

JOURNAL 1969

JAMES W. BEE

1969

Wakarusa Valley, Clinton Reservoir Area, Douglas Co., Kansas

Jan. 5, 1969

Census of fauna. Sky 100% cloudy, ^{thin} wind moderate from SW, temp. 29°F. Enroute noted the following kinds: sparrow hawk, horned lark, Eng. sparrow, starling, red-bellied woodpecker, meadowlark, crow. Mary Pauline + I made trip.

Mileage S end proposed dam, 20852.6, 9:40 A.M. Began census: 53.3 8 Eng sparrows. Creeks have been 2 feet higher with ice. 54.3 to S, 54.5 to W. 55.5 2 flicker in road + concerned with each other, a red + yellow-shafted, red-bellied associated. These birds were about 1/2 mile from good forested area. 55.3 to S. 55.8 40 horned larks. 55.9 8 Eng. 30 tree sparrows. 56.1 bridge at Lock Creek: Black capped chickadee, 2 blue jays. 56.4 great horned owl. Returned to main road. (no census of area already covered). 57.8 main road now to W. 58.5 redtail, 58.2 Clinton, 60.5 cardinal, tree sp., junco. 61.4 to S. 2 tree sparrows, 61.9 5 meadowlark, 62.6 base hill and in on group. 7 cardinals, 3 blue jays, 8 bobwhites, 15 Harris sparrows, 1 field sparrow, 15 tree sparrows, 1 slate colored junco, 1 ♀ redwing 1 bl. c. chickadee, ^{crow} Ice mass form in road. Returned main road. 63.1 12 meadowlark. 63.7 to W. ^{4:0} 63.4 Belvoir bridge ice dropped 3 feet. ^{logged and struck} 64.3 2 redtails soaring to N. 64.8 to S. field sparrows, 2 blue jays. 65.7 100 tree sparrows, 2 blue jays. 66.2 mockingbird. 66.3 to S at 4 corners. 67.0 bridge on Waki. 5% water open. 2 cardinal, b. c. chickadee, 1 yellow shafted flicker - 11:00 A.M, temp, ice dropped 3 1/2 - 4 feet. Temp, 38°F mourning dove. 67.9 red bellied woodpecker. 68.2 bend along river, field sparrow. 69.3 passing by bridge. 70.0 4 corners. 6 Eng sparrows, 70.2 Elk Creek partly open. On hill at 70.4 noted 6 cardinal, 2 titmouse 18 tree sparrows, 2 chickadees, 1 carolina wren, 1 brown creeper, 9 Harris sparrows, 2 blue jays, ^{8 goldfinch} 4 meadowlarks, 73.1 crow, 12 starling, 3 cowbirds, 6 meadowlarks. 73.3 Richland. 73.8 bridge, redtail, redbellied. water flowing in top. 74.6 main road. 74.9 mockingbird, redbellied woodpecker. 76.4 Shawnee - Douglas Co line, marsh hawk. 77.5 4 corners on side hill. 77.8 2 redbellied ^{crow} 18 tree sparrows, 6 cardinals, 3 white throated sparrows, ^{winter wren} 78.5 bridge + return to 4 corners (no census on return) "

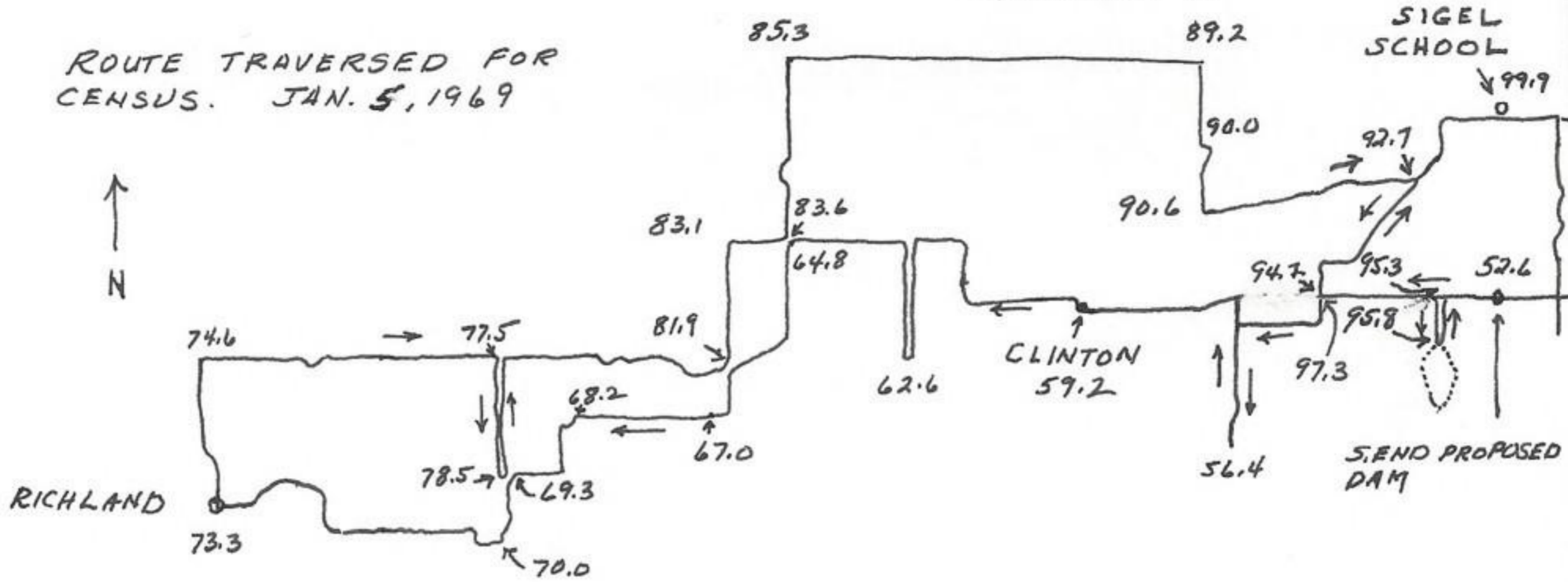
80.2 redtail, marshhawk. 80.8 creek 50° open. bluejay
 81.6 redtail, 5 eastern bluebirds, 1 towhee, 1 mourning dove, 3 juncos
 2 blue jays. 81.9 to N at 4 corners - 82.5. 90 starling
 8 meadowlarks, 2 blue jays. 3 tree sparrows. 82.9 2 redtails
 30 tree sparrows. 83.1 to E. 4 meadowlarks. 83.6 to N
 redtail. 84.5 dry creek partly open. 3 Robin. 85.1 group of
 15 Harris, 4 tree, 1 song sparrow, 8 mourning dove, 1 yellow-shafted
 flicker. 10 meadowlarks & starling, 16 slate colored juncos, redtail.
 85.3 to E. 85.1 red bellied woodpecker. 86.3 Deer Creek. 2
 Crows. solid ice. 87.0 sp. hawk, 8 meadowlarks. 87.5 Crow
 Creek. Creek in ice. 89.0 Old House with porch now down.
 89.2 to S, 90.0 Rattlesnake Pt. tree sp. 90.6 to E. 90.8 12
 horned larks. 91.9 N end old proposed dam Creek beyond ice -
 Bridge at 92.7. 3 meadowlarks, 3 starling. Wadi open in
 middle but on ice. 1:15 P.M. Temp. 38°F. redtail.
 94.2 Collins corner, now to E, 95.3 now to S. 95.8. base
 hill. walked (1:22) to quarry. 1:30 quarry, 3 blue jays, cottontail, 4 crows
 1:40 head drainage, cottontail concentrated at forest convergence
 red breasted nuthatch. Point 2:00 (no thermometer). Returned car 2:10
 Left 2:12. mileage 95.8. 96.3 now to W. 4 robins, 12 starling.
 at home. 97.3 now to N, 98.3 redtail. 98.8 bridge.
 4 starling, cardinal. 99.9 16 cardinals, 12 Harris, 30 tree, 2 blue jays. Sigel 20999.9
 at 2:25 P.M. Temp. 35°F

Summary:

Eng. Sparrow 8-8-6-
 red-shafted flicker 1-
 yellow-shafted flicker 1-1-1-
 red-bellied woodpecker 1-1-1-1-2-1-
 horned lark 40-12-
 tree sparrows 80-1-2-15-100-18-18
 3-3-40-1-3-
 black-capped chickadee 1-1-1-2-
 blue jays 2-3-2-2-2-1-2-2-3-2-
 great horned owl 1
 redtail hawk 1-2-1-1-1-2-1-1-1-1-
 cardinal -1-7-2-6-6-1-16-
 meadow
~~tree sp.~~ lark 1-5-12-4-6-8-4-10-8
 3-
 bobwhite 8
 Harris sparrow 15-9-15-12-
 field sparrow 1-1-1-
 slate colored junco 1-1-3-16
 redwing blackbird ♀ 1
 Crow 2-1-1-2-1-

winter wren 1-
 mockingbird 1-1-
 mourning dove 1-1-8-2-
 titmice 2-
 Carolina wren 1
 brown creeper 1-
 starling 12-90-8-3-12-4
 Cowbird 3
 marsh hawk 1-1-
 white throated sparrow 3
 eastern blue bird 5-
 towhee, rufous, ^{side} 1- (eastern form)
 robin 3-4-
 song sparrow 1
 sparrow hawk 1-
 red-breasted nuthatch 1-
 loggerhead shrike 1-
 goldfinch 12-
 cottontail 1- Total 36

ROUTE TRAVERSED FOR CENSUS. JAN. 5, 1969



Lawrence, Douglas Co., Kansas

Jan 5, 1969

Have observed one exception to the rule that starlings maintain a body interval when feeding or perching on lines etc. For the last 3 day, during period of low temperature, starlings have been perching on tops of chimneys and warming themselves between periods of feeding. At this time the starlings permit body contact without antagonistic behaviorism.

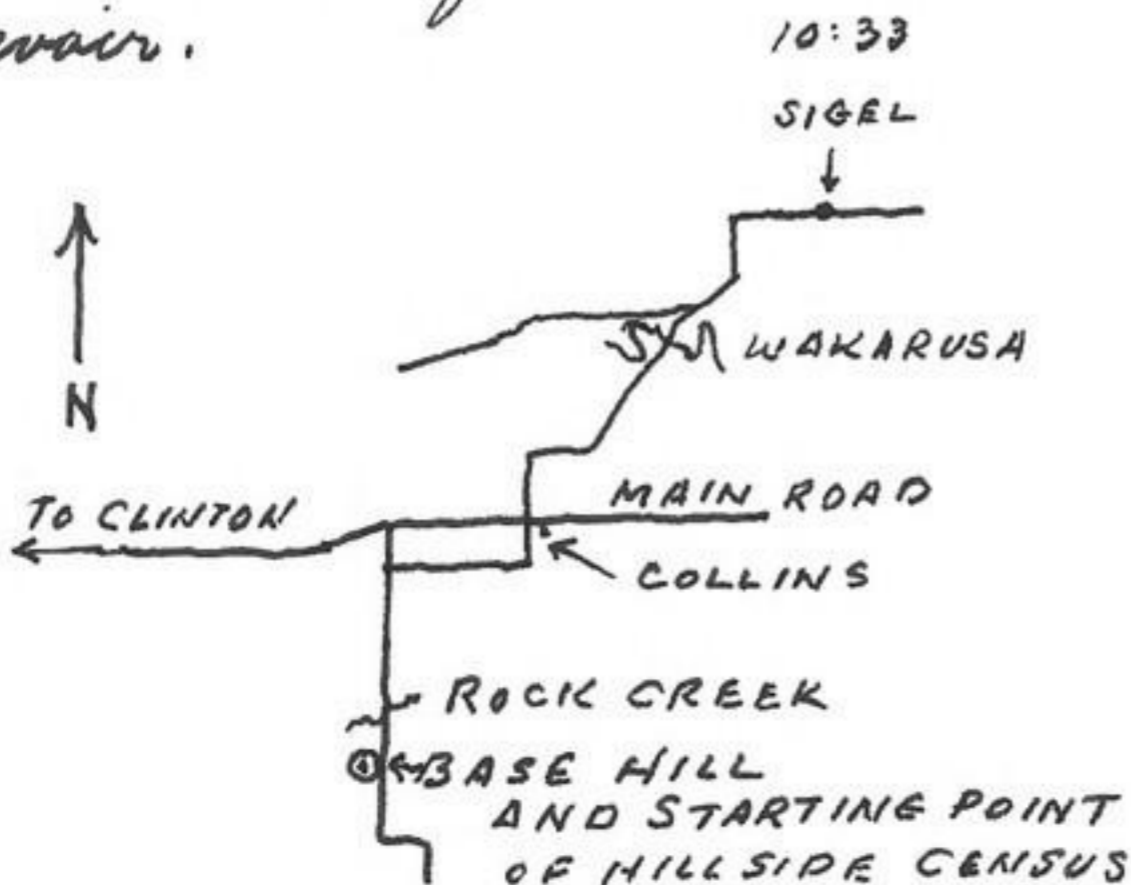
Jan 6, 1969


noted a yellow-bellied sapsucker at 10 holes on bark of black walnut. It visited each hole and seemed to imbibe liquid as temps. were too low to involve insects of any kind. a starling approached but was rebuffed by the sapsucker. at 17th and Illinois noted a squirrel, smaller than the fox and nearer size of gray squirrels but with faded reddish back and tail but gray underparts and sides.


Rock Creek, S Clinton, Douglas Co., Kansas


Jan 11, 1969

Made census of birds and mammals in area of proposed Clinton Reservoir.

