbler),
 380 New Hazelton, 383 S. Hazelton, 498 Skeena crossing
 (RR), Gravel bars in Skeena are pituitous and boulders all
 same size. 407 sparrow hawk, robin. 412 Price Creek.
 fresh snow on all higher mts. 414 sparrow hawk. 418
 sparrow hawk, goldfinch, in slower water all areas upwelling,
 430 robin, robin, robin, 444 sparrow hawk, 446 forest floor

beginning to look like coastal vegetation. Arrive at a place to camp on a part of an abandoned road at 8:00 P.M. at mileage 44449. A brown bear (black, adult) came into area but left when backdoor was slammed. Considerable evidence of bear in area. One pile of feces measured 8 x 6 inches of 11 individual masses 40 x 60 mm, other masses near river as well as ^{fresh} tracks in sand. One track measured 120 mm wide (front paw). Set 10 traps & baited for bear. At river were 3 bald eagles. They left gravel bar and flew into trees at edge of river. A raven was associated with the eagles. River high and extremely fast moving. Rocks on edge covered with mosses as if influenced by tide, some 2 feet above level of river. Vegetation under cedar, hemlock and fir a luxuriant undergrowth of ferns, large leaved plants, mosses, liverworts etc. Temp at 10:00 60°F. Low clouds developed late in evening.

7 miles N Chindanash Cr. Skeena R. British Columbia Canada
July 31, 1970.

Temp at 8:20 AM 56°F. Min 55°F, max 62°F. Collected the following mammals from 10 traps set in dense forest of Sitka spruce, western hemlock (dominant), mt. hemlock, Alaska cedar and black cottonwood, in a river valley. Traps 100' from river.

700731-1 Peromyscus maniculatus 201-102-23-18-23 gms ♂ testis 13 mm
From base of old dead tree among mosses, lichens, sword & broken fir etc.

700731-2 Sorex cinereus 125-53-15-8-11 gms. ♂ testis 6 mm. Hair scratched from body by hind feet then . Both specimens measurements only.

Hermit thrush with green caterpillar in mouth. (1 mi. = 1/10 mi.)

On car speedometer by road test which is 1/20 less than on all previous trips in the past years. Left area and continued on highway 16 to Prince Rupert. Sky overcast but with usual low, discreet clouds. Chindemash River at 456. 458 Msk. 473 Terrace.

2 gulls. 10:40, robin, 490 Shames River, small bird. 497 2 photos
700731-3 photo mountains and water in foreground.

700731-4 " " " " " " Small toads 15 mm long in this area. 498 Estew Riv. 506 5 Steller jays, gravel sandbars with small rocks are covered with dead tree log forms, many of the trees are cut logs. This condition does not occur in the upper reaches of the river. 506 band-tailed pigeon. 511 Etchamsike River, robin Steller jay, 515 2 band-tailed pigeons, robin. 516 Kasika Riv. 517 band-tailed pigeon. 520 Polymar Cr. 526 Kwintsa Cr., black bear on

railroad tracks and left with haste. The serious factor in conology on the Skeena River is wind (up canyon), otherwise water surface good. The remarkable feature of these large rivers, in upper headwaters, are the continuous riffle grade without slow moving sections. Currents fast. This may be correlated with high water this season. 2 small birds. 530 2 crows. 530 beginning of noticeable wind on river making whitecaps on water. These winds must be influenced by ocean. Steller's jay, cliff swallow. River becomes wide at ^{beginning} point of high wind. 532 3 band-tailed pigeons, 2 swa ~~by~~ H. K. Riv. 3 swallows, robin, Skeena (RR), 546 first large boat. 547 Tamiascum. 547 Tye 553 Rainbow summit. 554 Steller jay. 555 Rainbow Lake lodge. 558. Prudeholm camp, 8 barn swallows, 563 a small mammal (shrew seen across the road). 565 bridge across bay into Prince Rupert at 2:25 P.M., approx 400 gulls and a bald eagle. These were about (except 2) ^{the first} gulls observed ^{coming} into this area which would indicate that there is not much food on the river. 570 Prince Rupert at 3:15. Last 8-10 miles of road construction where large areas of rock are being defaced by road cuts. This afternoon visited Prince Rupert. At ferry ascertained that the price to Juneau and return was prohibitive. Charge one way to Kelsey Bay of trailer, car and 3 people is 181.27. To Ketchikan for one passenger is \$8.00 one way, to Juneau 87.50 one way. The day before yesterday a ferry from Juneau (Taku ferry) ran ashore with 291 passengers & 45 crewmen. Talked to an owner of a fishing boat (Bonnie Belle) about fishing condition. He reports that in 1965-66 the Provincial Fish and Wildlife seined out the herring fish for management purposes and as a result the forms of sea life dependent on the herring fish suffered, including Commercial fish. As a result of the withdrawal of the food resource, the bird life ^{all kind} (estimated at a million in the area) and the marine animals (seals, some kind of whales etc) were almost completely decimated. He used the term "resulted in a veritable desert of wildlife". ^{See Sgivers} ~~Travellers~~ are limited to 3 days a week by the Fisheries Commission. ^{a continuous} most fish are taken in 3 weeks of the year when fish are biting. Some fishermen make their ^{years} fortune in that period of time. Some salmon feed and rest on or near the bottom (260 feet in some cases). In contrast to Russian fishermen, now off Vancouver Island, Canadian fishermen are allowed to take only certain kinds and numbers. Good fishing depends on ocean survival before returning to fishing grounds. Fishing is getting worse and there is ^{no} not good prospects that it will ever return to the kind of fishing ^{as} in the past. Fish movement

checked with seabase and charges are \$60.00 per hour. To Queen Charlotte Island the price is \$21.00 per person one way. In the dock area the gull is common. The rook is throughout the area as is the fish crow. A hermit thrush song this evening. Along the railroad to 5 are the usual marine forms, lacking the mobile forms. Water pollution high in harbors and if it were not for gulls, there would be a serious problem. Gulls pick up fragments of fish (average 1 inch diameter). One fisherman reported that as few as 8 years ago the bald eagle was common, as many as 25 feeding in one small bay. Today they are frequently observed but not as common as years ago. Camped at Roosevelt Park. This afternoon Mary photographed me + Annette at dock at Prince Rupert. no. 700731-5

Kaien Island,
Prince Rupert, British Columbia, Canada.

Aug 1, 1970

Temp. 7:00 A.M. 58°F. Last night min -49, max 60°F. Foggy but sun occasionally. This morning made reservation for ferry to Kelsey Bay for Aug 4. Visited a fish processing plant. Salmon average 2 1/2 feet long. A fisherman reported that the removal of herring effected the large salmon but not the smaller ones. Salmon now are coming in smaller than in previous years.

The most important factor is ocean scum. Visited Port Edward. On way back made the following photographs:

Photo 700801-1
 and 700801-1a
 700801-1b Pollution from Port Edward Cellulose plant consist-
 ing of a white foam and dark water. This ^{does not} collect in settling
 basins but goes directly into marine waters

700801-2 The Cellulose plant and terminal - smoke pollution.

700801-3 At a point where highway 16 crosses bridge to
 Prince Rupert Island showing island and Galloway rapids.
 Bald eagles on island or peninsula to right.

700801-4 Same area as above with sun reflection on islands.
 End of roll

700801-5 Same area as above on Prince Rupert Island proper
 showing bald eagle on limb. There were 9 eagles including
 adults and mainly juveniles attracted to this particular area.

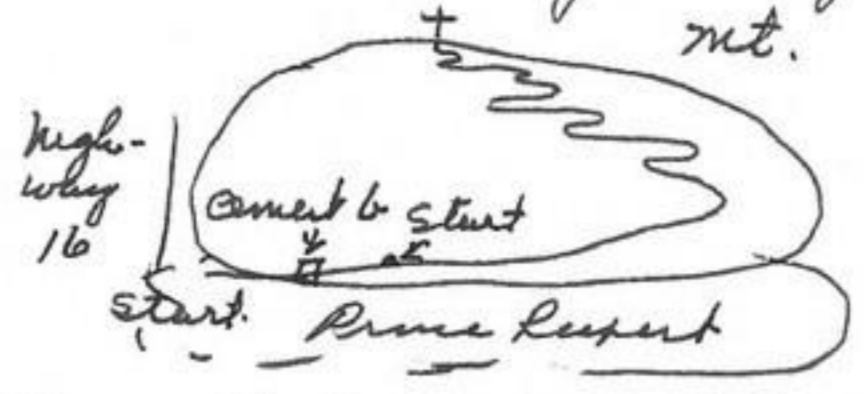
This evening made trip up log road on mountain east of
 Prince Rupert (approx 2 miles). Loggers are active in removing
 timber including western hemlock (dominant) Pacific silver fir,
 cedar, and Sitka spruce. Alder main soft wood tree. Many
 species of ferns. No birds along way except 2 grouse working
 up mountain. This evening set 50 traps at Annapolis water
 works. 700801-6 and 700801-7 of sunset from Roosevelt Park.

Roosevelt Park, unmt., Pruce Rupert, British Columbia, Canada

Aug 2, 1970

Temp. 7:00 AM 56°F. Last night min = 50, max at 10:00 58°F No traps supported mammals. Slate-colored junco and hermit thrush along set. This area is quite disturbed by people.

This morning, Mary and I hiked to top of mountain E of Puce Rupert.

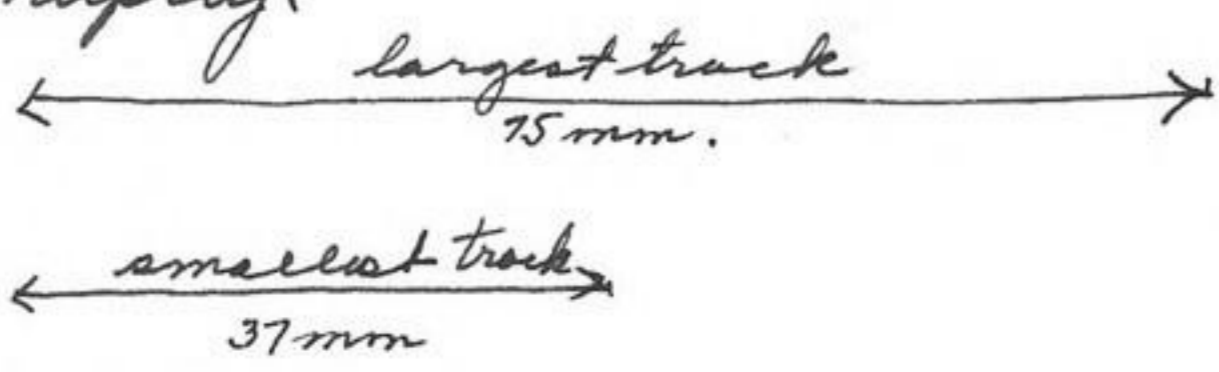


Follow a road made by the telephone Co to install and maintain the relay station on top of the mountain. The high quality timber cut to make road was left on

mountain, generally toppled down slope. This lumber should have been salvaged. Left at 11:05 AM at 4/10 miles above Cement building at beginning of Logau? logging operation that, already has removed all timber on E side of road for a mile. This company or individual bought the W side of this mountain from the city of Puce Rupert about 10 years ago for \$350,000. There is approx \$4,000,000 worth of timber being cut. Logging is disastrous to steep sidehills as the entire surface is modified for road construction. Will keep complete record from base to top of mt. 8 roven in groups of 2 or 3 near base. These roven are generally distributed around the city and mountain slope.

11:06 2 roven. Some make a call like a sound against a hollow log. This call is generally given while in tree but can be given while in flight. 11:25 winter wren, 2 roven, slate-colored junco. 11:30 slate-colored junco, winter wren. 11:55 2 roven. *Tamiasciurus* calling. 12:10 golden crowned kinglet. 12:20 2 roven, new at complex with cedar, elsewhere cedar are less common. The trees on slope are western hemlock which are dominant, cedar, Pacific silver fir (more common with increasing altitude, alder and mountain ash common deciduous trees. 12:30 first switchback and pass area. Trees reacting to wind influence and lodgepole present. The lodgepole are not of the life form as in conifers but short and irregular and oddly branching on the pass. Trees a fewer and 1/6 height of large trees on west exposure. Toad 75 mm long with blue stripe down back.

Blacktailed deer tracks increase from base of mountain to top. At first divide where timber opens up the deer tracks increase abruptly.



12:42 high voltage building. 3 roven, Oregon junco, 5 roven. 3 roven. 12:55 second switchback at each switchback the deer

Locality for 700802-2:

2 1/2 mi. S Prince Rupert (Courthouse), 1000 ft., Kaien Island
British Columbia, Canada.

Continue on as trail which immediately fades out. 1:03 3rd switchback. 107 4th switchback. Road becomes curved beyond and difficult to differentiate switchbacks. Four dragon flies so far. There are ponds on the upper slopes of mountain. One pond 10'x10' with water lilies covering. Other ponds in varying degrees of development. ^{At 1:25, is a pond with Sphagnum covering in loose organization.} ~~3rd & Oregon juniper~~. 1:48 3rd telephone shack. Deer utilizing dry soils from road construction. There are fewer rovers on top than on lower or middle slopes. 2:08 last divide before top. 2:35 top. There are more deer flies on top than elsewhere. Oregon juniper & young. Soils on upper slopes deep and humus. On top made photograph of Eriophorum with background of whitish roots of old tree. Inflorescence beyond maximum beauty. This photo no. 700802-1. Left top at 2:45. At 3:00 just below top on W side noticed a shrew running up bare water covered rocks in center of small creek. It ran under one of the rocks where it remained until captured. This specimen is no. 700802-2 Sorex cinereus 92-36-12-8 ♂ wt 4.5gms, testes 6mm. Will not keep complete census on return trip. The rovers use air currents on W side of mt and can be seen flying back and forth along slope and gaining or losing altitude. They travel in 2-3-4-5 and in pairs or 3's perform aerial acrobatic movements by the lower of 2 birds turning over on its back with a quick flip. 3:15 bald eagle (adult) flew ^(E) by at 200' near upper shoulder of mt. 2 slate-colored juncos. 3:22 Bald eagle flew W. Photo 700802-3 of the Cellulose Plant at Port Edwards with Mary in foreground. The smoke travels E up canyon. And pollutes the range for untold miles. Near the plant the air is unbearable. On some occasions the wind is from the S and some of the smoke reaches Prince Rupert. Photo 700802-4 of ^{Spanish} grasses of red & green on a hemlock. No 700802-5 of a W hemlock and typical spread branches. Noted several granite boulders (erratics) that do not are not native. They range from top to base of mt. Photo 700802-6 of Mary and bay area to NW beyond Prince Rupert. Photo 700802-7 some place but to SW with steep cliff. (Good vantage point for property. Photo 700802-8 of elevated toilet. Photo 700802-9 of red and green masses on rocks & soils of steep profiles. Arrived car 5:00 P.M. There is a great need for preserving

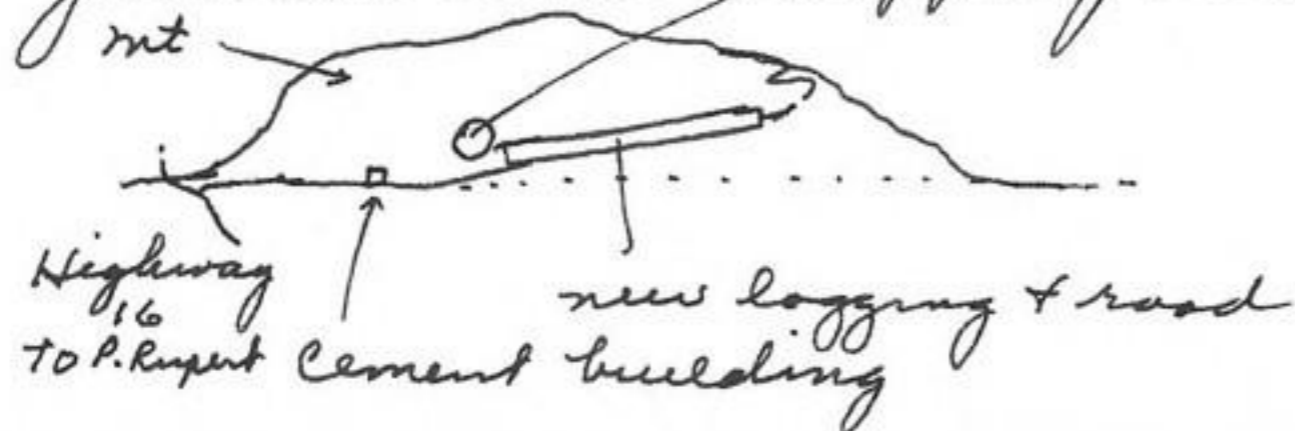
mountain of timber, especially as a resource for recreation and beauty for Prince Rupert. All available labor and commercial space is taken and the only expanding industry is tourism. This mt will be an important resource for tourist trade. The logging should stop immediately and horizontal foot trails should be developed thru representative timber communities. There is not one available area of native stands of forests that can be seen by visitors or local people. In addition to making available the forest there should be a section of beach set aside before development exposure to the last remnant of water front. Seely Island should not be developed for commercial purposes although it is the only direction that commercialization can expand.

Prince Rupert, British Columbia, Canada

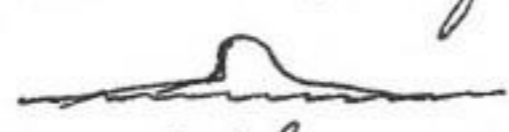
Aug 3, 1970


9:30 A.M. temp 63°F. Min last night 52°F. Made trip S down railroad tracks and along beach. Will keep record of birds observed. Left 10:50 A.M. 200 mew gulls, 4 glaucous winged gulls, 5 raven, Kingfisher, 3 N.W. Crow, Tamarac, Hudsonian, 4 Chestnut-backed Chickadee, 2 golden-crowned Kinglet, winter wren, 2 band-tailed pigeons. 11:20 song sparrow, winter wren, 2 raven. 11:30 2 raven 11:50 80 mew gulls, 2 glaucous winged gulls, raven. There is a oil band at high tide which covers rocks, logs, etc. Mink tracks?, black-tailed deer killed on railroad tracks, An returned checked old gun emplacement (W. war II), This area of Prince Rupert is characterized by raven from village to top of mountain. The mew gull is the dominant gull.

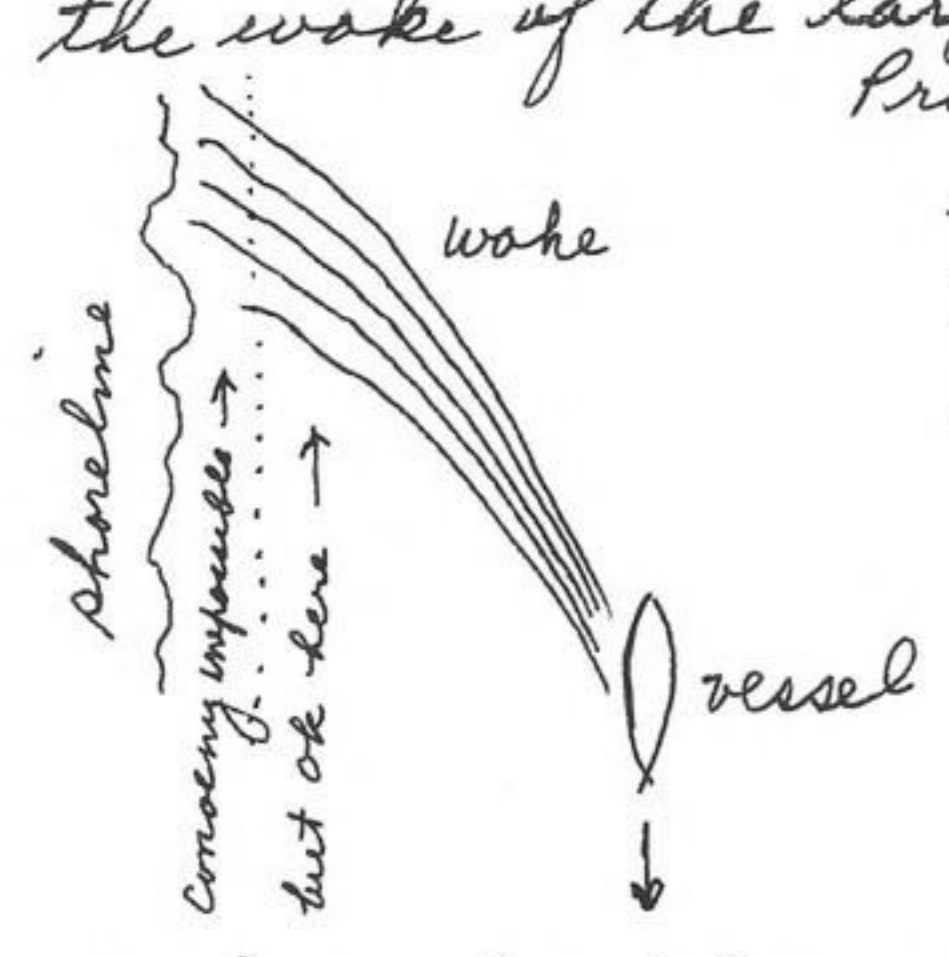
This evening set 100 traps in timber on mountain E of Prince Rupert. The area is near climax with cedar, hemlock, Sitka spruce, Pacific silver fir, alder and other associated shrubs. The understory was minimal except a thorny shrub that grew in less dense areas. Slope, covered with masses, ferns etc. all areas damp and in some areas there was standing water. This area is 4/10 mi. S of the old cement building and at a point where logging begins and grade increases. Trapping area.