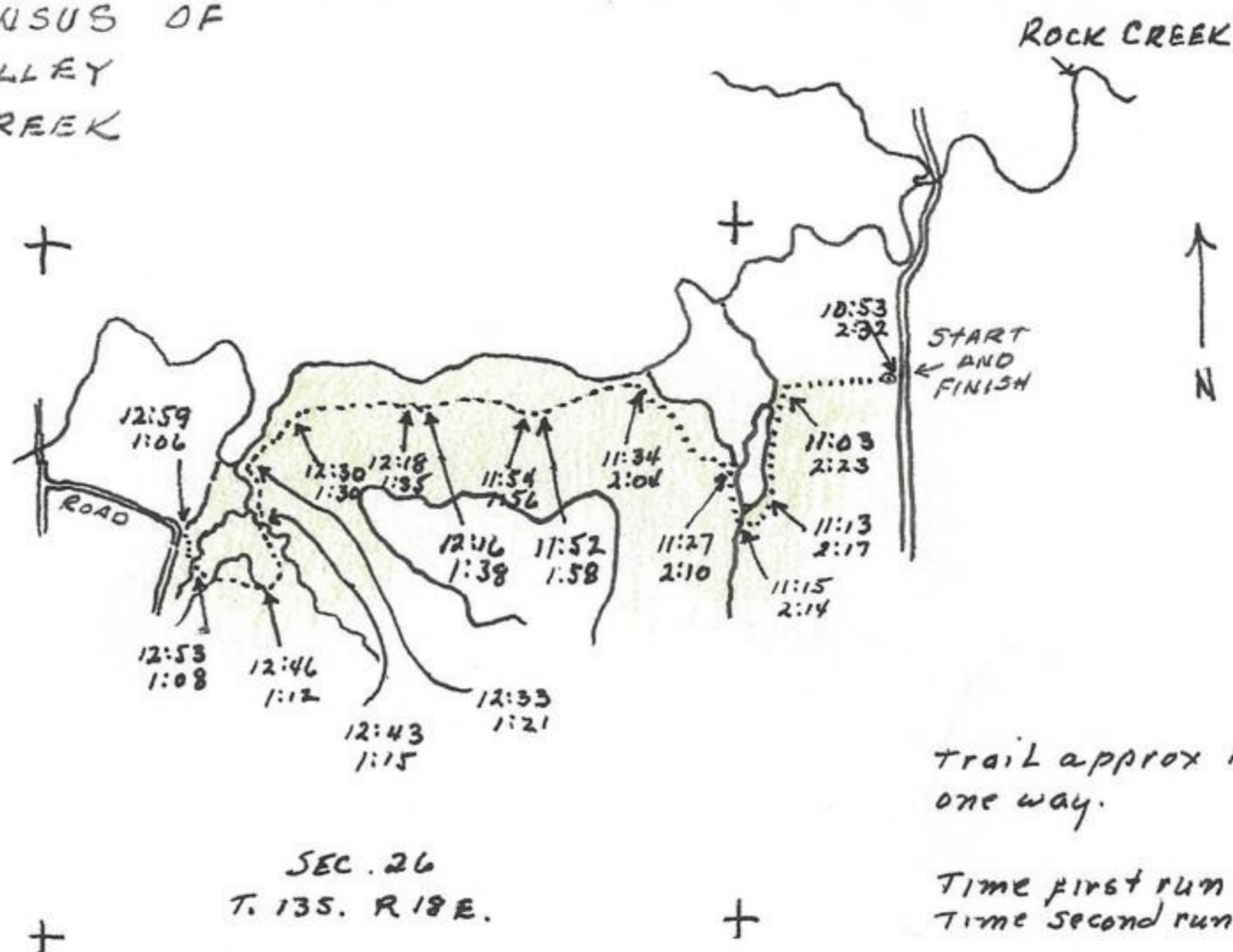


Started car census at Sigel School House at 10:33, mileage 49.0, temp 30°F., no clouds, slight breeze from SE. at Sigel noted an American rough-leg hawk on hill to N. Hovering characterized by movement of wing . Hovering stance

 body position upright in contrast to horizontal axis in sailing. legs down fan tail

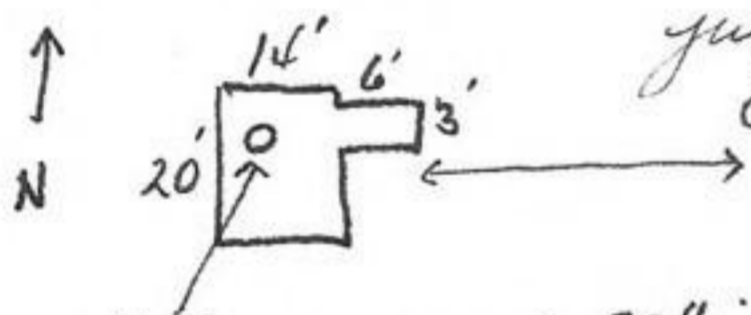
 black under + white spot on upper wing good character

ROUTE OF CENSUS OF
SIDE OF VALLEY
OF ROCK CREEK

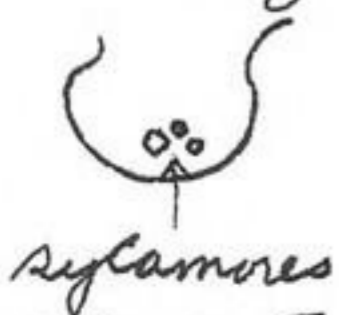


In same area noted 2 marsh hawks, one shrike and one redtail hawk. 49.8 loggerhead shrike, 2 blue jays, yellow-shafted flicker, 8 Eng. sparrows. 50.4 bridge over Waharusa, 2 yellow-shafted flickers, 9 Eng. sparrows, 4 blue jays, 2 red-bellied woodpeckers, 8 slate-colored juncos. water flowing on top of ice in river but some places free of ice in center. 50.7 red-bellied woodpecker. 51.8 Collier's corner. 53.6 Rock Creek bridge. Will check area to west, starting at old house, recently razed by tornado. Left 10:53 (see map above for this census). Woodrat in old stove, using mainly weed stems in immediate area. 4 slate-colored juncos. 11:00 downy, 3 slate-colored juncos, 2 crows. Noted a blue jay fly $\frac{2}{10}$ mi from fields to hillside, having 3 large kernels of corn in bill. 11:03 mouth canyon where road turn S. Ice on creek not safe for navigation, not because ice not thick enough but protection irregular. Sails on road and in creek bed pulverized and dry. 11:12 2 slate-colored juncos. 11:13 red-headed woodpecker. now leaving open field to right and road now in forest. 11:15 crossing creek on lateral road. Head trees & holes. 2 blue jays. Ice at day thick as 6". adult & immature red-headed woodpecker. Can hear 4 other woodpeckers drilling trees in valley. 2 fox squirrels scrambled down dead tree and noise on dead bark emphasized the commotion mayfield. 11:21 2 blue jays. 11:23 2 male red^{bellied} woodpeckers in close contact behaviorism, one of which was defending the general area.

at one time the two birds dropped to ground from 40' high in tree and during entire descent were at contact with each other. The descending bird called continuously. A second male arrived and was likewise repelled. 11:27 head of open plowed field but following forest trail to left. 11:30 3 eastern bluebirds, 1 downy, 11:34 west side plowed field at Lock Creek. Fox squirrel. 2 red-headed woodpeckers calling continuously from sycamores on N side creek. 2 blue jays. (stopped 10 min + started again at 11:45. Water on ice in creek, some areas open. No snow on sedgehills or river bed beyond ice. 11:52 first drainage (from hillside road) 2 red-headed woodpeckers calling, 3 blue jays. 11:54 2nd major (flat) drainage. yellow-shafted flicker, red-bellied woodpecker, 4 tree sparrows. Ice in trail and there only. No snow. 12:00 8 tree sparrows low in shrub growth, blue jay. 12:01 titmouse, downy, 2 red-headed woodpeckers, fox squirrel, 2 red-bellied woodpeckers. Noted one red-headed woodpecker following a downy (listed above). 12:05 old pioneer house (basement pit only). Red-breasted nuthatch here. The house foundation is approx: 20' x 14' juniper (approx 75" in diam circumference).



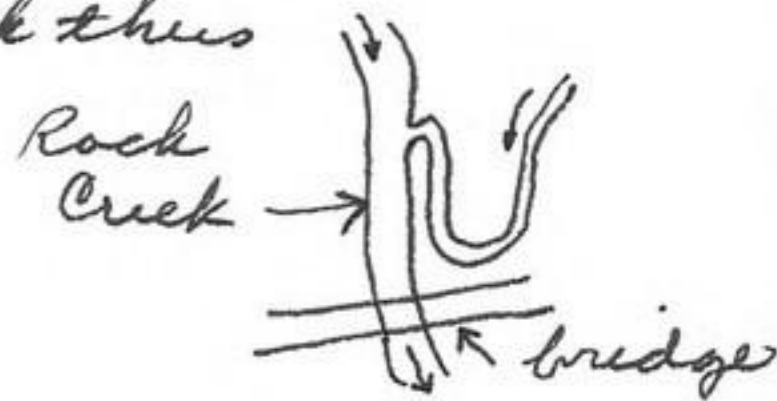
oak(?) tree approx. 32" in circumference. (3 other smaller trees in pit slightly smaller). It would be interesting to excavate this site. No wood remains. Other birds in this area are redtail, 3 black-capped chickadees, blue jay, 1 red-bellied woodpecker. Left 12:14 12:16 major drainage + deep. Cottontail at edge. 12:17 red-headed woodpecker. 12:18 2nd drainage and deep (parallel or from some canyon above). A red-headed woodpecker called continuously & at a much faster rate than usual call of separate calls (warning), blue jay. 12:23 b.c. chickadee. 12:24 b.c. chickadee, 2 robins in top of tree (high), 2 blue jays. 12:25 5 b.c. chickadees, 1 red-bellied woodpecker. 12:30 trail now toward S. 2 blue jays. 12:33 Convergence of stream from S. Ice above convergence, open below across 2 ripples & pools. Water clear. Air following under ice at edge and appears as if animals running along side of ice. Titmouse calling as in spring & summer, blue jay. Left convergence at 12:37 (good vantage point). 12:38 2 titmice. Opposite meander with three large sycamores. Another good vantage point 12:40 fox squirrel, titmouse. 12:43 crossing creek. red-headed woodpecker, blue jay. 12:46 open field 12:47 5 b.c. chickadees, one calling with faint call. 12:53 bridge



2 redheaded woodpeckers, 2 redtails perching & calling and in normal plumage. 4 b.c. chickadees, 2 titmouse, 2 red-bellied woodpeckers, 8 slate-colored juncos, 1 bluejay. Water frozen but crystallized 12:59 road, 2 crows. Paused 6 minutes before return trip back same trail & route. At road noted no birds in extensive plowed field to NW. Sky clear except some faint clouds in west. temp 36°F . Wind erratic, mainly quiet in forests. Started back at 1:06 P.M. 2 crows, 3 fox squirrels chasing each other, 1 bluejay. 1:08 bridge, 2 titmice, 8 slate-colored juncos, 1 redheaded woodpecker. 1:12 edge forest, redheaded woodpecker. 1:13 2 red-headed woodpeckers. 1:14 1 red-headed woodpecker. 1:15 creek, 1 red-headed woodpecker. 1:16 redheaded woodpecker. 1:17 2 redheaded woodpeckers, 1 red-bellied woodpecker, 2 slate colored juncos, 1 yellow-shafted flicker. 1:21 convergence with Rock Creek. 3 b.c. chickadees, 2 titmice. 1:23 white-breasted nuthatch carried a seed to tree and wedged in bark while it opened it and ate contents. This was a case of using bark crevices as a holding mechanism for prying out food content. 1:26 white-breasted nuthatch inspected limbs by checking one side and then the alternate side as it progressively fed along the limb; 2 b.c. chickadees, 2 titmice. 1:27 2 redheaded woodpeckers. 1:30 major bend of trail. Green mosses on side of trail. Good view of creek below. Riffles open, ice elsewhere. 1:32 red-bellied woodpecker, downy, 2 slate-colored juncos. 1:33 redheaded woodpecker. 1:35 major drainage. 1:38 2nd major drainage (from same canyon?); hackberry leaves on trees up this drainage & to right; 2 stumps in drainage 40' up from trail (approx 24" diameter). 1:40 2 slate-colored juncos; downy. 1:42 old pioneer house. 1:42 2 red-headed woodpecker, 6 b.c. chickadees, 2 red-bellied woodpeckers, 5 titmice, 1 golden-crowned kinglet, white-breasted nuthatch, cardinal (the cardinal was 1 foot from squirrel tree nest & a jay approach & inspected hole in nest and was immediately repelled by occupant (kud?)), goldfinch. 1:52 5 tree sparrows. 1:55 shallow drainage before mgot one. 1:56 major drainage, 2 red-headed woodpeckers, 1 white-breasted nuthatch 2 blue jays. 1:58 road drainage (the hillside road is responsible for this drainage). A large juniper with many low branch up hill from road. 2:00 2 red-headed woodpeckers. 2:03 good view of creek. 2:04 edge open field but will follow hillside trail parallel. fox squirrel, redheaded woodpecker. Clouds (faint) now at line with sun and clouds moving to E.) 2 crows. 2:07 3 crows flying N. More breeze & cool on face as entering

n-5 canyon. 2:10 head field. 3 b.c. chickadees. 2:11 redhead woodpeckers, cardinal low in creek. 2:13 3 redheaded woodpeckers, chickadee. 2:14 crossing creek. 3 b.c. chickadees, 1 redheaded woodpecker, 2 blue jays. 2:16 main road. 2:17 road at begin field, 3 slate-colored juncos. 2:08 blue jay, red-bellied woodpecker, 3 b.c. chickadees. Leaves among hillside trees are a colorful reddish brown. 2:20 downy, blue jay. 2:22 redbellied woodpecker. 2:23 downy, cardinal, 2 b.c. chickadee, winter wren. 2:28 2 blue jays, 3 slate colored juncos. Tent. caterpillar balls still in trees. 2:29 4 b.c. chickadees. Clouds (faint) now 3/4 across sky to E. 2:30 2 blue jays. 2:32 Car. temp 38°F. Left by car at mileage 54.0. With car closed I can smell a faint skunk odor picked up along trail but unnoticed until in close enclosure. 4 crows. 54.3 Rock Creek bridge. red-bellied woodpecker. Entrance of small creek thus 55.1 to E. 55.4 30 starling. 56.1 Main road at Collins. 57.6 Wakerusa bridge. 2 cardinal, 8 Eng. Sparrows, 4 tree sparrows. 58.1 redbellied woodpecker, 6 tree sparrows. 58.7 sparrow hawk, meadowlark. 58.8 Sigel school house and end of complete census.

Summary: (double census of identical route)



2:32	flicker	redtail	Crow	Junco	Chickadee	titmouse	blue jay	blue bird	redheaded W	redbellied W	downy	Cardinal	w.b. nuthatch	b.b.	tree sparrow	goldfinch	rabbit	Squirrel	Robin	winter wren	J.C. Kinglet.
10:53-2:23		2	7-3	6	1-4				1	1	1									1	
11:03-2:17			2-3	3	2				2	1											
11:13-2:14				3	2		1	1													
11:15-2:10				4	4		5	4									2				
11:27-2:04			5				3	1	1												
11:34-1:56					5-2		4	4				1					1				
11:54-1:35	1	1		2-3	1-5	2-1	2	2-5	1	1	1	1	1	1	1	1	1			1	
12:18-1:30				2-7	3		1	1	1	1								2			
12:30-1:21				5	4-2		1					2									
12:33-1:15	1			2	4	1	4	1									1				
12:43-1:12					1		1	4													
12:46-1:09				8-5	2		1														
12:53-1:06	2	2-2		4	2	1	2	2									2				
12:59-																					
	1-1	3-0	4-7	9-20	19-21	7-11	20-13	0-16	2-8	5-13	4-10	2-0	4-1	1-0	12-5	0-1	1-0	5-3	2-0	0-1	0-1

Less correlation of birds on the move.
 Some correlation of semipermanent birds
 numbers and species average out along a line of census.

Rock Creek, SE Clinton, Douglas Co., Kansas

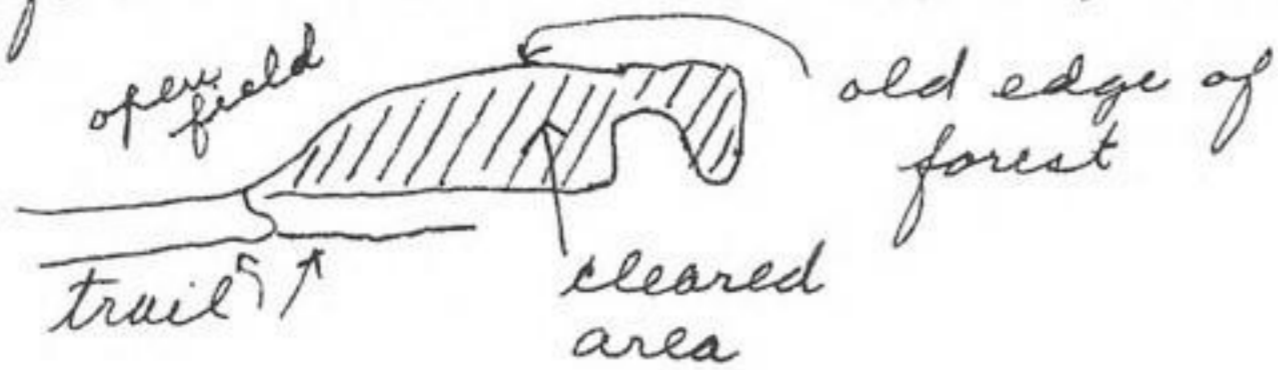
Jan. 12, 1969

made a bird-mammal census of deciduous forests on hillside from a point at base of hill S of bridge over Rock Creek, to a point of the south end of the proposed Clinton Reservoir. (See diagram). Sky cloudy, complete, wind 5-10 mi. p. h from SE, temp. 30°F. Left 9:50 A.M. Annette will pick me up at 3:00 P.M.

9:52 3 slate-colored juncos, 2 crows calling. 9:58 artificial lake. The following birds were congregated at east side of lake. Water completely frozen. 10 blue jays, 3 redheaded woodpeckers (one of them low (10') on limb and appeared inactive), 4 cardinals, 1 downy, 30 slate-colored juncos, 1 goldfinch, 8 tree sparrows, 12 titmice, 8 chickadees (b.c.). Of the above noted a junco, a titmouse and a goldfinch, successively feed on an orange, partly eaten and opened by either cottontail or Neotoma. Left lake at 10:15.

10:20 now to E. 10:24 26 tree sparrows, 2 slate-colored juncos, 1 goldfinch, 2 chickadees, 1 redbellied woodpecker, 3 blue jays. 10:27 redheaded woodpecker (low on limb and feathers fluffed), 2 b.c. chickadees. 10:30 redheaded woodpecker, 3 b.c. chickadees. 10:33 at convergence of fence from W to N S fence up ridge. 3 titmice, 2 b.c. chickadees. 10:37 large elm tree on alluvium at mouth of drainage. This marker tree is in direct path of present creek outwash. red-bellied woodpecker. Forest quiet but low hear wind on ridge to S. a yellow-bellied sapsucker came into area and flew directly to a tree with numerous holes and started to feed. This bird flies less like a woodpecker and is more quiet and less vigorous in its actions. Also in the area of the elm were 1 golden-crowned kinglet, 4 b.c. chickadees, 1 brown creeper (fast movement and action good field character). The above birds were all in a group extending less than 100'. 10:45 great horned owl, 2 blue jays. 10:49 redheaded woodpecker. 10:52 2 redheaded woodpeckers, 2 blue jays, 1 b.c. chickadee. 10:58 flock of 90 tree sparrows (edge), 2 cardinals, 4 b.c. chickadees, 1 downy, 2 bluebirds, 1 ruby-crowned kinglet, 1 redheaded woodpecker, 1 yellow-shafted flicker. The tree sparrows, on some community recognition, and in two surges, gradually gained upper limits of edge trees and then left gradually to form a group of approx 40 birds, flying upward for approx 200' and then leaving area. The second group of 50 birds

left shortly after, 11:00 trail left to open field. From here to east the entire deciduous forest has been removed to base of hill, a tremendous clearing operation. Retracted to main forest trail and continued east. Flicker at edge of field.



11:08 2 redheaded woodpeckers. The trees and brush have been pushed up to E-W fence line that trends now up-hill.

The are no small birds in an otherwise excellent habitat of this massive and extensive brush pile. 11:09 Cardinal, 3 slate-colored juncos, downy. 11:14 2 b.c. chickadees, 2 brown creepers, redheaded woodpecker, yellow-shafted flicker, 4 titmice. 11:18 3 redheaded woodpeckers, 2 blue jays.

11:23 top ridge and now dropping off to E down trail. More wind as soon as one leaves the strictly lee side of valley slope. 4 redheaded woodpeckers, 2 blue jays. The redheaded woodpeckers have a variety of flight patterns with greater range of variations than other kinds of woodpeckers. 11:29 down to flat segment of bench (previously identified as such on other trips). 11:31 gate at head of field (along main E-W line. ^{Trees removed to N.} 2 blue jays, 3 b.c. chickadees, redheaded woodpecker. 11:38 crossing creek. 11:40 now into climax forest. 11:45 stopped for 15 minutes (at tree marked 97). This oldest of forest stand with large high tree & fewer understory trees is marked for removal. A Cooper size hawk flew past but identification doubtful. Temp 36°F at 6" and 32 on ground under leaves.

No birds passed thru in 15 minutes except one redheaded woodpecker. Left 2:00 12:02 2 redheaded woodpeckers. 12:10 trail crossing at Rock Creek. Ripples open below ford. A large group of birds here were: 11 redheaded woodpecker, 1 white breasted nuthatch, 1 downy, 2 redbellied woodpeckers, 1 redtail, 20 slate-colored juncos. 12:16 redheaded woodpecker, 2 blue jays. 12:19 redheaded woodpecker, 2 downy woodpeckers, 6 b.c. chickadees, 2 blue jays, 1 titmouse (call like in spring), brown creeper (gave loud sharp call). 12:25 at short-cut trail to Chimney but keeping to right. 2 redheaded woodpeckers. 12:27 first minor drainage. redheaded woodpecker, hairy woodpecker. 12:31 redheaded woodpecker. 12:32 main drainage with eroded bank up stream. Great horned owl left to west, 2 cardinals, 12 redheaded woodpeckers, 1 hairy, 4 b.c. chickadees. 12:43 3 redheaded woodpeckers, 2 blue jays, 4 titmice. 12:42 2 fox squirrels (first one seen today and

extremely wary), 2 redheaded woodpeckers. 12:46 Chimney, no water from main drainage into Rock Creek. Entrance of secondary drainage up stream (Rock Creek) keeps water open because of riffles. River above frozen. No snow on sidehills but ice (crystallized white generally) in drainage courses and frequently in trails. 2 gray squirrels at chimney area. At chimney collected two cup-board locks, nos. 690112-1 and 690102-2. Maybe original hardware of old pioneer log cabin. This is a very delightful setting for a cabin and indicated the owners value of esthetic choice of a place to live; on high bank overlooking the Creek and adjoining a very interesting side canyon to S and open fields or woodlands (irregularly) to N. Left 1:00 sky has been cloudy all day and no sun. 1:01 redheaded woodpecker. 1:10 crossover to left and now working up sidehill to E. 1:17 orange fruit being beaten at base of trees. Sides relatively bare on slope under hickory trees. 1:22 top bench at point. will follow N. on this benchland, redhead woodpecker. 1:23 first ice masses from springs or seepage. 1:25 2 redheaded woodpeckers. 1:30 double jumper on bench, redhead woodpecker. 1:33 3 blue jays. 1:34 Point. Located thermometer left in branch but now on ground about a year ago. I am surprise Neotoma did not claim it. 1:40 old side hill road. 1:45 first major drainage 1:47 fence line + old road to top. 1:48 main headwater drainage and road. now to NE along road. 1:52 downy, 2 blue jays. For the last hour there has been enough sun for a shadow. Skies ^(clouds) gradually disappearing. 1:56 Rock Crusher pits (top of road. 2:02 leaving pits. Water in pits frozen almost to bottom. No wren nests in cattails. Cottontail on edge. 2:04 gale + neotoma nest about 60' to N. 2:07 2 b. c. chickadees. 2:11 spring area and supporting grasses + sedges. redheaded woodpecker. 2:13 redhead, hairy. 2:16 12 tree sparrows. 2:20 fence. 2:35 Promontory Point half way along ridge. redhead, ^{redbellied woodpecker} 2 b. c. chickadees. Temp 42°F. ^{High} Misty clouds clearing + now considerable blue sky. Wind about 12 mpr. Point at 2:45. Cottontail. These animals always seem to be here among dense juniper. Redtail left. Carolina wren called vigorously (like sharp-shinned sparrow + added sharp note). On N side of this point noted 16 cardinals, 2 blue jays, 3 slate colored juncos, redbellied woodpecker + 2 tree sparrows. Birds have been unusually scarce since logging cleared forests.

The last group of birds may have been formed by movement to a terminal point of ridge. East end point 2:55 P.M. Car. 3:00 A.M.

Summary of kinds and numbers of birds & mammals according to group formation and first observed. total in circles

slate colored junco 3-30-2-3-20-3 = (61)

crow 2 = (2)

blue jay 10-3-2-2-2-2-2-2-3-2-2 = (34)

redheaded woodpecker 3-1-1-1-2-1-2-1-3-4-1-1-2-11-1-1-2-1-1-12-3-
2-1-1-2-1-1-1 = (64)

Cardinal - 4-2-1-2-16 = (25)

downy woodpecker 1-1-1-1-2-1 = (7)

am. goldfinch 1-1 = (2)

tree sparrow 8-26-90-12-2 = (138)

titmouse 12-3-4-1-4 = (24)

black capped chickadee 8-2-2-3-2-4-1-4-2-3-6-4-2-2 = (45)

redbellied woodpecker 1-1-2-1-1 = (6)

yellow-bellied sapsucker 1 = (1)

golden crowned kinglet 1 = (1)

brown creeper 1-2-1 = (4)

great horned owl 1-1 = (2)

eastern blue bird 2 = (2)

ruby crowned kinglet 1 = (1)

yellow-shafted woodpecker 1-1-1 = (3)

Cooper hawk ?

white breasted nuthatch 1 = (1)

redtail hawk 1-1 = (2)

hairy woodpecker 1-1-1 = (3)

fox squirrel 2 = (2)

gray fox squirrel 2 = (2)