This evening bear common loon and a bald eagle passed N by camp at Roosevelt Park. Barn swallow nesting.

8 surf scoters?, 4:40 2 bald eagles, 4:43 2 bald eagles, 4:47 bald eagle 5:05 Kitmat turn off channel. 2 bald eagles 5:06 bald eagle, 5:07 bald eagle, Can see 16 gulls at one observation in wider part of channel. 5:12 bald eagle. 6:30 Canadian Fishing Co., barn swallow, 18 gulls. 6:41 first of several small whales with a short fin on back . In this general area for approx 4 miles observed 32 of these mammals (probably porpoises) in groups of 1-2-6-15-6-2. Gulls increasing in this area. Have noticed that when Kitmat trees have been removed from sides of canal, especially on shallow ~~the~~ soils, the succession is not to young conifers as elsewhere, but to a depauperate vegetation of shrubs. Many of these slopes have been denuded for long periods of time and do not return to conifers. 7:02 2 bald eagles. 7:30 bald eagle. 8:15 a bald eagle flew W to E across straight. 8:20 2 bald eagles. 8:25 bald eagle, 8:30 bald eagle, 8:31 bald eagle, 8:35 2 bald eagles. 8:55 Cone Island. 9:30

in area of recent ocean floor emergence with the following profile. . At about this time the lights were getting low and so concluded the census. A Mr. John Draper, 3 East Street, Fareham, Hampshire, England joined us on the boat trip. He studied at Leeds, England and was touring Canada and U.S. before returning. Studying accounting. Enroute from Prince Rupert made a significant observation in relation to canoeing in the inland passage. Except for stormy and windy conditions this passage would not be any more difficult to navigate than the lakes in northern Minnesota. There is one condition, however, that cannot be accommodated and that is the wave action along the shoreline created by the wake of the large vessels or ferries. The Queen of



Prince Rupert created approx. 22 consecutive waves which pounded the shoreline much the same way as the surf of the ocean. The height of the wave along the shore varied with the distance of the vessel from shore but averaged 4 feet (3'-6"). In addition the waves created and overturned about 6-12 feet from shore. These conditions would make canoeing an impossibility along the shore. To navigate these ship created waves one would have to be at least 100' out from the shore beyond the turbulent wave action of the shoreline.

One should be alerted to the fact that a canoe cannot be beached or tied at water level as these waves would capsize and damage the canoe. One could compare the wave action along the shore with the surf action against rocks on the ocean. There are approx. 22 such wave actions with each passing ship. I was not able to ascertain the type of action of two opposing sets of wakes created by two ships passing in opposite direction. but would estimate that the water surface would be completely unpredictable and hazardous to canoeing, especially on shore and at the point where wake of ships become antagonistic. These conditions would apply to rubber life rafts, row boats and small motor boats. In summary of observations on the bald eagles would say that there is a tendency for these birds to select the mouths of rivers and especially islands associated with these rivers as they enter the canal. They most frequently are observed on the outer conifers of the island or mainland, and generally perched in a limb $\frac{2}{3}$ to top of tree. The ends of islands are more commonly selected. Did not see birds on the ground or beach. All birds were adults and easily recognized at a distance by white head. As other populations observed supported $\frac{3}{4}$ subadults (those at Prime Rupert) would judge that the total number of eagles observed (all adult) on the inland passage from Prime Rupert south would actually be much greater or $\frac{2}{3}$ greater. The subadults are difficult to see unless silhouetted against sky or flying. The number of eagles were: 2-3-2-2-1-1-1-1-1-1-2-2-1-2-1-1-1-2-1-1-1-2 = total 38. Including those observed at rapids ^{on E side Prime Rupert Island} and elsewhere the number of bald eagles would be approx. 60.

Kelsey Bay, Vancouver Island, British Columbia, Canada
 Aug. 5, 1970

Arrived at Kelsey Bay at 8:30 A.M. Continued S to cutoff to Alberni, thence W to West side of Vancouver Island at Longbeach. The Macmellon Cathedral Forest is a segment of climax forest, set aside by Mr Macmellon, a lumberman, as an example of the forests before these timberlands were denuded. The principal tree here is Douglas Fir, some over 200' high and 6-8 feet in diameter. Continued to divide between Sprout and Kennedy Lakes ^{on highway 44} and set 100 traps in climax conifer trees near the pass.

Divide, between Sprout and Kennedy Lake, Vancouver Island,
British Columbia, Canada. [Sutton Pass]

Aug 6, 1970

Collected the following mammals from traps set last night:

	<u>700806-1</u>	<i>Peromyscus m. interdictus</i>	210-120-24-19-29 gms, ♀	2x2 emb 15mm
	<u>700806-2</u>	"	199-105-23-20-23 gms ♀	plac. scars.
	<u>700806-3</u>	"	208-108-24-19-24 gms ♀	wt. normal
	<u>700806-4</u>	<i>Peromyscus maniculatus</i> ^{angustus} interdictus	[126]-[36]-19-18-20 gms ♀	wt. normal pelage pattern from natural mouge.
	<u>700806-5</u>	"	" ^{intermedius}	204-111-24-19-22 gms ♀ plac. scars
	<u>700806-6</u>	<i>Peromyscus maniculatus</i> ^{angustus}	179-88-20-19-22 gms ♀	plac. scars
	<u>700806-7</u>	"	" ^{angustus}	167-81-21-18-16 gms ♂ testes 8mm
SK. ONLY	<u>700806-8</u>	"	" ^{angustus}	162-78-21-18-20 gms ♂ testes 10mm
"	<u>700806-9</u>	<i>Peromyscus</i>	" ^{interdictus}	170-88-23-18-21 gms ♂ testes 3mm
"	<u>700806-10</u>	"	"	164-84-23-18-21 gms ♂ testes 5mm
"	<u>700806-11</u>	"	"	173-91-24-18-20 gms ♂ testes 4mm

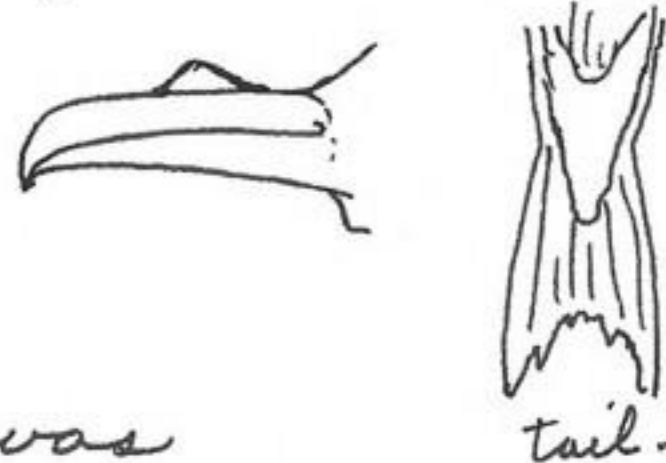
These animals were from climax forests and edge at first open field E of divide. 50 traps were set in sedges ⁽²⁵⁾ and 25 along edge of willows. The remaining 50 were in climax forest on slope among large boulders ^{in forest} (some 30x30). Ground covered with ^{down} mosses, ferns and typical ground cover of forests. Trees were cedar, hemlock, Douglas fir, mt. ash etc. *maniculatus angustus* was at edge, nothing in sedges and long-tailed *Peromyscus* ^{maniculatus interdictus} in climax forest. Deer tracks were common in slopes surrounding residential pond (6x15'). Bear tracks also in sand and meads. When traps were collected a bear track (hind foot 8" long from buck to end claws had stepped on my fresh foot imprint made 10 minutes before. I had heard just shortly after some rocks falling on side of road grade some 200' beyond. This meadow apparently is flooded periodically because of drain interference by road construction. This A.M. temp 58°F, min 55°F. At pond at trapping area observed 28 band-tailed pigeons, 5 Stellar jays, 2 robins, 4 slate-colored juncos. This is an area of aggregation of birds for feeding and watering. Berries of several varieties on all slopes. Left camp at mileage 878 at 11:00 A.M. for W. Coast of Vancouver Island. Arrived at Ucluelet at mileage 915 at 12:15 P.M. Enroute are 3 lakes at different elevations or step down. From Ucluelet continued N. to Longbeach where we camped at northern end of beach at rock barrier before last segment of beach.

Longbeach, Vancouver Island, British Columbia, Canada

Aug. 7, 1970

Temp 56°F at 9:45 A.M. Min last night 55°F. Found a Leach Petrel, washed ashore on beach. It measured: 432 mm wing spread, 138 mm wing, 194 total length, 80 tail, 15 exposed culmen, 44 gms weight, 5 mm in front of turbinal

Collected also a surf scoter from beach. This bird had the characteristic color on beak and head but lacked the conspicuous white of forehead and nape as was present on other scoter in area. On the ocean beyond breakers and again about 1/10 mile beyond were approx. 110 surf scoters feeding and swimming either as single or groups of various sizes. Occasionally a group would fly by at water level. This A.M. an osprey flew by over edge of water about 200' high. This evening went to Tofino and took 4 photos of vessels nos 700807-1 to 700807-4. Lost lens of camera here and reported to police and placed notice in local paper. Other birds in area were: cormorant (occasional but flew by), 150 sanderling, 3 dowitcher, killdeer, 200 herring gulls and 15 glaucous-winged, 1 Herrmann's gull, western sandpiper?, chestnut chickadee, red-throated loon?, kingfisher, oyster-catcher, Steller's jay, hermit thrush, kinglet and barn swallow.