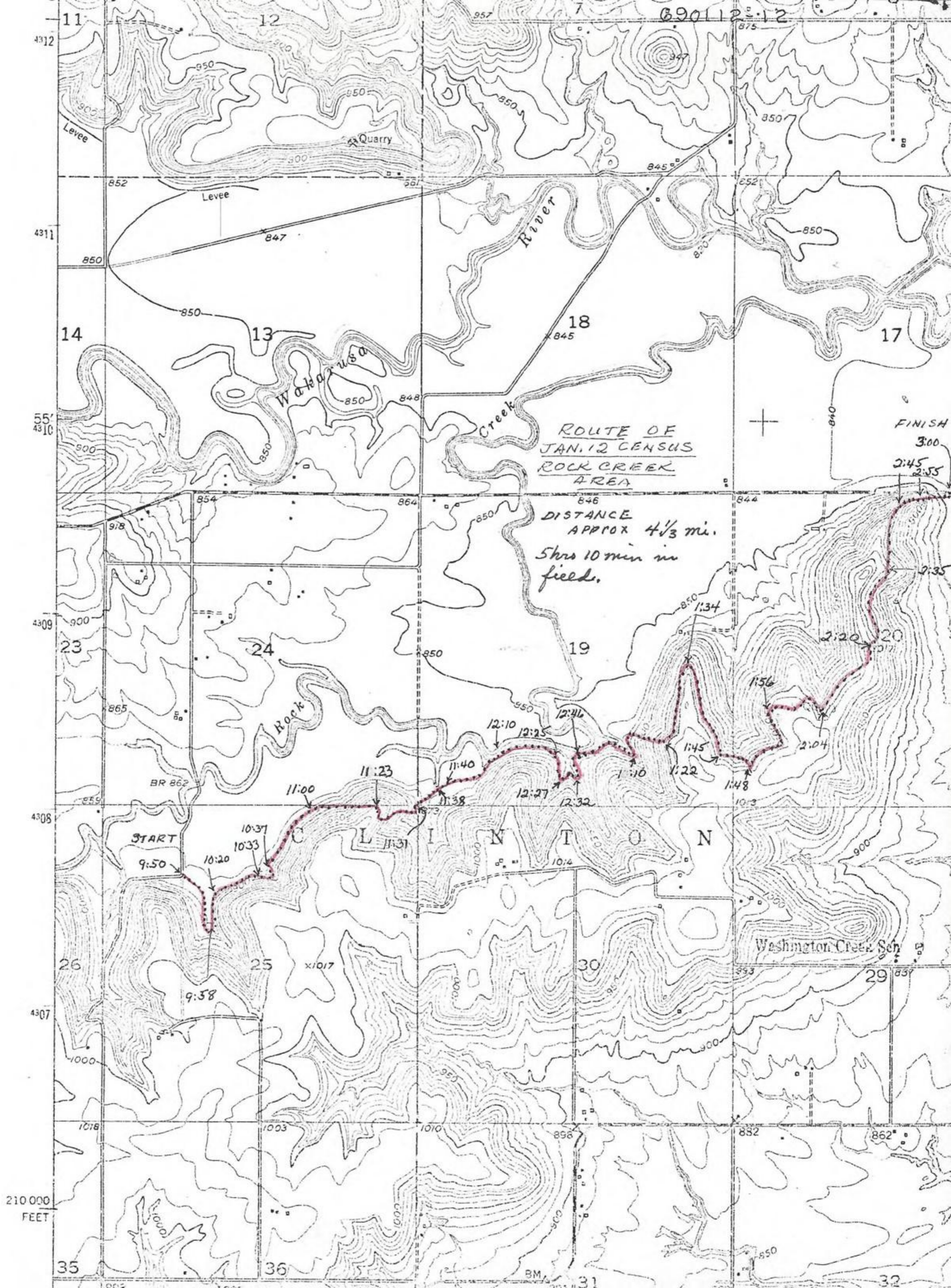
Cottontail rabbit 1-1 = (2)

Carolina wren 1 = (1)

22 species birds (not including
Cooper?)
3 species mammals.

Total of 435 individuals

There is a definite association of redheaded woodpeckers with climax forests and the more extensive the forests the greater number of woodpeckers of this species. Their requirements are upright old dead trees among the forests. The distribution chart shows this dramatic association. When the old climax forest are gone, the numbers of redheaded woodpeckers will be greatly reduced. The forests will disappear when the area becomes the Clinton Reservoir. It is interesting to note that on Jan 5, in the same general area of the Unkarusa valley, we did not see a single redheaded woodpecker in 48 miles of roadside census.



ROUTE OF
JAN. 12 CENSUS
ROCK CREEK
AREA

DISTANCE
APPROX 4 1/3 mi.
Spns 10 min in
field.

FINISH
3:00
2:45
2:55

START
9:50

Washington Creek Sewer

210 000
FEET

Lawrence, Douglas Co., Kansas (K.U. Campus) 690114-14
Jan 14, 1969

noted soils, adjacent cement walks, raised from $\frac{1}{2}$ to 1 inch above walks by frost action. On practice fields cars have crossed and grass show yellow in contrast to green of grass elsewhere. It is doubtful if the grasses died of physical injury but more likely from destruction of air spaces of grass & soil for insulation from cold temperatures.

Perry Reservoir, Jefferson Co., Kansas

Jan 19, 1968

made bird + mammal census of ^{part of} this reservoir. Gates closed a few days ago and lake just beginning to form with several isolated bodies of water covering the old fields. A previous impoundment created a lake of approx. 20' high, since receding to river channel but, as stated, now officially beginning its status as a reservoir. Will attempt to cover periphery at the water-forest contact or equivalent full pool elevation of 920 ft. It appears that some forests are below this level and certainly some roads leading to boat ramp etc. This information can be compared with populations after reservoir has become stabilized. Enroute to Perry noted 3 redtails, 1 sparrow hawk, several small groups Eng sparrows and starling.

Left W end dam at 9:34. Day foggy and sunless, wind from SE at approx 10 mi., temp 27°F, upper trees on tops of hills to about $\frac{1}{3}$ distance down slope were covered with white frost, below tree clear of frost. No snow on slopes, some ice patches. At point where Delaware river enters outlet position on dam, large and smaller sized debris floating in old river channel some 300' continuously upstream. This valley cleared of trees and supporting a reddish weed & brush since originally clear is an awesome sight and not the life form of the usual community makeup of the general Kansas countryside. 9:39 end rocks of dam. 9:42 stop - 9:48 continued on. 9:50 first small drainage, 4 crows searched debris and ice of lobes to E. 90% water in ice. The water on W side in water for about 30' from shore. 2 black-capped Chickadees. 9:53 major drainage. 9:54 end forest. 9:56 new erosion 4' deep from interference of grading slope above. 2 song sparrows called. 10:01 major drainage and water running. 3 tree sparrows, raccoon and coyote track in mud. Fog of sufficient intensity that I cannot see buildings (headquarters) on east end of dam. 10:03 spring area and beginning of trees. Good plant community and

microtine runways. 10:08 major drainage, no water. Can hear ice action on body of water below, some pushing upright. water a greyish brown. The soils from slopes to edge of water become progressively deeper and less stable which in turn is related to man activity above and on the slope. This is a long, straight shoreline. Log & branch debris below from last inundation of reservoir from excessive rains of last year.

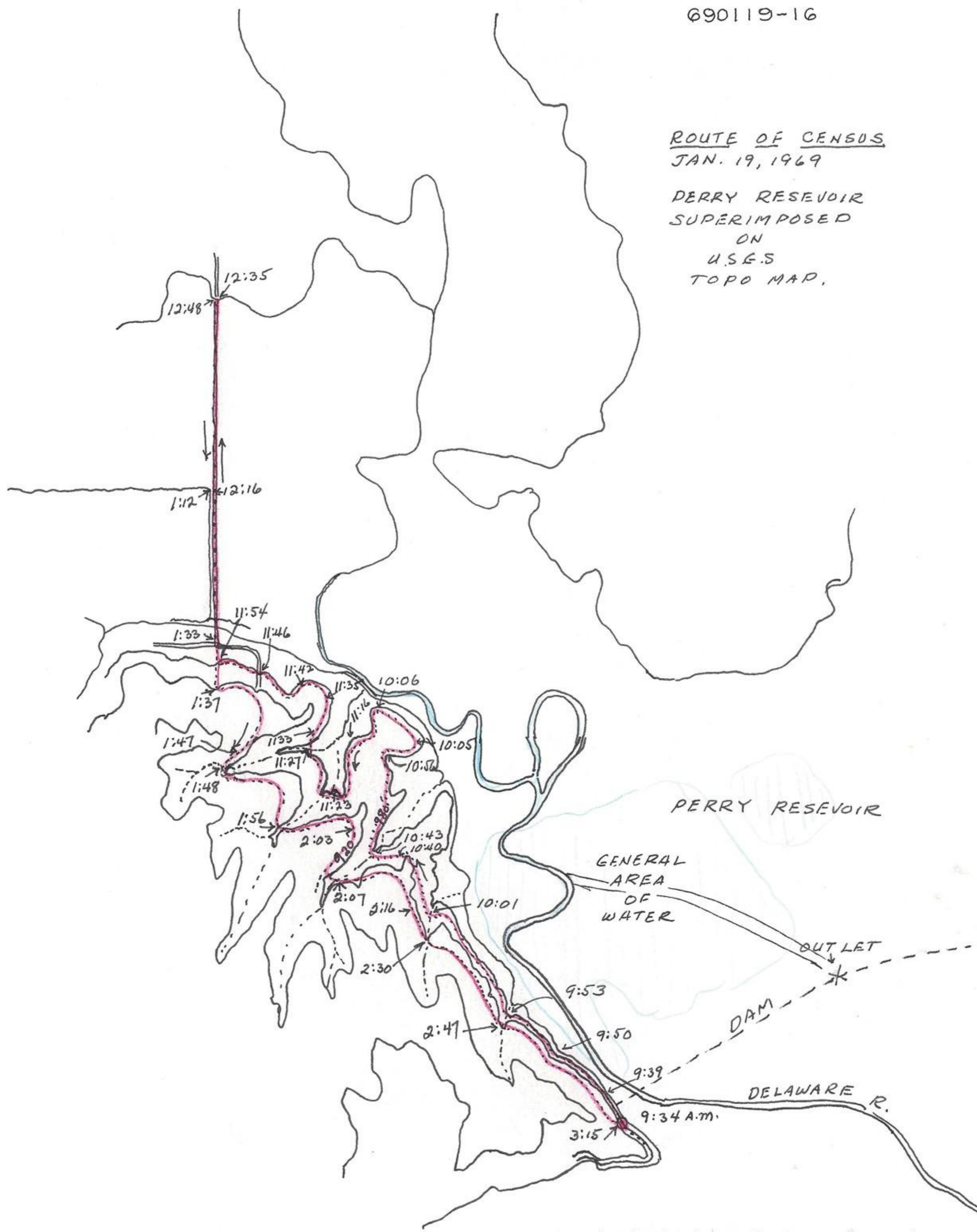
10:15 minor drainage, no water. 10:19 minor drainage, no water. 10:21 rock fence & minor drainage. 10:23 open area. Road peninsula below. 10:25 major drainage newly eroded to 6' deep and good exposure for recent stratigraphy. sand gravel interspersed, some glacial granite erratics in deep soils no water. minor drainage just beyond. 10:33 2 trees at point and beginning of rock quarry below. The entire ridge has been removed. Good microtine communities along here. 10:38 open field. 10:40 pond to left, downy woodpecker. 10:43 major drainage (at bridge) water flowing 1 gal per 5 seconds. now to NE. Good microtine runways. 10:46 minor drainage along fence row. The channel at this point is paved and lined on each side by solid rock. 10:51 pond. 10:56 major drainage with wet soils and some running water. now trending E.

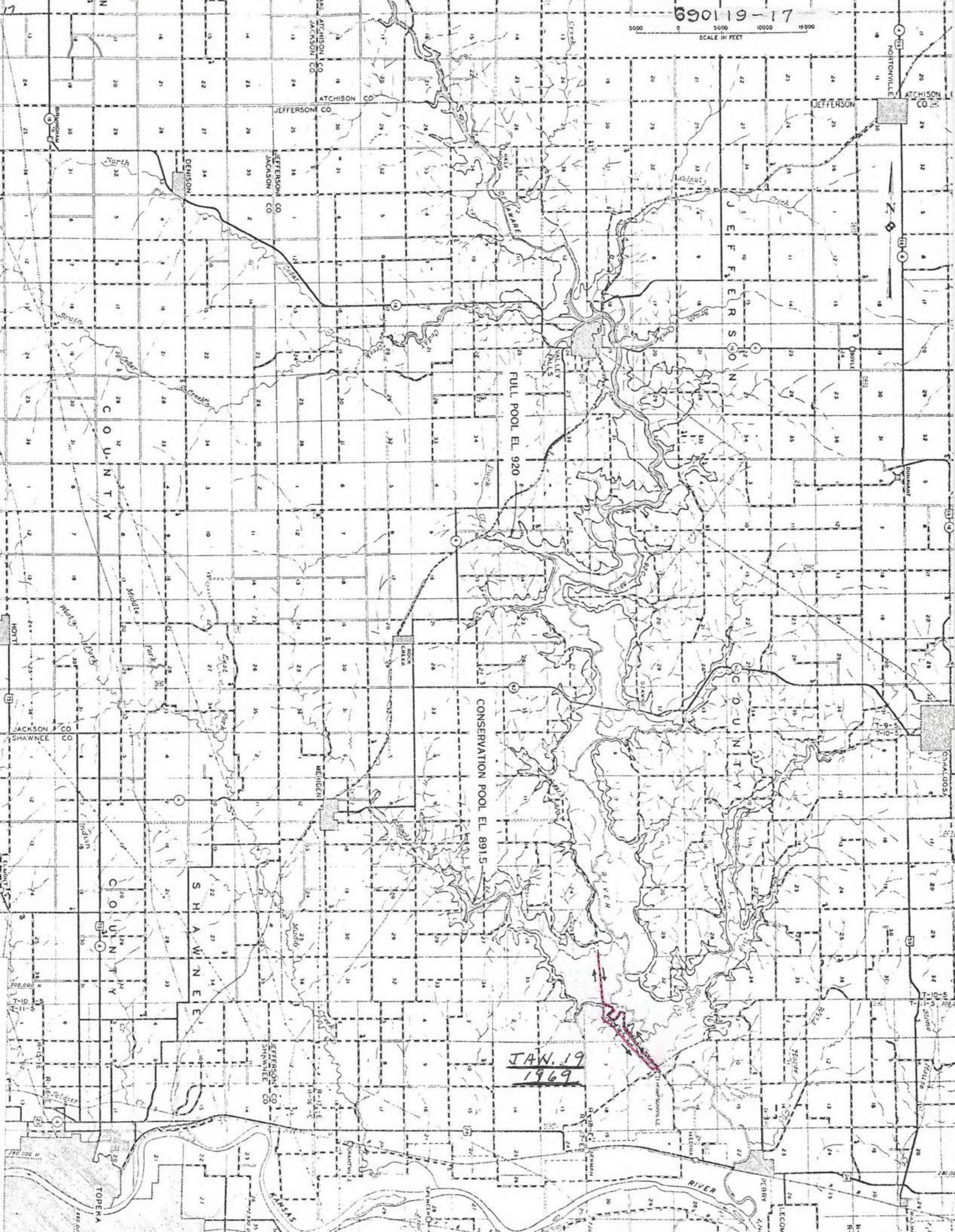
10:05 SE end promontory. Marsh hawk ♂ & ♀ mallard flew SE. 11:08 23 mallards (♂♂ & ♀♀) flew SE. 11:06 N end promontory. This entire peninsula should have remain free of roads and maintained in its natural profile and grassy slopes. Delaware River below 50° in ice. Debris on top of bank from last inundation. 11:14 minor drainage. Good microtine trails all along this area of N exposure. Ice in many sections of the trails. 11:16 on side of drainage opposite boat ramp, just newly constructed. 11:18 measured erratic of red granite as 64' x 48' (approx.). 11:20 4 black capped chickadees, 11:23 convergence of 2 drainages. 1 gal per 10 sec from right fork, nothing from left. Raccoon tracks in bottom of drainage at confluence. 11:27 pond. 1 pt per 10 seconds from this pond. Cattails at head of pond. These ponds should be converted into marsh areas for rails, marsh wrens etc. 11:30 measured another large erratic as approx. 64 x 66. The upper E edge shows signs of glacial erosion. 11:33 boat ramp. 11:35 Cottontail.

11:35 Promontory. 11:42 small pond at drainage, water low, fence line crosses dam. 5 black-capped chickadees in weeds below. 11:46 old road down slope. In this road the erosion

ROUTE OF CENSUS
JAN. 19, 1969

DERRY RESEVOIR
SUPERIMPOSED
ON
U.S.S
TOPO MAP.





JAW. 19
1969

was 1 foot deep. On the W side was approx. 15 feet or more deep. Soils red and coarse. Excellent microtine trails (mainly *Microtus ochrogaster*) in swales and on ridges of contours. Nests on ridges. 1 tree sparrow. 11:54 drainage and road to N crossing valley. 4 tree sparrows. Will cross valley to check birds & mammals in an area that was flood not too long ago. Sun breaking thru & temp 31°F. Just warm enough to melt surface muds and making walking difficult. Raccoon, rabbit, deer, coyote tracks in area to base of slope. 12:05 marsh hawk. 12:07 cement bridge 1 gal. to 15 sec. Debris on top of dike to left and apparently water cover in high water period. 12:16 N end dike. A marsh hawk searched S along dike and flew to within 20' of me before recognizing me. 12:30 raccoon track in mud and foot track since S side of valley. 12:35 bridge at Rock Creek. (bridge down). Coyote tracks (2) going N from N end dike to bridge. No tracks along dike area to cement bridge and 1 pair trending S from the cement bridge. Left bridge 12:35⁴⁸ and returned to S side valley. No crayfish in saturated soils. 1:12 N end dike. 1:21 cement bridge. 1:33 ^{main old} road. 1:37 new road. Will follow this road as far as practical. 1:47 road to boat ramp. Beyond is unpaved and because of mud is almost impossible to navigate so am traversing fields of at side of road in vegetation. 1:48 major drainage and old cement bridge. Fox tracks crossed road here. 1:56 major drainage at old wood bridge (fallen) (head ramp canyon). 2:03 passing road to promontory. 2:07 major drainage passing N of rock quarry. 2:14 shrub. 2:16 S end quarry below. 18 mallards resting on ice until an army helicopter alighted at rock quarry. 2:30 rock fence & road to left at base of hill where main road goes up hill. 2:47 flicker predated. 2:55 2 song sparrows in brush in creek, also 1 slate-colored junco. 3:06 blue jay, 4 slate colored juncos, redheaded woodpecker, 4 blue-capped chickadees, 2 titmice. 3:15 2 slate-colored juncos, 2 song sparrows. 3:23 arrived at car. Temp 40°F, sky hazy + 60° blue. The rock protected slope on the north side of dam is indeed a major modification of the ecology of this area and represents the most extensive rock habitat of any place I know. It would be interesting to see if mammals utilize this association. It might be a good place for marmots. Most birds were noted in the last 20 minutes of the census. Elsewhere birds extremely scarce.

Summary:

crows 4	song sparrow 2-2-2-
black-capped chickadee 5-2-4-4-	tree sparrow 3-1-4-
coyote tracks 5 sets	marsh hawk 1-1-1-
microtus ochrogaster	mallards 18-2-
raccoon tracks approx. 10 sets	yellow-shafted flicker 1-
deer tracks 1 set	red tail hawk -2-
fox tracks 1 set	red headed woodpecker 1-
blue jay 1-	slate-colored junco 1-4-2-
titmouse 2-	downy woodpecker 1-
cottontail rabbit 1-	

It is my opinion that the paucity of birds in this area is related to presence of wind and secondly to the interrupted condition and perhaps the physical interference of man on the community. The degree of influence of man is correlated with the amount of disturbed soils and, exemplified by the difficulty of navigating the slopes and flats because of mud. There is a direct relationship between the amount, depth and softness of the soils from the relatively stable and undisturbed soils on the upper reaches of the slopes above mans activity of grading and road building and the slopes below. The nearer the lake the deeper the soils from down slope movement. In climax forests or grasslands in other areas, one can walk all day and never accumulate soils on shoes. In the Perry area the mud formed elephant feet wherever one moved.

while the Perry Reservoir Project is essentially flood control and water preservation, it is evident that great time and monies are being spent for recreational purposes. Making the area available for the public is one of practical application with extensive and wide roads, ^{boat} loading facilities, observation areas, all modifying the so and usurping the natural community and landscape. The objective is to create a strictly man-made facility to accommodate the greatest number of people. To maintain natural conditions, ^{one} would have to sacrifice the accommodation of large numbers of people by limiting the size and numbers of roads and access to the lake, as well as adding stable water levels for certain parts of the lake, creating ^{stable} marsh areas above the level of the lake and lessening mans interference of the adjacent plant and animal community. Residences, whether supported by the public or private should be inconspicuous. Inviolable areas should be established

Wakarusa Valley, W of Clinton, Douglas Co., Kansas 690122-20
Jan. 22, 1969

made census of birds and mammals from Elk Creek to Clinton Cemetery along S side of Wakarusa Valley (see route on map). Enroute from Lawrence noted wakarusa about 4 feet higher than usual summer level. Day cloudy, no sun, foggy earlier, temp 56°F. Wind variable. Started roadside census at S end proposed dam at mileage 43.2. Redtail and meadow-lark. Rock creek higher than usual summer level. 44.9 y.s. flicker. 46.5 redtail. 47.1 Clinton. 47.6 sparrow hawk. 48.5 cardinal. 49.6 Belvoir bridge, no ice on or in river channel, water brown. 49.8 2 meadowlarks. 51.0 starling. 51.1 sparrow hawk. 51.8 2 redtails 4 feet apart in top willow trees. Cattle aggregation below. 51.9 8 Eng. sparrows. 53.1 now to S. Ponds melted around edge but ice in center. 54.1 sparrow hawk. 54.9 crow. Small creeks flowing and water clear. Large creeks with brown water. 55.0 blue jay. 55.3 bridge over Wakarusa. 30 tree sparrows, 8 slate-colored juncos, 2 cardinals. 55.9 End census. and beginning of hillside census from Elk Creek to Clinton Cemetery, a distance of 6 1/2 miles by census route. Left at 12:05. Chris will arrange to pick me up at Clinton destination. Will survey (1) open upland grasslands, (2) climax deciduous forests (3) adjusted or modified forests. 12:07 top hill at old tree, blue jay. 3 crows calling about 3/10 mi to W. 12:10 blue jay, titmouse, cottontail. Well follow forest-field contact. Cottontail tracks in soils at edge forests. 12:13 now to N. 12:17 now to E. 12:24 at point where upper set fields of native grass passes thru corridor to lower field enclosed by forests. This corridor is a vantage place to observe birds passing from one segment of forest to the other. At this point 6 slate-colored juncos moves from W to E across the clearing. 12:27 now to N. At this point there are more and deeper gullies than on the W-E course. The uncut strip of native grasses supported many runways. 2 bird nests in this strip. 12:28 N end of strip. Area quiet. 12:35 top ridge at fence. Along the route so far in but field of native grasses, examined approx. 30 bales of grass (round form) and in no case were there evidence of trails or meerkat activity. Cross top and arrived at 3 trunk jumper tree at 12:40. From this vantage point could not see hawks or mammal activity such as coyotes etc. Noted that the native grass is generally distributed in drainage system except in floor of canyon where it is replaced by a

690122-21
yellow colored grass. The native grass varies from individual
isolated bunches to complete coverage. Depending on how the grazing
is rotated, the grass varies in life form. In this drainage the
brush of young trees is gaining foothold by extending isolated patches.
12:52 2 redtail hawks flew down drainage. 12:55 meadowlark
singing. sparrow hawk. 12:58 creek water running approx 1 gallon
per 10 seconds. 90° green bottom from masses + algae. Some black
slate rocks as outwash but bottom mainly grown to grasses to edge
of creek. Patches of coarse, high yellow grasses support good microtine
(*Microtus ochrogaster*, *Synaptornis* and *Hymadon*) trails and activity.
1:01 drainage. From here to top of ridge on a diagonal course
counted 82 well developed microtine trails (mainly *M. ochis*?) and
the nearer the top, the better and more trails. (This number can
be correlated with previous trips). 1:10 top at point. Down
other side of ridge (diagonal) to fence good microtine trails.
Beyond fence the area was heavily grazed. 1:18 head of pond.
The wind is cool and moderate on ridges but quiet in draws or
gullees. 95% ice in pond. no water in creek below.
meadowlark singing. 1:22 east drainage and met and
ice formation. Grasses on east slope of drainage to top of
ridge with sparsely arranged native grasses and closely grazed
grasses between bunch type native grasses. From old eroded
trail on sidehill to at 1:25 to top (diagonal) counted 38
well formed runways crossing sparsely + closely grazed grasses
to adjacent patches of native grass. The trails were deep and
partly covered. This was not expected but would prove to be
an excellent place to trap because the runways are so conspicuous.
1:28 top ridge at point. a good redtail nest in big treeⁿ beyond point
and only slightly below level of ridge (a good point for observation
station of this nest). 1:33 sparrow hawk. Sun breaking thru
temporarily. meadowlark singing continuously. 1:36 drainage,
clear standing water but no running water. microtine activity less
meadowlark (eastern) singing. I have noticed that there are no
cattle on range. no snow on any exposure. 1:42 second fork.
water 1 pint per 5 seconds. Grass growing to edge of creek. meadowlark sing-
ing. Although native grasses are as good as in other drainages, there
do not appear to be as many microtine runways. 1:45 good microtine
trails on bench. From the previous drainage, to fence on this bench, counted
29 microtine runways. (good trapping area). 1:51 drainage, water 1 pint
per 5 seconds. 2 blue jays, 4 juncos, 2 song sparrows, redtail, 2 crows calling
to 5. 2:03 3 horned larks. When they left they flew 5 to beyond