This afternoon made trip to Shipwreck Wreck Bay and made several photos of the young peoples camps:

- | | | |
|-----------|--|--------------------------------------|
| 700807-5 | Annette on rock at N end of bay. | |
| 700807-6 | Camp site of hippies among drift wood at Wreck Bay | |
| 700807-7 | dwelling of hippie under logs. | 700807-11 passing the cigarette! |
| 700807-8 | " " " " " " | 700807-12 dwelling |
| 700807-9 | " " " " " " | 700807-13 hippie in performance. |
| 700807-10 | abandoned dwelling and sign | 700807-14 dwelling |
| | | 700807-15 " and dwelling |
| | | 700807-16 general area of beach wood |
| | | 700807-17 Wreck Bay |
| | | 700807-18 " " beach |

This bay has the same kind of birds as at Longbeach but also more black oystercatchers. Returned to Longbeach and observed the whale just off shore. Noted 3 at one time and at least one in action most of the time. The back appeared mottled and with the following profile: This afternoon also observed the killer whale.

This evening set 100 traps on uplands (first marine bench) among climax forest of cedar, hemlock, lodgepole pine (round crested), mosses, ferns and standing water. The flat condition created edaphic conditions & trees were not as high as in better drained areas.

8 mi E and 6 1/2 mi S Tofino, approx 80 ft., 700808-119
Longbeach, Vancouver Island, British Columbia, Canada.

Aug 8, 1970

From trapline of 100 traps set last night caught:

<u>700808-1</u>	Sorex	118-52-14-8-7gms ♂ testis 5mm
<u>700808-2</u>	"	128-54-14-8-7gms ♀ ut. normal.
<u>700808-3</u>	"	128-54-14-8-5gms. ♀ ut. normal.
<u>700808-4</u>	Peromyscus	210-116-24-19-22gms ♀ plac. scars.
<u>700808-5</u>	"	198-109-24-19-22gms ♂ Testis 9mm
<u>700808-6</u>	"	216-116-25-19-26gms ♀ plac. scars.
<u>700808-7</u>	"	178-90-22-18-26gms ♀ ut. normal.
<u>700808-8</u>	"	188-100-24-19-18gms. ♀ ut normal
SK. 6N. <u>700808-9</u>	"	180-98-23-18-24gms ♀ ut normal.
SK. 6N. <u>700808-10</u>	"	181-95-23-18-25gms ♂ testis 3mm

These mammals showed tendency to aggregate along line of traps rather than occurring at random. Temp at 10:00 A.M. 62°F min. last night 49°F. This area is to become a national Park after Sept 11 and lumbering will culminate at that time. It is important that under N.P. control, the area will be used to the greatest value. Two important items should be considered; 1) hold Wreck Bay inviolate to trespass except viewing area from crest of bay. 2) restrict visitors to beaches by reservation and keep buildings and trailers (also tents) on lee side of bordering trees. Other beaches should be developed as recreational beaches were swimming and use could be developed to maximum capacity but not associated with national park. Already these beaches are crowded with cars using the beaches for speedways. The gulls and sandpepers are harassed constantly and their distribution is governed by the present use of the beach, being most of the time beyond the limits of the beach. There is never an instance of a resting gull on Longbeach. The tidal pools and encrusted barnacles and mussels show very little effect from trampling and, from my observation, are rarely visited, most people remaining on the sandy beaches. Many species (at least 15) of kelp are on the beaches in a loose windrow. Communication between beaches (Wreck Beach and Longbeach) are poorly developed and indicate a rather recent concentrated use of the area. As a general statement would say that Tofino is unique in position but because of its limited area will suffer from commercialism. Ucluellet may be in a better position for expansion. Tofino should be maintained in its unique state.

Longbeach, Vancouver Island, British Columbia.

Aug 9, 1970

Had brakes adjusted and visited areas near Longbeach.

Aug 10, 1970

Left Longbeach ^{45064 mi.} for Victoria. ^{at 10:30 AM} Drove first to Ucluellet and left this point at mileage 080, 11:15 A.M. Will keep complete record to Parksville. 082 roven, Steller's jay. 085 junction to E. at 11:25 A.M. 086 robin, 2 gold finches, Steller's jay, 087 Steller's jay. (these jays are mostly single birds and occur in the same places along road as if still on territories), 088 Steller's jay, Steller's jay. 082 Steller's jay. 109 cascades and falls in river. Photo (700810-1) of Annette at edge of river channel. ^{Herring gull at falls.} Birds rare. Top of log trail at switchback is 1600 ft. at mileage ¹³⁰ ~~128~~. ^{Occasional grasshopper called.} The grade is about maximum for trailers.

The greatest and most hazardous aspect of traversing this road is fade-out of brakes which happened on the trip out to beach. One should be sure brakes are properly adjusted before starting. This section of road will be replaced by new road at base of mt along Sprout Lake. This lake is freshwater and is characterized by dark color and interesting wind patterns. There were no fishermen (boats) on this lake at the time we were passing by. Lumbering operation extensive on S side and new roads being constructed by the timber interests. If Longbeach is made into a National Park, this area should be left untouched for the scenic route to the park. Albertin would profit by this lake asset. Arrived at Parksville at 179. ^(3:00 P.M.) Birds rare between Ucluellet and here. 217 Road kill raccoon (could be set). This animal was between Cassidy and Ladysmith. At Duncan noted a great blue heron and a night hawk. Arrived Victoria at Ferry at mileage 278. Camped at a Trailer park approx 3 miles W of town. This evening Mary photographed the government building (no. 700810-2). Considerable building around the old part of town and to my estimation is detractive.

Victoria, Vancouver Island, British Columbia.

Aug 11, 1970

This A.M. place car and trailer on ferry ramp for 3:30 departure. In meantime we visited the city of Victoria. Again, progress is changing the original character of the city. At the main port of Victoria talked to a researcher and his wife and


pet raccoon about their recent trip thru the Alaskan, British Columbian inland route. In fact they had just arrived at the time we were there. They were associated with the Conservation section of the Canadian government and had made a survey of the otter from Valdez, Alaska to Victoria, having taken moose as one of their specialties. The raft was relatively small (12×6 approx ) and propelled by a motor. The entire trip, according to the informers, was made on the outer oceanic side of the islands rather than the protected inland channel route. They claim that this type of rubber raft is safer on open ocean than boats and that most of the navigation by the Conservation Dept is by this means.

Photo 700811-1 of this party ^{boat} at the foot of the docks at Victoria. Photo 700811-2 is a rerun of entrance into harbour for purposes of publicity. This last shot was about the time the ferry arrived so was about 2:30-3:00 P.M. In the Victoria area took several photos of the central dock area, showing especially the boats in the harbour:

700811-3 large sailboat

700811-4 general view with sail boats

700811-5 flowers on government grounds

700811-6 at dock for ferry to Port Angeles (brownish trailer is ours)

700811-7 cruiser leaving port

700811-9 rope on ferry

700811-8 bell on ferry

Left Vancouver Island at Victoria at 3:30 and arrived at Port Angeles shortly after (\$25.00 charge for 3 passengers, car and trailer: adult \$2.50, car \$7.00, trailer \$11.00). Schedules are:

6:30 A.M., 11:15, 3:30, 7:30 P.M. Enroute across straits noted 2 killer whales, ^{TOWNSEND} 4 porpoises, 4 seoters, gulls. Continued E to Port Angeles. Max and Mariann at home. Phyllis just finishing summer session near Tacoma.

Port Townsend, Washington

Aug 12, 1970

Visited various parts of peninsula. Scuba divers claimed that water is more contaminated here than in Oregon and if brown with visibility frequently less than 4 feet. This area is at edge of main town in same bay as Zellerbach Paper mill which is at the head of the bay. Photographs taken in the general area are:

700812-1 2 black tail deer near Port Townsend.

700812-2

Left Port Townsend at 351 at 11:38. Will keep only selective notes enroute to Vancouver. Swainson hawk at outskirts of P. Townsend. 45512 Swainson hawk and first signs of tent Caterpillar infestations. 564 arrived at Mrs Vaughans at 5:00 P.M. After a short visit continued up S side Columbia River. 590 sparrow hawk east out of Portland. 622 3 Crows at bridge of the Gods. Continued to 8 miles W of Hood River (Camp Viento).
 Photo 700812-3 of Columbia River from camp.

Camp Viento, Columbia River Gorge, Oregon.

Aug 13, 1970

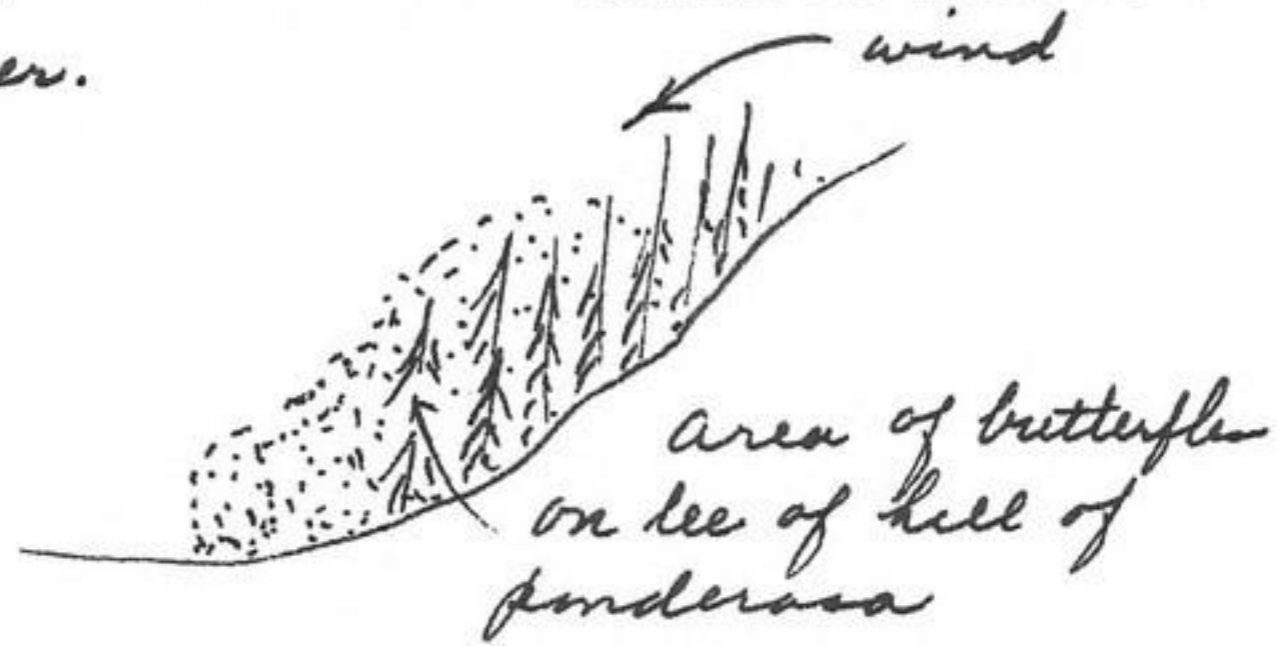
Left camp at 45635 at 9:10. Steller jays at camp. Will keep selective notes to Spokane and Couer d'Alene Lake. The wind both yesterday and today has been from the west and creating wave & resistance which would make compassing impractical. 643 Hood River. 644 First rock squirrel. 661 Rock squirrel, 2 striped skunk road kill and first observed for some time. 677 2 crows and rock pigeon flying together. New soil created by road building support sagebrush in contrast to normally covered grass slopes. 751 Boardman at 12:35, 2 striped skunk road kill. First cultivated slopes. gulls uncommon along Columbia River and where observed are in small groups on sandbars. The transition from W side of Cascade to east side is from Coniferous forests to grass on east slopes to sagebrush beyond. Cowbird dominant bird in Boardman area. Also first mourning dove. 591. Washington State line. 803 striped skunk road kill. N. East of Pasco there is a noticeable increase in yellow and white butterflies of the species that is associated with alfalfa. These butterflies are definitely associated with alfalfa in the new areas created by irrigation. As soon as one leaves these areas the butterflies are absent. Mileage 830 is a good example of this butterfly aggregate and at 835 the butterflies decrease as one approaches the typical desert. 843 on uplands wheat covers most of the surface to the total exclusion of the grassland desert. At 875 there is a concentration of diggings along exposed cuts of road right-of-way. These holes and diggings are probably squirrels and have been congregated as result of recent and complete utilization of lands for wheat. This complete removal of native vegetation and development of wheatlands will someday have a disastrous effect on erosion and clogging of drainage systems as a result of

unexpected
 excessive amounts of rain in proportions beyond the now known
 maximums. This evenuality of floods from unusual amounts
 of rain should be taken into consideration in the planning of
 dams, reservoirs and croplands. 891 marshhawk. 894
 2 redtails, 898 Ritzville junction 4:05 PM, Birds rare
 thru the dry farming wheat country. 902 horned lark and
 first observed. This is a valley of lava flow covered with
 grass and impractical for farming. 905 redtail hawk. 917
 redtail. 921 Sprague Lake and killdeer, meadowlark near
 stop. There are dense growths of cattail in certain parts of the lake.
 This was the first meadowland observed today. 931 Redtail
 hawk. 932 Decided increase in ponderosa pine and
 small lake. There is an increase in numbers of mourning
 doves. Aspen is the second tree to occur (pine grass,
 ponderosa pine, aspen. Most lakes filled with rushes and
 cattails. 963 Spokane, 6:00 P.M. Left Spokane after
 visiting Margorie Norden and continued east to NE end of
 Coeur d'Leve Lake for camp.

Coeur d'Leve Lake, Idaho

Aug. 14, 1970

Last night there was an unusual congregation of bats at trailer
 at edge of water. (Camp 1/3 mi S at NE corner of lake). Gulls
 and a chipmunk only birds observed this A.M. here. Temp. 51°F
 at 8:00 A.M. Left 8:35 A.M. at mileage 46014. There is an
 unusual amount of pollution in canyons in eastern Idaho.
 Kellogg is another place where pollution is unbearable. Accord-
 ing to natives of the area, there is nothing being done to eliminate
 smoke. Montana border 46072 at 9:30 A.M. 121 superior
 and meadowlark. 128 sparrow hawk. 134 crossbills (8),
 158 osprey, 162 Turkey vulture, 174 2 redtails. Continued
 to Missoula and picked up Karl Hoffmann. Robert Hoffmann,
 wife and children are vacationing there. At their place of
 vacationing (Rattlesnake Canyon N of Missoula, counted
 250 white and yellow alfalfa butterflies crossing road (100' length)
 per 10 minutes. When wind would blow the number increased
 to approx 10 times the usual number. These butterflies were reacting to
 wind and were collecting on
 the lee side of the hill and
 ponderosa pines. It is questionable



whether their presence among ponderosa pine was for life cycle purpose but was for protection from the wind. There is considerable alfalfa in this area. Left Missoula at 196. 241 Badger road kill, 258 Lewis woodpecker. Continued S to Sawmill Gulch at Wisdom Turnoff where we camped along the river.

Sawmill Gulch, Wisdom River, Montana

Aug. 15, 1970

min temp last night 44°F. Temp at 6:30 A.M. 44°F. Will keep list of all birds to Utah. Left 7:40 at 356 at Wisdom Turnoff. 357 5 magpies. Alfalfa on lower bank of curve in road because of drainage factor. 2 cowbirds, 2 mourning doves. 360 Moose Creek, meadowlark, 3 Brewer's blackbirds, meadowlark, Brewer's blackbird. 370 Madison Co. line. Brewer's blackbird, ^{2 mourning doves} ibid, 3 cliff swallows, meadowlark, 369 sparrow hawk, 1 redwing, 370 red fox road kill measured 24" ~~to~~ body length (which is minus tail), 8 cowbirds, 3 meadowlarks, 8 cowbirds, barn swallow, small bird, 3 Brewers, cowbird, Brewer's blackbird, redwing, approx 20 cliff swallows (there may be an occasional barn swallow but the great predominance is the cliff swallow), magpie, mourning dove, Eutamias, mourning dove, 375 Beaverhead Co. 2 Brewer's mourning dove, mourning dove, redwing, magpie, magpie, mourning dove, mourning dove, mourning, 378 Navy, 3 yellow-shafted flickers, magpie, mourning dove, 14 cowbirds, 17 cowbirds, 379 red fox road kill, 2 cowbirds, Brewer, barn swallow, Brewer's, 2 meadowlarks, 2 Brewer's, magpie. 382 Horned lark, mourning dove, ~~ibid~~, ~~ibid~~, ~~ibid~~, 388 beginning of irrigated valley. barn swallow, ducks, mourning dove, 3 cliff swallows, 2 Brewers, 4 cliff swallows, cowbird, 2 barn swallows, 4 Brewers, magpie 400 Dillon, 8:50. magpie, 4 magpies, 20 Brewer's, 4 cowbirds, 2 Brewer's, 3 Brewers, cowbird, 3 Brewers, Brewer's, 3 Brewers, Brewer's, cowbird, Brewer's, 4 cowbirds, Brewer, redwing, Brewer's, 2 yellowheaded blackbird, magpie, Brewer's, 408 Barrets, Brewer's, 20 cowbirds, 411 Beaverhead River, mourning dove, magpie, 8 magpies, 2 Brewers, 414 Swanson hawk, mourning dove, barn swallow, 2 magpies, 2 Brewer's, 8 cowbirds, 18 Brewers, Brewer's, 3 Brewers, 3 Brewers, 3 yellowheaded blackbirds, 4 Brewers, 3 Brewers, 421 Badger road kill at reservoir, on The Beaverhead, horned lark.

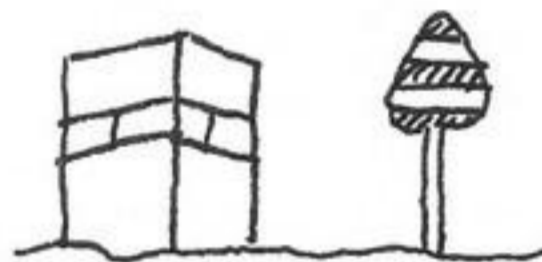
approx 10 gulls generally distributed along lake. 2 horned
 larks, 15 gulls, magpie, magpie, magpie, 427 Red Rock
 River. 8 Cowbirds, Brewer's, Swainson hawk, mourning
 dove, 4 cowbirds, magpie, Brewer's (when listed as Brewer's is
 intended for 1 Brewer's blackbird), 4 cowbirds, 2 magpies, 2
 magpies, Brewer's, Brewer's, 2 magpies; 3 Brewer's, Brewer's,
 5 Brewer's, mourning dove, 431 5 Brewer, Cowbird, 8
 Cowbirds, Brewer's, Brewer's, 3 Brewer's, Brewer's, Brewer's,
 eastern Kingbird, 5 Brewer's, 5 prairie tails, 4 Brewer's,
 Swainson Hawk. 435 Brewer's, 8 Brewer's, 4 Brewer's,
 2 redwings, shoveller, cowbird, 3 barn swallows,
 436 Kidd railroad stop. Brewer's, 8 Brewer's, 5 Brewer's,
 2 Brewer's, Brewer's, Brewer's, 15 Brewer's, eastern Kingbird,
 Brewer, Brewer, 30 Brewer's, magpie, Brewer's, 438 red tail
 hawk, 5 cliff swallows, magpie, 3 Brewer's, 2 cowbird, 2
 cowbirds, 2 cowbirds, 442 Dell. 4 barn swallows,
 magpie, Brewer's, ibid, ibid, ibid, ibid, 2 cowbirds,
 small bird, Brewer's, magpie, Brewer's, magpie, mourning
 dove, magpie. 451 Lima, 10:00, 2 horned larks, striped
 skunk road kill, ♀ and 2 young antelope, meadowlark,
 3 Brewer's, horned owl road kill, 2 eastern Kingbirds, 8
 cliff swallows, small bird, 461 red tail hawk, 465 Swainson
 hawk, meadowlark, 467 monida, 3 Brewer's, 10 antelope,
 468 10 ~~at~~ ^{crows} at Idaho border. 471 Swainson hawk.
 472 Swainson hawk, cowbird. 474 Humphrey. 475
 Swainson hawk, 2 cowbirds, crow. 484 Spencer, mourning
 dove, 2 horned larks, 4 cliff swallows. 498 Dubois.
 mourning dove, Swainson hawk, 2 mourning doves, mourn-
 ing dove, 508 Jefferson Co. line. 516 Harner Turnoff, 4 blue-
 wing teal, 3 horned larks, 524 Lehigh Turnoff, ducks,
 black tern, Forester's tern, Franklin gulls at a lake. also
 marsh hawk. Extensive marshland on left. Calif. gull.
 533 Roberts. 12 cliff swallows, many magpie nests in trees.
 crow, 541 Ogden Area at 12:05. 12 cliff swallows. 549
 Reider Airport outside of Idaho Falls. ~~12:15~~ and end of
 complete census. Idaho Falls at 12:15. Left Idaho Falls
 at 1:20 701 sparrow hawk. Continued S thru Ogden,
 Salt Lake and Provo at 8:33 at 8:00 P.M. The freeway thru
 Utah has interrupted the ecology of many places that until
 a few years ago were unaffected by roads or traffic, for
 instance the sand dunes between the Provo & Stansbury level NW of Provo.