690122-23

distant ridge some 1/2 mile beyond. 2:05 Point of ridge. This point is the best vantage point in this general area and would make an excellent site for a home. Left 2:13. redtail, 2:17 pond clear of ice around edges. 2 meadowlarks, 1 mockingbird, 2 slate-colored juncos. The mockingbird (just below down) left to W up hillside. 2:22 old road eroded into slope. microtus actively but considerably less than drainages to W. 2:30 drainage (large juniper) at angle of rock fence. Beyond this rock fence to E, there is no Andropogon but a fine grass completely covering the ground. Good grasses in swale and good microtine activity. Water running approx. 1 gal. per 15 sec. clear water with green masses. 2:35 good Coyote & deer tracks in mud. yellow-shafted flicker calling. 2:38 Crossing over creek at rock fence. Water 1 gal per 10 sec. clear & green masses. Continuing along old road in forest. blue jay. 2:42 spring area and running at approx 1 pt per 20 sec. 2 black-capped chickadees. mockingbird calling to E. 2:44 another spring area of approx 100' and supporting sedges and standing water. An ice mass of 2'-8" thick extending as an outflow for approx 50'. Fox squirrel. 2:45 spring area and ice mass. Redheaded woodpecker. 2:48 drainage to right, water 1 gal. per 15 sec. Good Coyote & deer tracks, one set each at crossing. Coyote is selective in placing feet. (Dogs generally are not). The following birds in group at this point: 2 downy woodpeckers, 1 hairy woodpecker, 3 redheaded woodpeckers, 70 tree sparrows, 7 Harris sparrows, 5 slate-colored juncos, 3 Cardinals, 3 black-capped chickadees, 2 titmice, 2 red-bellied woodpeckers, 2 bluejays, 1 golden crowned kinglet, 3 fox squirrels. Noted one of the redheaded woodpeckers, on two occasions, displace a downy woodpecker on a tree. A fox squirrel called vigorously as I recorded below. Temp 61°F. These birds finally moved out of the area. It would be interesting to see where and how they move as a group, and if there is antagonism in meeting other distinct groups of similar composition. Left this drainage at 2:57. at 3:00 a group of 4 b.c. chickadees, 1 blue jay, 1 fox squirrel. 3:03 mouth Canyon and now to E. redheaded woodpecker, Carolina wren, crow flew E, good Coyote & deer tracks. Coyote fresh and deer measured 55 mm. 3:05 5 blue jay, 1 redheaded woodpecker, 2 titmice, 6 Cardinals, 2 b.c. chickadees, 3 fox squirrels. 3:16 Crow flew E, fox squirrel. 3:10 leaving old field, now grown into brush. 3 chickadees. 3:16 4 blue jay. at

great horned owl, 1 fox squirrel, 2 titmouse, 690122-24, some deer track, now 3 sets of coyote tracks. 3:12 3 redheaded woodpeckers, 2 eastern bluebirds. 3:15 2 redheaded woodpeckers, 4 chickadees, 1 bluejay, 2 redbellied woodpeckers, 1 gray squirrel (seemed more wary than fox squirrels). 3:16 white breasted nuthatch. 3:18 3 red-headed woodpeckers, 1 fox squirrel, 3 b.c. chickadees. 3:20 fox squirrel, hairy woodpecker. 3:22 3 redheaded woodpeckers, a large tree (elm?) about 30' off trail to left. approx. 13' 9" + or - 4 inches. 3:28 extensive spring area and largest of the 6 or 7 that are along this trail. Their presences are marked by standing water in the trail. 3:38 end forest. drainage from spring area approx. 1 pt per 30 sec. see covered and 10 inches above present water level. deer track (single) still going east. marsh hawk in open field. 3:41 pond at mouth drainage frozen. cardinal, carolina wren, 3 bluejays, 4 redheaded woodpeckers, coyote tracks very fresh, 2 titmouse. water in drainage 1 pint per 15 sec. 3:45 now into forest. 3:48 pond open but see in center on bottom and covered with water. 2 bluejays. 3:50 fence & beginning dike, redhead, 3 chickadees, downy. 4:00 spring & marsh near point. 2 redheads, 2 y.s. flickers. In the protection of gullies & lee side hill the wind is 0 and the community absolutely quiet. In marsh noted a cottontail with no conspicuous white on tail, 2 song sparrow and extremely confident, micratinic runways, solid ice forms from spring and from seepage on hillside above. The distribution on hillside is different than on previous years and seems to be lower. 4:04 point. good stand of cattails and sedges with micratinic. 8 tree sparrows, 4 slate-colored juncos. 4:10 redhead & yellow-shafted flicker. 4:11 crossover at creek. 1 gal per 3 sec and best flow of drainages checked, mockingbird, 2 downy. More of the forests on east side cleared. As clouds move in the countryside is unusually quiet. No wind. In damp areas of old trapping area are good runways, some predation. 4:19 song sparrow, 12 quail in close formation as if preparing for the night. 4:20 road. 4:23 redtail. 4:24 drainage. 4:26 drainage (diverted course) 1 pt per 5 sec. Raccoon tracks in this area. 4:30 2 bluejays, 3 chickadees. 4:32 drainage at road up hillside at 1 gal per 20 sec. 3 bluejays, hairy. 4:35 drainage & marsh below, 3 juncos. Considerable damp area all along. 4:40 end of forest area and at windmill. marsh in NE end of field to west of the kind of

sedge that dominated this field several years ago. Excellent microtine activity in this high sedge. 8 juncos at large tree 4:50 Clinton cemetery. cleared slope below looks like the lower bench may have been produced by river or lake erosion. D. horned owl calling to E. Temp. 54° F at 5:20 P.M.

Summary: mileage from 12:05 to 2:38 grasslands - (3 1/2 miles)
 " " " 2:38 to 3:38 climax forest (deciduous) (1 3/10)
 " " " 3:38 to 4:50 adjusted deciduous forest (1 7/10)

	grasslands	climax forest	adjusted forest
downy	1	2	2
hairy		2	1
blue jay	1-1-2	1-2-1-5-4-1	3-2-2-3
Crow	3-2	1-1	
titmouse	1	2-2-2	2
slate-colored junco	6-4-2	5	8-3-4
redtail hawk	2-1-1		1
meadowlark	1-1-1-1-1-2		
sparrow hawk	1-1		
song sparrow	2-		1-2
horned lark	3		
mockingbird	1	1-	1
coyote	tracks	tracks	tracks
deer	tracks	tracks	tracks
yellowthroated flicker	1		2-1
Chickadee, b.c.		2-3-4-1-3-4-3	3-3
fox squirrel		1-3-1-3-1-1-1-2	
redheaded woodpecker		1-3-1-1-3-3-3	4-1-2-1
tree sparrows		70	8
Harris sparrows		7	
cardinal		3-6	1-
redbellied woodpecker		2-2	
golden crowned kinglet		1	
Carolina wren		1	1-
g.h. owl		1	1-
raccoon		tracks	tracks
gray squirrel		1	
white breasted nuthatch		1	
marsh hawk			1-
Cottontail			1-
quail.			12-

(Totals of birds only) Species 11 (42) or 3.1 species per mi. or 12 birds per mile
 Species 17 (161) or 13.1 species per mi. or 123 birds per mi.
 Species 17 (78) or 10. species per mile or 46 birds per mile

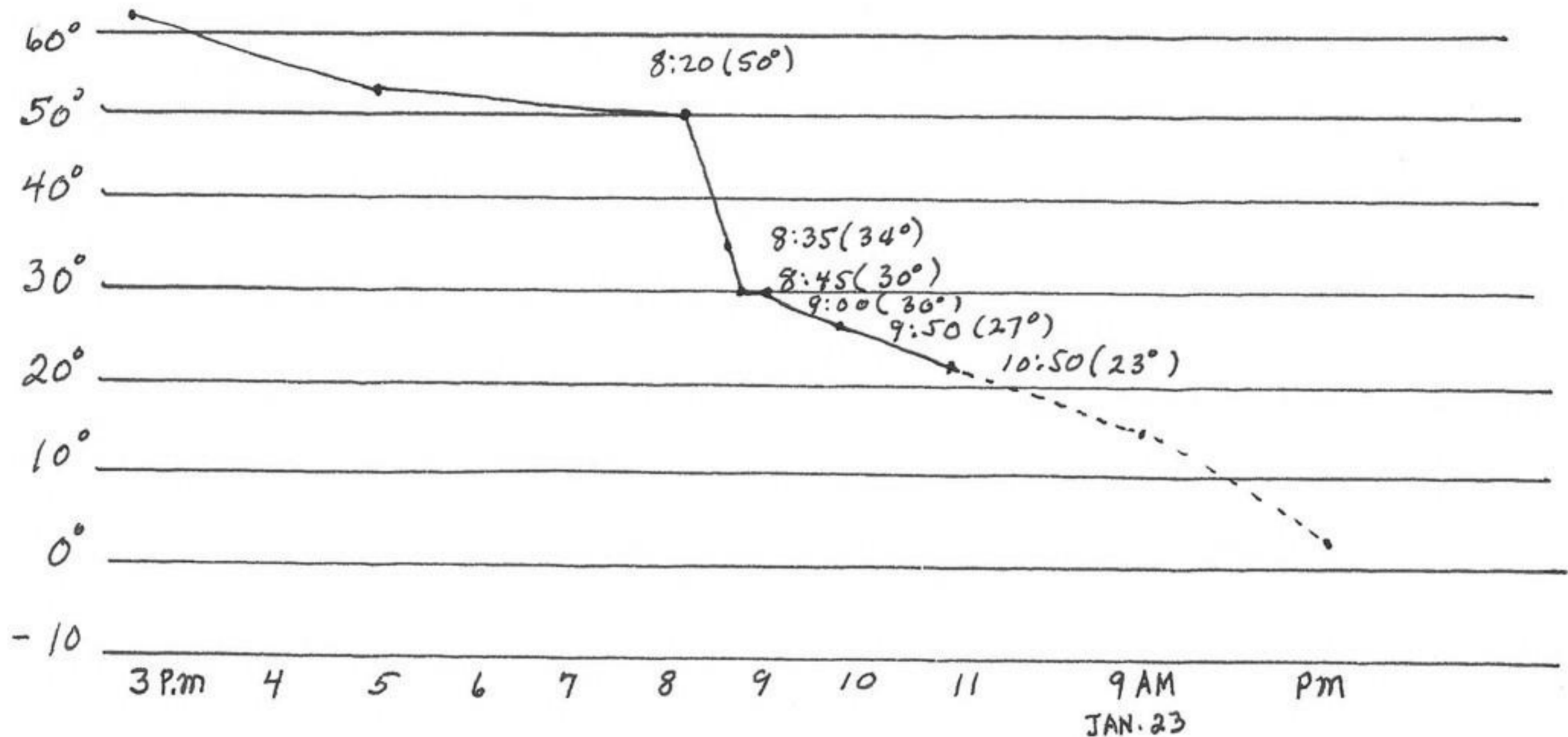
On the grasslands, the meadowlark and horned lark were the only birds associated with the grasslands, all others were

associated with the riparian growth bordering the drainage systems crossing these grasslands. On this basis the grassland supported 57 species per mile and 2.8 individuals per mile. The factor of wind may have been a factor in the distribution of birds; scarce on the open grasslands and relatively numerous in protected climax forests. Of other unusual occurrence was the number of fox squirrels in the climax forests and absent elsewhere.

Lawrence, Douglas Co., Kansas

Jan 22, 1969

Recorded the rapid drop of temperature is evening; .8 degree per minutes for 20 degree drop.



Wakarusa Valley, Rock Creek, SE Clinton, Douglas Co., Kansas

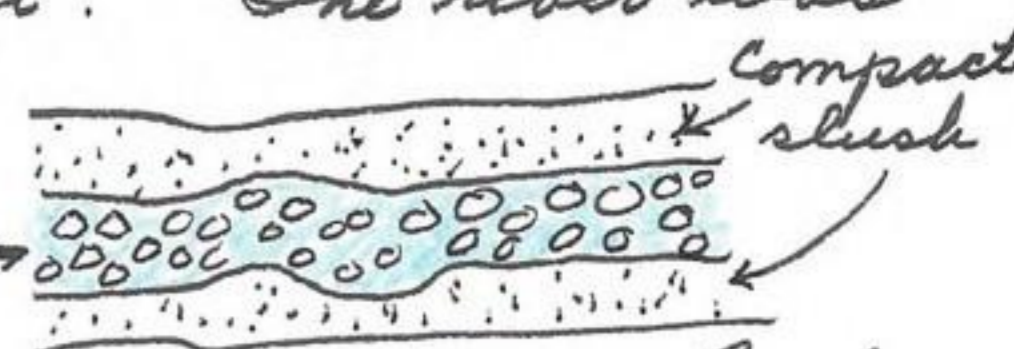
Jan. 24, 1968

(See map of Jan 24 for route covered) made bird and mammal census of valley hillside thru climax deciduous forests. Snowed last night up to this morning and put 1 inch of new snow on a snowless ground. One of the objectives of this census is to check on the activity of fox & gray squirrels, rabbits, coyotes, foxes, deer etc on snow imprints. Start roadside census at Sigel School house at 12:03 at mileage 68.7. 68.9 30 tree sparrows, 10 slate colored juncos, 5 cardinals, 1 yellow-shafted flicker. 69.3 Wakarusa bridge. At a farm house (NE of bridge) observed one group of 36 cardinals, 3 blue jays, 2 song sparrows, 1 downy, 3 black-capped chickadees. These birds were within an area of

30x40 feet at a refuge pile of corn cobs, and fragmented parts of I love
earn. This debris was being pushed over bank of river. I have
never seen so many cardinals at one point. The river was
being constricted by slush.