Provo, Utah Co., Utah.

Aug 14, 1970

This morning took Mary and Karl to Aspen Grove for their ascent of Mt. Pimpaneque. Photo 700816-1 of their departure across the field to the trail among the aspens beyond. They are scheduled to return from top via American Fork side at Pimpooneke Basin. Citellus armatus active at Aspen Grove. Can also hear Parus in fir trees on S side of valley. Two Eutamias minimus active.

At 3:00 P.M. set up telescope at Orem and noted Mary & Karl on trail, having left the top at 3:00 P.M. (8 hrs on trail so far).
3:07 at ridge at base of peak. 3:11 Top rock chimney at Purtebbook.
3:17 base of chimney. 3:24 ridge divide and starting down E side into ~~Pimpooneke~~ Am. Fork Cirque. From Orem could see an additional structure on top near the glass house which is probably a survey marker. At



the mouth of American Fork Canyon made three photos of faulting of alluvium

700816-2 fault of alluvial fan and minimum ^{point} post faulting erosion. Fault scar surface still in successional stage of development.

700816-3 Fault scar

700816-4 Am. Fork terraces and displacement.

Continued to Pimpooneke Basin to pick up Mary & Karl Hoffmann. While waiting for them hiked to forest open field below terraces. Photo 700816-5 of this area. The Citellus armatus were not in grassy open field below but among the aspen and dense hillside vegetation on the W side of canyon. The Ochotona are in rock slide on E side of canyon and as low as base of slide at near meadow level.

Mary and Karl arrive at 6:30 having taken 3 1/2 hrs from top on 11 1/2 hrs for the entire trip. They observed marmot, pika, Clarki Crow, 2 hawks?, and several small birds but did not see or recognize the leucosticte. One deer observed. Townsend warbler in area.

at Pimpooneke Basin noted a road kill porcupine and several Steller's jays. At mouth of Am. Fork Canyon noted 2 rock squirrels. At Lindon at base of hill the right

wheel socket broken and lowered car to road surface for 150'. Naylor Dodge pulled the car to Provo for repair. This mechanical failure could be disastrous but fortunately it occurs at lower speeds of 35-40 M.P.H. These sockets had been cracked for some time although they had recently been checked. Dinner at Dave Evans.

Provo, Utah Co., Utah

Aug 17, 1970

Visited Don and Brenda Beck at Clark's ^{Sporting Goods Store} Don has a diamond ^{concession} section and Brenda the Skiing and mountaineering section (also Revolution section). Car repaired this afternoon and departed for Deer Creek at mileage 46930. 956 sparrow hawk. 957 sparrow hawk. Arrived mouth Provo River (at Deer Creek) and fished from boat until 9:00 P.M. then visited Si and mil at the Wasatch Camping grounds. While fishing on water this evening noted the first bat at 8:41 P.M. The Calif. gulls were still flying and feeding at that time but did not interfere with the bat.

Deer Creek, Wasatch Co., Utah

Aug 18, 1970

Mary, Karl and I tried fishing again this A.M. at mouth or entrance of Provo River into Deer Creek in inundated channel about 1/10 mi lakeward. Mary caught a 20' rainbow trout and both Mary & Karl caught many perch, the largest 9" long. Had fish this morning for breakfast. The Calif. gulls were represented by approx 150 birds. They remained resting on shore at N end lake but some occasionally fed on perch thrown back by fishermen. As wind change to S trend, many feathers ^{of gulls} (tail, secondary and body) moved past our position in the lake from their resting position to the north. The gulls showed signs of molting in tail. Occasionally all the gulls would leave the shoreline by a mass departure, circle and then return. I could not ascertain the harassment source. Birds in area, including last night, were: Canada geese, mallard, teal sp?, Calif. gull, cormorant, black crowned night heron, pintail, killdeer, spotted sandpiper, night hawk, barn swallow, cliff swallow, sandpiper sp?. Left Deer Creek and continued to Heber and thence N to turnoff to Uintas. at mileage 46993 ^(along Provo River) along conglomerate outcrops between turn off and entrance to Kanab Valley, noted a golden eagle (imm. with considerable white in wing and upper tail) soaring above the cottonwood trees along river. It alighted on top of conglomerate rock cliffs for 30 seconds then left to continue its flight along riparian growth. The 10x binoculars showed eyes, bill and body feathers at close range. Continued to Kanab, thence E up canyon to head of Provo River. At pass Mary & Karl left for the ascent of Mt. Baldy. They were to return to Butterfly Lake this evening. Continued to Butterfly Lake and set 100 traps along creek issuing from Butterfly Lake.

Butterfly Lake, 10,300 ft., Duchesne Co., Utah.

Aug 19, 1970

Collected the following mammals from trap line set last night:

700819-1	Sorex.	119-48-13-8-4 gms. ♂ testis 6 mm
700819-2	Clethrionomys	129-37-19-14-19 gms ♂ testis 9 mm
700819-3	"	133-35-19-13-20 gms ♂ testis 9 mm
700819-4	"	125-33-18-12-17 gms ♀ ut. normal.
700819-5	Bufo	6.5 mm body length, white dorsal. In hole at edge of creek.

These mammals were the only ones taken from 100 traps set along the outlet creek from Butterfly Lake, ^{at 10,321 to approx 10,200 ft below.} This area is a small creek (2-3 feet wide) and lined with mertenia, sedges and grass. The creek is thru Engelmann spruce and other upper montane communities. In previous years the upper part of this drainage had been trapped (see previous notes) when great numbers of mammals were taken. This year while all other conditions seem comparable, the population is extremely low. Of the mammals captured today, the Sorex is really the only one specifically associated with the stream. The Clethrionomys were at base of tree or along logs bordering the stream. While the water level seems constant from year to year, the other lakes show slight effects of lack of rain this year. Another factor of low populations is the lack of chipmunks and birds in general in the Butterfly Lake area. There are more small birds, however, in the mirror Lake area, especially the W side of lake near the lodge. One factor of lack of birds may be the increase fishing pressure on all lakes in the basin.

The birds in the immediate area of Butterfly Lake are: Clark's Crow 5, pine grosbeak 6, siskin 8, gray headed junco 10, Lincoln sparrow 1 caught in trap, white crowned sparrow 15, red shafted flicker 2, Canada jay 4, Townsend warbler 3, spotted sandpiper, bats over lake in evening, gopher diggings as usual.

A golden eagle, adult, flew and circled the full length of the Hayden Peak ridge from N to S, utilizing the updrafts whenever altitude ^{gain} was necessary. It disappeared beyond trees to S. These eagles at higher elevation seem to fly with more energy than eagles at lower elevations. The flight was perhaps 200 feet below the crest of the ridge.

On their trip to top of Baldy yesterday, Mary & Karl observed a small flock of leucosticte, pica, marmots and other birds. They also checked the floating island in a lake near Butterfly Lake and were able to move the island ^{with} sticks.

Left Butterfly Lake at 11:30 A.M. at mileage 47043. Mary and Karl will hitchhike to Evanston where we will pick them up. Checked the area of concentrated sparrow hawks at beginning of first one observed at mileage 61.0. (also magpies + selected obs.)

- 61.0 sparrow hawk
- 61.2 2 sparrow hawks
- 62.4 3 sparrow hawks
- 62.6 1 sparrow hawk
- 62.9 1 sparrow hawk
- 63.4 1 sparrow hawk
- 63.7 1 sparrow hawk
- 64.6 1 sparrow hawk
- 65.1 1 sparrow hawk (12:20 P.M.)
- 65.5 Wyoming State line.
- 67.4 Cultivation and open savannas beginning
- 68.9 1 sparrow hawk
- 73.7 1 sparrow hawk
- 76.4 1 magpie
- 77.4 badger road kill
- 78.7 1 sparrow hawk
- 80.9 red tail hawk and magpie
- 81.1 3 magpies
- 81.3 Bear River
- 81.7 magpie
- 83.4 4 magpies, striped skunk road kill
- 88.1 4 magpies, " " " "
- 88.7 1 magpie
- 89.2 City limits of Evanston (just beyond top of hill)

Continued E toward Fort Bridger etc. 112 3 redtail hawks.
~~270~~¹⁴⁰ sparrow hawk. 160 Little America at 4:00 P.M. at dinner here. At Green River there was a decided increase in velocity of wind which was governed by the new Flaming Gorge Lake to the south. The wind was strong in the area influenced by the canyon and valley leading N from lake. Just beyond Green River Town, the wind subsided. This is definitely a new reaction created by a man made lake. It would be worth while to ascertain the influence of this new factor in the ecology of the area. ²⁰⁵ sparrow hawk, 214 6 magpies not associated with ~~cultivated areas~~ ^{habitation of man.}
 Beginning of census of rabbit road kill (predominantly jackrabbit but cottontails represented) from junction of highway 789 to Rawlins. Alongway up to county line were 22 road kills. 306 Hadsell Rd

A total of 43 rabbit road kills up to this point (Hoduell Rd). 312 at
 7:15 P.M. a total of 51 road kills and end of census. 338 junction¹³⁰ to
 S at ~~7:45~~ 7:45 P.M. At 47340.8 Camp at Pass Creek and set 100
 traps in *Artemisia tridentata*. The sage brush conformed to
 valley associated with flat area at and just above high water
 flood stage of Pass Creek. Some of these sagebrush bushes
 reached a height of 12' and 24" in circumference at base. In
 fact they were of a size and life form to support at least 10 nests
 of magpies. Some area impenetrable. Old sage brush limbs
 were collected in piles where flood waters forced them against
 other living bushes. There were approx. 24 antelope associat-
 ed with these sagebrush bottom, either in or closely associated
 with the forest. 3 dead antelope were among the bushes, probably
 injured during hunting season and having retreated to the
 protection of these 'forests'. Other antelope approached the area
 as a matter of curiosity of seeing a human head reappearing
 above the sage brush in the process of setting traps. The area
 showed signs of sand accumulation from the creek but
 now mantled with the sagebrush. Hales in these dunes
 suggested those of *Dipodomys*. The creek proper was clear
 in ripple areas but brown stained in pool areas which
 could have been the result of recent rains. The slopes and
 erasional levels are in sedges and some grass but sparsely
 used by microtines. The sign is there but is not recent or
 fresh. There must be areas of refugia in sedges protected
 from periodic flooding. Noted a muskrat swimming in
 one of the pools and a family of 4 young (4/5 size adult) and
 female mallard. They were in a side pool, and when surprised
 from edge of bank, dispersed for ten feet in all directions but
 finally reforming and swimming down current. The female
 flew from the pond and did not follow the young. Magpies
 were in the area but kept quiet during the late evening
 hours. The Brewer's sparrow? was not too uncommon
 in the sagebrush area. One group appeared to be a family
 unit. Two mourning doves remained in the general area.
 One group of 8 cowbirds were associated with the
 sagebrush. In several areas among the sagebrush
 were colonies of large black ants. They visited and consumed
 some of the oatmeal placed on traps. A few bats flew
 up and down the creek channel at late twilight and
 were medium in size.