69.5 bluejay. 70.8 main
road and now to W. 91.6

moving
slush



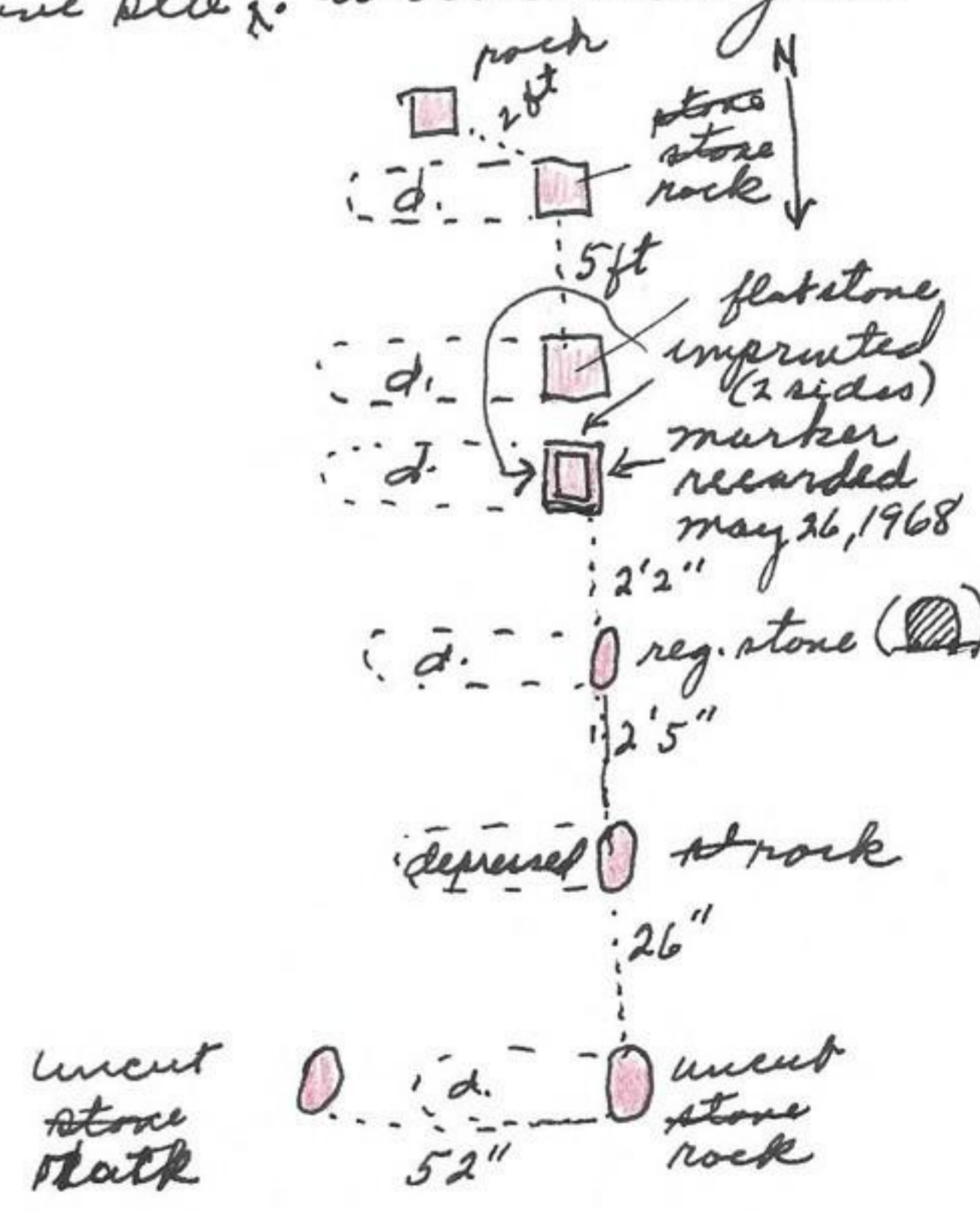
now to S. hairy woodpecker, 2 meadowlarks. 72.6 Rock
Creek bridge, water completely frozen + snow on top. 4 slate-
colored juncos. 72.9 base of hill and parked car. Left at
12:27 to E. 12:32 golden crowned kinglet, fresh coyote tracks
from E. 12:33 18 tree sparrows, 10 slate-colored juncos.
squirrel tracks, squirrel tracks, cottontail tracks. 12:35 red-
headed woodpecker, blue jay. 12:36 2 squirrel tracks, 2 sq.
tracks, 2 sq. tracks. 12:37 cottontail tracks in brush below
dam. Lake frozen + covered with snow. 12:38 fox tracks,
at one time following ^{on top of} log. 3 squirrel tracks. 12:39 red-
headed woodpecker. 12:41 at large tree on E side lake. 5
sets squirrel tracks. 12:42 2 sets squirrel tracks. 12:43
redheaded woodpecker, 2 sets squirrel tracks. 12:44 ⁽³⁾ downy
woodpeckers. most birds appear large because of the fluffing
of feathers. Temp approx 15°F. A redheaded woodpecker
flew towards me as if curiously. Birds frequently do this when
weather is extremely cold. 12:47 Coyote deviating to S but re-
turning to main trail and moving W. set squirrel tracks.
12:50 mouth canyon on E side. 9 goldfinches feeding closely
together. 12:51 2 titmice, 4 b.c. chickadees. 12:54 2 sets
squirrel tracks. 12:55 3 sets squirrel tracks. 12:57 set squirrel
tracks, now at fence paralleling trail. 12:58 set squirrel tracks
12:59 4 set squirrel tracks. 12:60 2 sets squirrel tracks.
1:01 fence line on ridge where 2 lines meet. Wind from NW.
squirrel tracks. 1:02 3 sets squirrel tracks, 12:5 2 sets squirrel
tracks. 1:07 large elm at drainage. 6 sets squirrel tracks, 1
blue jay. 1:08 2 sets squirrel tracks. 1:09 3 sets squirrel tracks,
1:11 redheaded woodpecker, 6 cardinals, 3 downys, 2 bluebirds,
3 sets squirrel tracks, 3 titmice. 1:12 2 sets squirrel tracks,
3 redheaded woodpeckers, 1 redbellied woodpecker. 1:14 3 sets squirrel
tracks. 1:15 redheaded woodpecker. 1:18 4 sets squirrel tracks
120 fox squirrel running across snow covered log. 121 2 fox
squirrels. 1:22 set fox squirrel tracks. 1:24 trail to field.
redbellied woodpecker, 2 b.c. chickadees, 3 squirrel tracks. 1:26
2 b.c. chickadees. 1:27 2 sets squirrel tracks, 1 set squirrel tracks.
1:28 2 sets squirrel tracks. 1:30 trail now upgrade. Brush pushed

8
against sidehill without mammal ^{tracks.} 690124-28 ^{This is} because
of the recent formation of these extensive accumulations.
1:31 3 sets squirrel tracks. 1:32 set squirrel tracks. 1:33 2 sets
squirrel tracks. 1:34 2 sets squirrel tracks, 2 redheaded w.
1:36 2 sets squirrel tracks, microtine burrow under snow. 1:37
at suspended rock on fence post, 2 squirrel tracks. 1:39 ridge,
redheaded woodpecker, 2 bluejays, 2 titmice, 2 sets squirrel
tracks. 1:41 4 cardinals, 1 redbellied woodpecker, 2 titmice. There
is less wind on this exposure. 1:42 2 redheaded woodpeckers,
downy, 2 b.c. chickadees, 1 yellow-bellied sapsucker (the sapsucker
has a sharp call something like a cooper's hawk). 1:45 squirrel
tracks, 2 redheaded woodpeckers. 1:46 2 squirrel tracks. Flat part
of bench. 1:47 2 redheaded woodpeckers, bluejay. 1:49 squirrel track,
Cardinal. 1:50 gate at head of field. Burrow thru snow. 3 squirrel
tracks. 1:52 3 cardinals, 2 titmice, 1 redheaded woodpecker in gulch.
1:55 crossing gulch. 1:56 entering forest. 2 redheaded woodpeckers, yellow-
shafted flicker, Carolina wren. 1:57 2 squirrel tracks, redhead, golden
crown kinglet. 2:00 drainage, first coyote from E (in trail) and at
this point turned to S. 2 squirrel tracks. 2:02 redhead. 2:04
3 squirrel tracks, 2 blue jays, coyote track in trail shows running gait,
2 redheaded woodpeckers. 2:05 3 squirrel tracks, 5 redheads, 2 blue
jays. 2:06 ford at creek and water open only at ford. 3 squirrel
tracks, 1 golden crown kinglet, 3 chickadees, 1 downy. 2:09 3
squirrel tracks. Coyote still in trail and adjusting course from
one side of trail to the other or in center. 2:12 squirrel tracks.
2:14 3 squirrel tracks. 2 coyote tracks now, downy. 2:16 Coyote
unmated at edge trail 2 squirrel tracks. Coyote tracks both left
trail, 3 redheads, 2 blue jays, 3 squirrel tracks. 2:19 squirrel
tracks. 2:20 short cut to Chimney but continuing on regular trail.
squirrel tracks. 2:22 squirrel tracks. 2:23 2 squirrel tracks,
2:24 first drainage, 2 redheaded woodpeckers, 2 squirrel tracks.
2:25 squirrel track. 2:26 redheaded woodpecker, redtail left
from ground among trees. squirrel tracks. 2:28 drainage,
frozen, redhead & 3 squirrel tracks, tunnel of small animal (could
be microtus pennsylvanicus or shrew?), 3 redheads. 2:30 2 squirrel
tracks, now to N. redhead & squirrel track. 2:31 2 squirrel tracks.
2:33 squirrel tracks, redhead. 2:35 Chimney, Cardinal, Black Creek
open below upper convergence. 2:36 squirrel tracks, redheaded woodpecker
on sycamore. 2:37 3 squirrel tracks 2:38 2 squirrel tracks. 2:39
3 squirrel tracks, 3 b.c. chickadees. 2:40 2 squirrel tracks. 2:41
squirrel track. Temp 17°F. 2:43 Crossover and end of complete

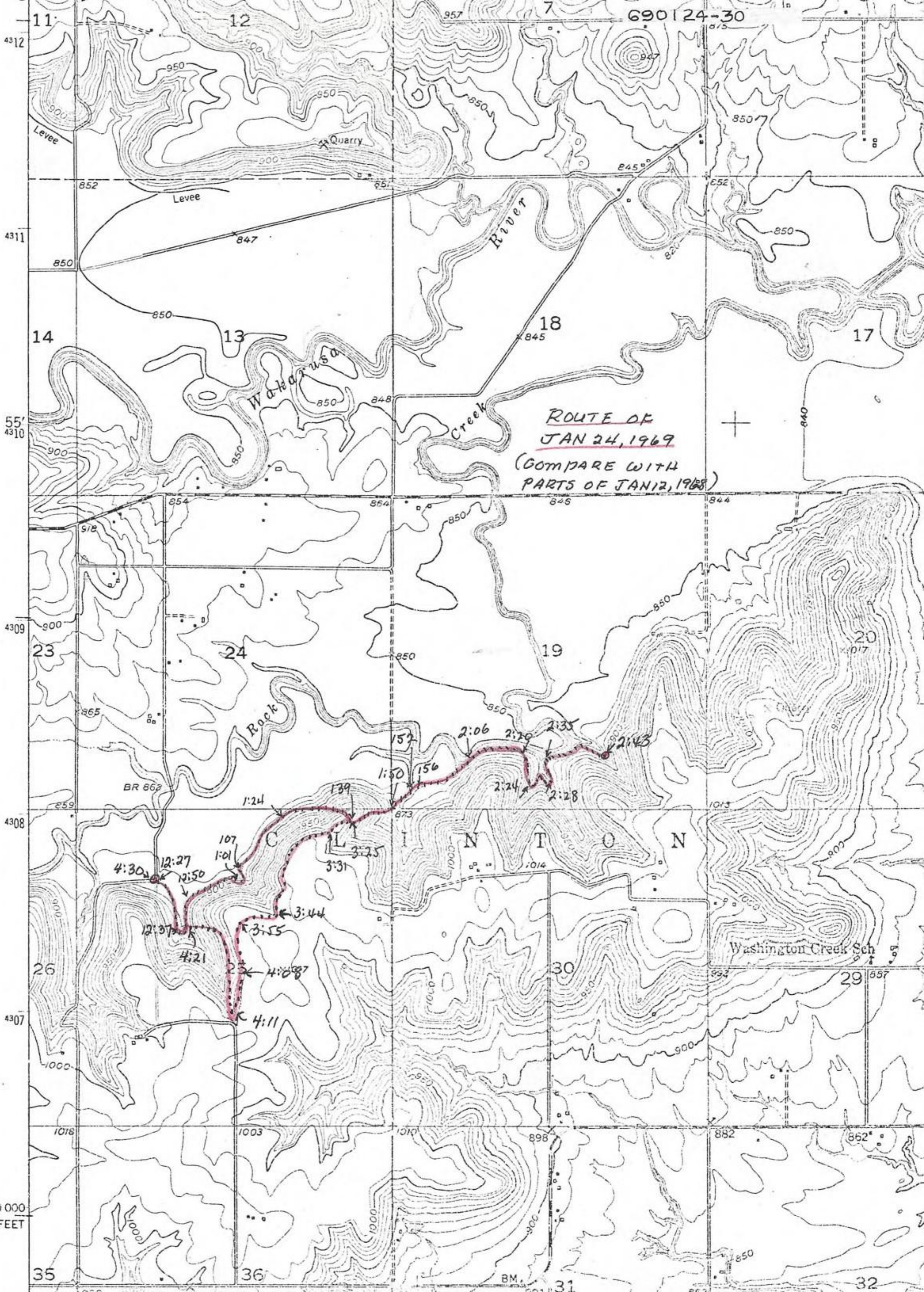
census. Will return to convergence of trail ⁶⁹⁰¹²⁴⁻²⁹ and continue complete census on upper trail to car. ^{on ridge} water below chimney in creek 34°F and only where running open between frozen segments of the creek. Date 3:15 3:25 on ridge and now will continue complete census to top and along trail. Snow here 1 inch deep. bluejay, redhead + squirrel tracks.