Pass Creek, 6597 ft. Carbon Co., Wyoming

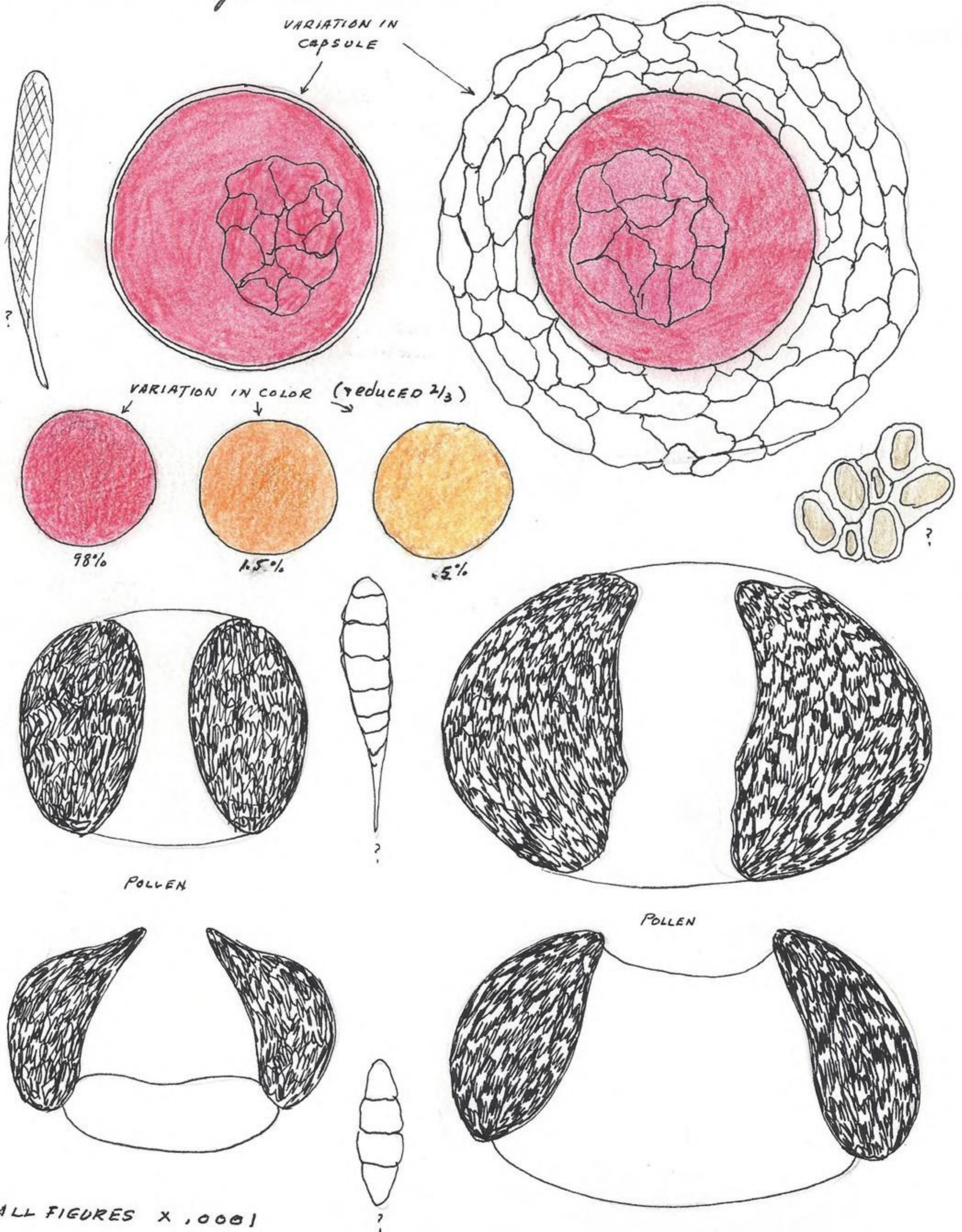
Aug 20, 1970

From trapline caught in Artemisia Caught:

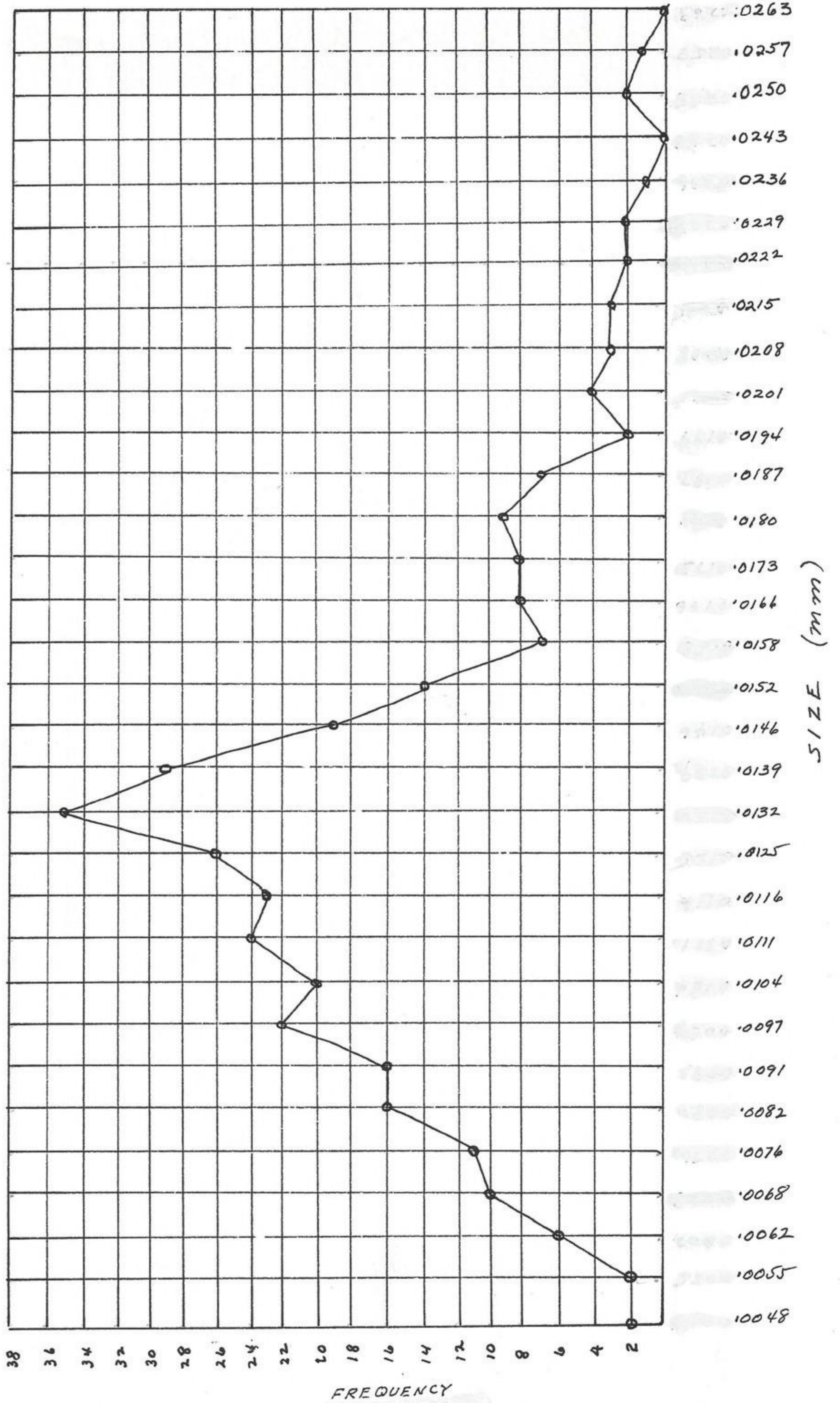
Specimen No.	Sex	Weight (gms)	Testis (mm)	Embryo (mm)
700820-1	♀	31	3x4	22
700820-2	♂	22	11	normal
700820-3	♀	27	4x2	13
700820-4	♂	20	10	normal
700820-5	♂	18	9	normal
700820-6	♀	13	normal	normal
700820-7	♀	7	normal	normal

min temp last night 38°F. Temp this morning 52°F. Left area at 8:45 A.M. at mileage 47340.8 and continued S and then E to Snowy Range. 361 mileage about 1 mile N of Saratoga. Ducks of several species (including coot + pied-billed grebe) in area. Also 3 sparrow hawks. 366 sparrow hawk. 375 2 sparrow hawks. 376 sparrow hawk. These hawks were in slopes of cultivated grasses and hay stacks. In this same area of sparrow hawks were 8 magpies in small groups. 377 Citellus. 378 mouth of canyon. 379 Wellaw meadow and pond (previously photographed). The pond is dry or drained and with exposed mud and water drainage. On all previous trips the pond has been full and ducks present. 385 Tamiasciurus hood kill. 386 chipmunk. and 2 golden mantled ground squirrels. Continued to Lake Marie in the Snowy Range where Mary + Karl left for ascent of peak and N to end of range on crest (N Gap Lake) and return. They left at 11:00 A.M. Annette and I continued to Mirror Lake and parked trail at edge of lake on S side. Annette and I made trip on median ridge from Mirror Lake to base of Medicine Bow Peak and return. This ridge lies E of Lookout Lake. Will keep track list of all birds and mammals. Left at 11:45 A.M. In high rock slide N of Mirror noted ♂ ♀^{adult} and 2 young marmots. They moved gradually up slide from foraging on low slide and meadow. Young called. 3 Clark crows here. Continued to pass to W, thence N near crest of ridge. Golden-mantled ground squirrel, adult grey headed juncos feeding 3 young. 3 Clark crows, 2 juncos, 2 Clark crows, 5 grey-headed juncos, robin. 1:40 P.M. Lookout Lake about middle section. Slides of quartz clean on W side lake. W. Crowned sparrow, single young marmot, 2:00 near old mine shaft. pipit on divide, white crowned sparrow, 3 pine siskin, Eutamias, from a snow field took several examples of red snow for study 700820-8 to 700820-14.

The alga *Chlamydomonas nivalis* was on all snow slopes in the Snowy Range but varied in intensity and position. They occurred from highest snow cornice to lowest snow field on glacial platform. Within one snow patch the intensity would vary from light reddish pink to a darker intensity in channels and patches. 700820-8.



SIZE RANGE CHLAMYDOMONAS NIIVALIS



2 adult marmots, 2:36 divide and shallow lakes, continued N down drainage. 2:50 opposite road switchback from Krumholz. marmot in slide, pika. Returned to mirror Lake via road. many exceptional settings for photographs are situated on this ridge with the main Snowy Range in the background. It would be worth while to spend a week just photographing these glaciated area. Mary and Karl arrived at Lewis Lake at 6:30 having hiked for 7 1/2 hours which is about the proper time for the approximately 8 mile trip. They report leucosticte, Clark's Crow, blue grouse, marmot, pika, white crowned sparrows, but no ptarmigan. Mary made one photo 700820-15 from top Snowy Range.

Flowers consist of approx 10 common species and then several species that occur only seldom. Grasses & sedges are in greater number of species and most frequently found in meadows. marked increase of people in area. Left mirror Lake and continued to Larime, thence to Cheyenne, camping in Veterans Park. Foggy and rain enroute especially E side front range.

Cheyenne, Wyoming

Aug 21, 1970

Left Cheyenne for Denver. Birds rare across Wyoming and Colorado because of heavy traffic on 4 lane highway. at mileage 562 noted a Swainson hawk and 2 meadowlarks. Continued to Denver and after checking E end of runway of airport (one jet tried two times without success) continued E on Colfax to freeway and thence toward Limon. at 710 noted a redtail hawk, and sparrow hawk. 7:22 Limon. at 1:00 P.M. 743 meadowlark and marsh hawk. 747 13 lined ground squirrel ^{and} at 5:40 Kansas border at 47817 mileage. Will keep complete list of birds across Kansas. 836 marsh hawk. 837 Broadland. 847 jackrabbit and skunk (striped) road kill plus mourning dove. 849 jackrabbit road kill and mourning dove, meadowlark, 856 Brewster. Temp 74° F. 866 meadowlark. 867 Levant Road, barn swallow. 870 Swainson hawk. 875 Colby, 5:45. barn swallow, ibid. 892, 7:00. 895 marsh hawk 897 Swainson hawk. 47899 W oakley and end of complete census. Camped at first Rest Area east of Oakley.

E of Oakley, Kansas

Aug 22, 1970

Summary of birds between Oakley and Abilene:

Approx. 150 meadowlarks (1-5) up to Smoky Hills and then uncommon to rare beyond. 6 Swainson hawks generally distributed. 30 mourning doves, general in pairs. 1 loggerhead shrike, 2 Eastern Kingbirds, 15 W Kingbirds, 200 barn swallows, 1 short eared owl at 957. 2 redwings, 8 Cowbirds. 2 crows. Did not count Eng sparrow or starling, the latter approx 12. The most unusual distribution was the meadowlark - high in flat country, rare in the deeply rolling country of the Smoky Hills area.

From Abilene recorded hawks and other noteworthy information. Abilene 48113 at 12:30, temp 75°F. 114 Swainson hawk, Swainson hawk 5 mi W Junction City. Swainson hawk at Mc Lawell Creek road. 177 badger road kill, 178 Snokomo Road. Arrived Lawrence 3:20 P.M. at mileage 48 237.

The above notes of summer travel should be organized with distribution of birds and mammals against geographical areas. Hawks and meadowlarks represent complete censuses. Because of new size of tires on car the mileage factor is: 1 intrinsic mile represents 1.05 miles on car meter. To get true mileage, determine car mileage and times by .05. Example: if car reading is 14.6; x by .05 and add subtract results from 14.6 thus

$$\begin{array}{r}
 14.6 \\
 \times .05 \\
 \hline
 .730
 \end{array}
 \qquad
 \begin{array}{r}
 14.60 \\
 \times .05 \\
 \hline
 .73 \\
 \hline
 \underline{13.87}
 \end{array}$$

Lawrence, Douglas Co., Kansas

Aug. 30, 1970

Checked birds in riparian community on E side R.R tracks immediately E of Lawrence Waterworks Plant. 180 starlings in cottonwood trees, from 1/3 to tops of trees. They consisted of one aggregate. Robins (of which there were approx 80, generally distributed in forested area. 7 cat-birds at pond by tracks, 1 mockingbird, 2 brown thrashers, 1 flicker, 3 grackles. The pond supported more birds than I have observed before and were there because of dry conditions elsewhere. 3 cottontails. There is a noticeable difference in conditions of river and drainage systems; all clear except one from waterworks which is heavily laden with yellowish silt.

Wakarusa and Kaw River, Douglas Co., Kansas

Sept. 27, 1970

Mr. Dennis Bailey and I made canoe trip from Dugemou's Crossing (9:00 A.M.) on the Wakarusa River to Captains Creek (2:30 P.M.) on the Kaw River. Day clear and warm. Did not keep complete record but recorded some selected observations. Only 3 examples of solar change in leaves and these were a few leaves on maples. These are the first solar changes this season and are probably of this date or at least not over a day or two old. The Wakarusa was receding from previous flooding. Kaw higher than usual. Frogs and fish activity uncommon. 8 gar were noted at lower end of Wakarusa.

On the Wakarusa noted 2 woodpecker, 2 beaver, 2 muskrats, red-bellied woodpecker about 1 per 1/10 mile, 2 great horned owl, 2 redtails, 3 downy and 2 hairy woodpecker, 1 kingfisher (near Kaw), 2 green heron, There were no influx of winter birds. The usual birds included bluejay, robin, titmouse, black-capped chickadee, cardinal, etc.

On the Kaw noted 5 great blue herons, 3 spotted sandpipers, 2 killdeer, 12 green-winged teal, 18 coot. At this time of year there are many grackles & redwings in area.

Lawrence, Douglas Co., Kansas

Oct 17, 1970

Noticeable color in trees starting this date

Oct 21

Color of trees reaching maximum color intensity. 1/3 in color. Greens to vivid orange, yellow & reds.

Lawrence, Douglas Co., Kansas
 museum, ~~_____~~
 Oct 21, 1970

Mr. Ralph Gentry of 510 Ohio presented ^{to} me a neotoma, trapped from his home at above address. This animal had been causing considerable noise at night both in the attic and between the walls of the house. This animal is:

SK: 701021-1 neotoma

355-138-37-33-155gms ♀
 uterus normal, vagina imperforate.

Lawrence, Douglas Co., Kansas
 museum, ~~_____~~
 Oct 24, 1970

Maximum color intensity of elm, maples and oaks with 80% of trees in color. There will be further color changes but true reds and yellows are now at their maximum. This year has been characterized by perfect synchronizing of all species of trees in the 1) beginning of the change of color and 2) the culmination of the maximum color. The leaves have not been affected by desiccation or removal by wind which usual interferes with the leaves during the change of color. In 23 years in Lawrence, I have never observed such perfect conditions for color or beauty of trees. Cool-warm contrasts and cloudy windless days toward ^{the} culmination of true colors is responsible for this unusual year of color. The city produces more reds than native deciduous forests beyond limits of the cultivated trees. A visitor from Iowa, this date, remarked that there is more reds in this area than to the north where the colors are mainly yellow. The leaves in Iowa have passed their optimum color and many trees are without leaves.

Lone Star Lake, Douglas Co., Kansas
 museum, ~~_____~~
 Oct 25, 1970

Took several color photo of Annette and her friend Chris Palmquist at lake as they prepared to sail.

701025-1 Annette & Chris.

701025-2 " " " Departing.

701025-3 Carl at edge of lake with Annette & Chris in boat

701025-4 Color in deciduous trees ^{now} ~~NE~~ of dam.

701025-5 " " " " " " "

701025-6 Jumper at edge of lake.

701025-7 Broken mast of boat.

- 701025-8 misc color shot below dam, trees + flower foreground
 701025-9 misc color shot below dam, old meander
 701025-10 " " " " " old meander

Lawrence, Douglas Co., Kansas

(36) nos 701025-11 to 701025-46 ^{Oct 25, 1970 38} the city of
 Took a roll of color pictures of trees in Lawrence. There was no attempt to compose pictures but just shot unusually colored trees for color effect only. There was enough wind this A.M. to dislodge many of the leaves which, up to this date, were on trees. I would judge this day as the first day of decline in the average maximum color intensity of trees. Other trees will develop color but the season will be on the downward slope of the cycle. Photos 701025-10 to 701025-46

In the city the leaves are not as far along as in the country and in the city are: 30% green, 65% in color, 5% leafless. In the country (reparation along Wakarusa) 80% yellow, 19% green, 5% leafless. On the hillsides (deciduous) 65% yellow, 5% green, 15% reddish brown, 15% leafless. There is a correlation of change of color of leaves and cold nights and warm days with moisture. This year there was considerable cloudy weather and moist atmosphere and no wind. The red maple (only one tree on campus) was first to change color to a brilliant deep red and the first tree to drop leaves. The hard maples are mainly in city. Trees and grasses that are native and are acclimated turn color whereas those from more southern areas and are introduced are green. The latter change color later. The pin oaks in city are deep red to reddish brown. If leaves have adequate sugars they turn brilliant colors.

Flow of Kansas, Lawrence, Douglas Co., Kansas

Dec. 1, 1970 at sundown

Noted two brown bats flying in area between Snow Hall and Potters Lake. They were approx 100 feet high and foraged back and forth over slopes to N. There were no insects in the air and previous days or weeks had been unusually cold. The warm day this evening created favorable temperature for flying. I would judge that these bats had been in a hibernating state before this date.

Dec 2, 1970

One bat observed flying in same area as above.