Trees on east side of ridge covered with snow but not on w side. 3:27 top level of ridge, 2 squirrel tracks. 3:28 reddish woodpecker, blue jay. 3:29 small mammal tunnel. 3:31 field at big tree, 2 squirrel tracks. 3:32 squirrel track. 3:33 squirrel track. 3:35 angle of field now SW. 2 squirrel tracks. 3:36 3 squirrel tracks, wind blown snow from N.W. 3:36 3 squirrel tracks. 3:37 squirrel track. 3:38 3 squirrel track, 2 redheaded woodpeckers. 3:39 5 trunk elm. redhead, squirrel track. 3:40 squirrel track. 3:42 field edge and downy. These contacts with open field are for only a few feet and then the trail returns to forest trail, 2 squirrel tracks. 3:43 3 squirrel tracks. 3:44 trail to right down gully. 4 squirrel tracks, cardinal. 3:45 3 squirrel tracks, redhead. 3:46 2 squirrel tracks, 2 chickadees, 2 squirrel tracks, redhead. 2:47 2 redheads, downy, 2 squirrel tracks, chickadee. 3:50 field and 5 squirrel tracks. now at grave site ^{at 3:55} with weeds gone

discovered other markers thus: The graves were sunk toward the east. Some of the headstones were uncut rocks, others regularly cut stones. In area noted several (2) *Peromyscus* trails along rock fence to S. Beyond an open field of cut corn were 8 redheaded fliers, some 300' from forests. They collected in an area approx 20' x 20' and by one or two at a time. They remained near top of the 8' high corn stubble or on ground but did not seem to feed, mainly socializing. They remained for approx 3 minutes and then



690124-30



ROUTE OF
JAN 24, 1969
 (COMPARE WITH
 PARTS OF JAN 12, 1968)

210 000
 FEET

flew, 3 in one direction and the other 5 in another directions. As they left or preceding their departure one flicker gave a sharp call. Left grove area 4:05. 4:06 white breasted nuthatch, mourning dove, 3 squirrel tracks. 4:07 2 squirrel tracks, 4:08 field of tree fence to east, 5 squirrel tracks, 2 song sparrows left open field & flew into brush. 4:09 3 squirrel tracks, 2 squirrel tracks. 4:10 squirrel tracks, 4:11 downy drainage at road & now down hill on same hillside system, 3 cardinals. G.H. owl called from opposite side of drainage to W & slightly N, ^{crow to S} 4:13 squirrel track. 2 redheads. 4:14 2 squirrel tracks, 4:15 redheaded woodpecker, 2 squirrel tracks. 4:16 fox tracks in trail for 30' and up grade, 2 squirrel tracks, 4:17 2 squirrel tracks, 4:18 3 squirrel tracks. 4:20 3 squirrel tracks. 4:21 lake, 5 squirrel tracks, 4 cottontail tracks N of dam. 4:30 ear and end of census. On return to Lawrence noted that the slush in the Wakarusa River had gone and water flowed freely between edges of ice (some amount of ice or compressed slush as this AM).

Summary (Rock Creek Census)

- Crow - 1
- golden-crowned kinglet 1-1-1 = 3
- Coyote tracks 1-1 = 2
- tree sparrows 18-
- slate-colored juncos 10-
- squirrel tracks 1-2-2-2-3-5-2-2-1-2-3-1-1-4-2-1-3-2-6-2-3-3-2-3-4-1-3-2-1-2-3
 1-2-2-2-2-2-1-2-1-3-2-2-3-3-3-1-3-2-3-1-1-1-2-2-1-1
 3-2-1-2-1-1-3-2-3-2-1 = 148
- cottontail tracks 1-1 = 2
- redheaded woodpecker 1-1-1-1-1-3-1-2-1-2-2-2-1-2-1-1-2-5-3-2-1-1-3-1-1-1 = 43
- blue jay 1-1-2-1-2-2-2 = 11
- fox tracks 1-
- downy 3-3-1-1-1 = 9
- am. goldfinch 9-
- titmice 2-3-2-2-2 = 11
- b.c. chickadee 4-2-2-2-3-3 = 16
- cardinal 6-4-1-3-1 = 15
- bluebirds 2-
- red-bellied 1-1-1 = 3
- fox squirrel 1-2 = 3
- y. b. sapsucker 1-
- y. s. flicker 1-
- carolina wren 1-
- redtail hawk 1-
- TOTAL species birds = 17

Return on upper trail:

- blue jay 1-1 = 2
- redhead 1-1-2-1-1-1-2-8-2-1 = 20
- sq. tracks 1-2-2-8-1-2-3-3-1-3-1-1-2-3-4-
3-2-2-2-5-3-2-5-3-2-1-1-2-2-2-
- cardinal 1-3 = 4
- b.c. chickadee 2-1 = 3
- downy 1-
- w. b. nuthatch 1-
- mourning dove 1
- song sparrows 2
- Dr. h. owl 1-
- fox 1-
- cottontail 1-
- TOTAL species birds = 9

Comparison of birds along identical route of Jan 12 and this date Jan 24. Jan 12 under snowless conditions & Jan 24 with first substantial snow of the season:

	Jan 12	Jan 24
slate colored junco	58	10
crow	2	1
blue jay	27	11
redheaded woodpecker	58	43
cardinal	9	15
downy woodpecker	6	9
am goldfinch	2	9
tree sparrow	124	18
titmouse	24	11
b. c. chickadee	41	16
red bellied woodpecker	4	3
yellow bellied sapsucker	1	1
golden cr. kinglet	1	3
brown creeper	4	0
g. h. owl	2	0
eastern bluebird	2	2
ruby cr. kinglet	1	0
yellow shafted flicker	3	1
white-breasted nuthatch	1	0
redtailed hawk	2	1
hairy woodpecker	2	0
Carolina wren	1	1
	375	155
	22 species	17 species

It is interesting to note that if the number of redheaded woodpeckers observed on the upper trail (20 in number) were added to the list of birds observed on the lower trail, would be 60 or 2 more than the 58 birds noted Jan 12. Most of the same kinds of birds were noted on each of the two trips but number fluctuated because of slightly different community selection due to wind, etc, and inactivity of birds during the cold snowy period of Jan 24, with snow having fallen the last night permitted activity of squirrels (probably 90% fox squirrel & 10% gray squirrel) in the snow. 148 separate tracks were counted but many were undoubtedly from the same squirrel, especially those in combination of 2 or more. However, two sets of tracks a foot or so apart would both be travelling in the same direction. One was impressed, however, with the

33
great amount of squirrel activity and the 690124-33
squirrel on census route. Equally startling was the ab-
sence of cottontail rabbit tracks.

Lawrence, Douglas Co., Kansas

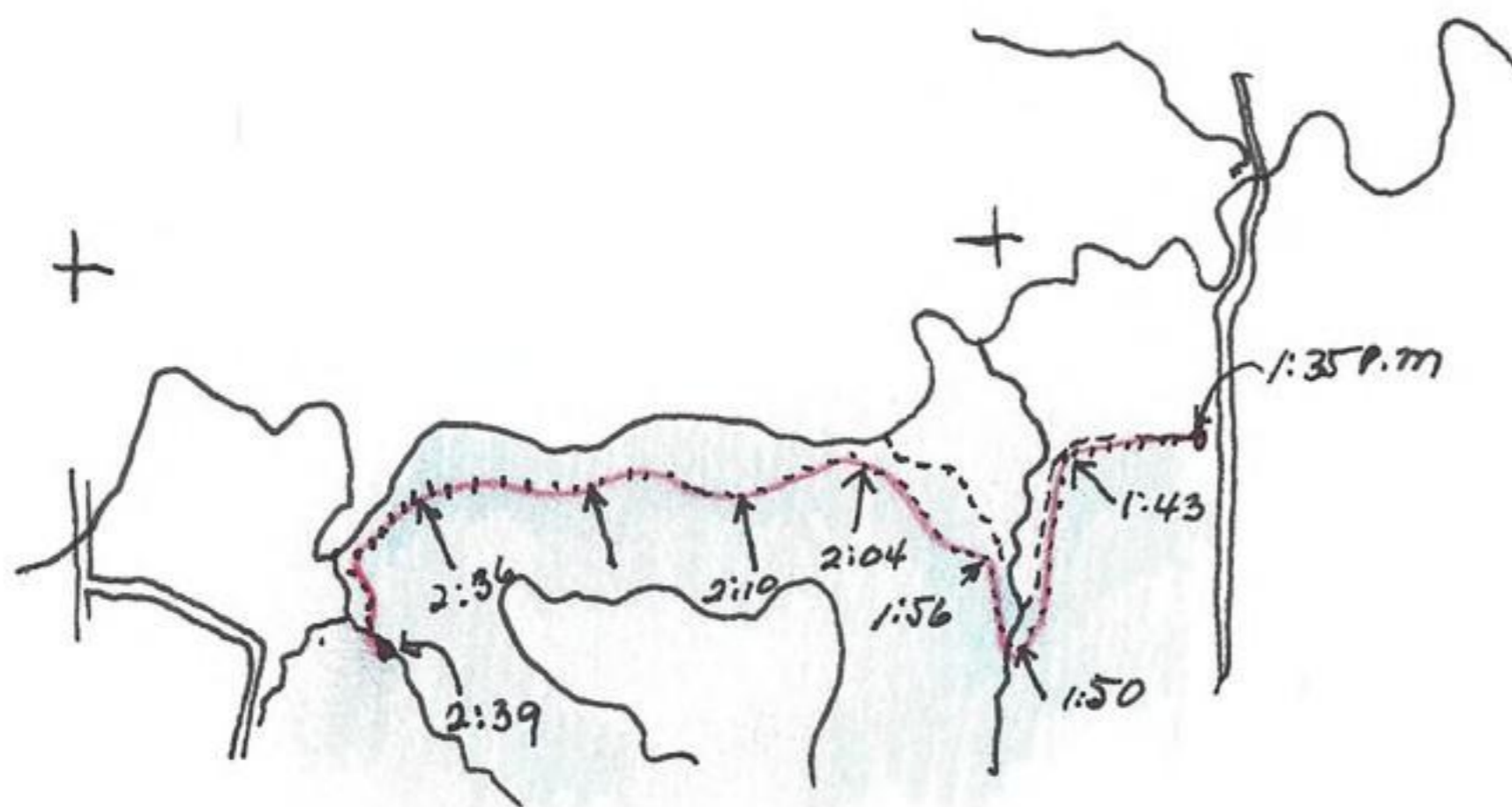
Jan 26, 1969

First substantial snow of the season with 5 or 6 inches. yesterday
and today there has been a single american goldfinch at feeder
along with Eng. sparrows, slate colored junco, cardinals, bluejays
and starling. I presume that this is the same bird observed
on both days. On several occasions in the field I have noted
a single goldfinch associated with other kinds of birds in a flock.
This morning the slate-colored junco arrived at feeder (7:15 AM)
when lights were weak. The junco alighted on packed snow
below feeder and remained motionless for 30 seconds, then
turned head only for 15 seconds and then finally moved in
usual feeding movements. I have noticed that 4 or 5
juncos arrive about the same time, followed next in order by
cardinals. A tree sparrow remained at feeder this
A.M. and its mannerism of flipping its tail up and down identified
it from the other sparrows.

Rock Creek, Wakarusa Valley, SE Clinton, Douglas Co., Kansas

Jan 26, 1969

Annette C. Bee, Mary Pauline Bee, Martha Faubel and Peggy Laugle made
trip from base of hill S of bridge (SE Clinton) to near bridge S of
Clinton and return. Snow 7 1/2" deep (7-8). Temp 27°F. Slight wind
from NW. Left car



1:35 P.M. 1:43 2 cardinals
and mouth canyon.
1:44 song sparrow. 1:50
Crossader, song sparrow
1:56 end field, 2 redtails
2:04 Creek, 4 redheads,
yellow shafted flicker.
2:08 2 bluejays, coyote
tracks in trail and partly
covered by most recent
snows this A.M. 2 b.c.
chickadees. 2:09 3 cardinals
at eroded trail on sidehill.
2:10 first drainage, redhead
flicker. 1:17 15 slate colored
juncos, 12 tree sparrows,
4 b.c. chickadees, 2 bluejays

44
 Checked old pioneer site. Left 2:24. 2:25 690124-34 redhead.
 2:29 drainage. 2:32 2 blue jays. 2:33 ^{drainage} downy, chickadee.
 2:36 Point. redhead, 3 b.c. chickadees, white-breasted nuthatch
 2:37 redhead, titmouse flew into root system of large tree at side
 of lateral drainage and remain for several seconds. 4 slate-
 colored juncos, 4 chickadees, redhead. 2:39 stopped for re-
 freshments. Winter wren, 5 redheads and 1 redtail in area.
 Left 3:50 (takes 30 minutes to heat water for 5 servings of chocolate).
 and followed same route on return.

Perry Reservoir, Jefferson Co., Kansas

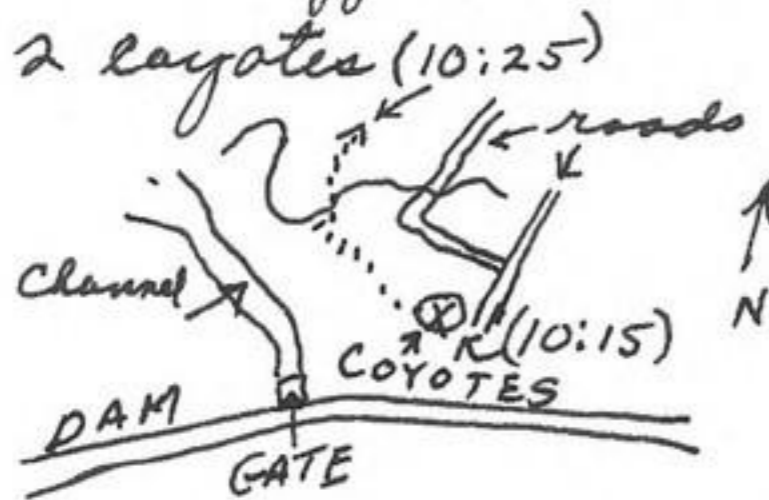
Feb. 1, 1969

made roadside census in reservoir area (see map). Enroute
 to Perry on highway 24 counted the following birds:

meadowlark 3-1-1-10-20-2-1-1-1-1-2-8-9-8-1-1 or 70 individuals.
 These birds were along edge of highway (4-6' from passing cars)
 on bare areas of shoulder of road. They were crouching and
 feathers fluffed. One bird was killed by car and it is surprising
 that others were not hit by passing vehicles. Under ordinary
 conditions, meadowlarks are not quite so confiding.

Learned larks. 3-20-18-7-8-32-12-13-6.

Fog in air (high & low) and obscuring vision by about 1
 mile. Snow covers ground. Temp 14°F. The trees in the
 valley are covered with white frost but trees on hill slopes are
 not which is a reverse of the general arrangement. Other
 birds were observed but only the above were counted. Continued
 to Perry reservoir and started census at 56.0 (10:10 A.M.) at east
 end of road leading to dam. Cardinal. 56.9 headquarters.
 57.0 approx. 1/10 mi. E of outlet gates at dam. From here noted



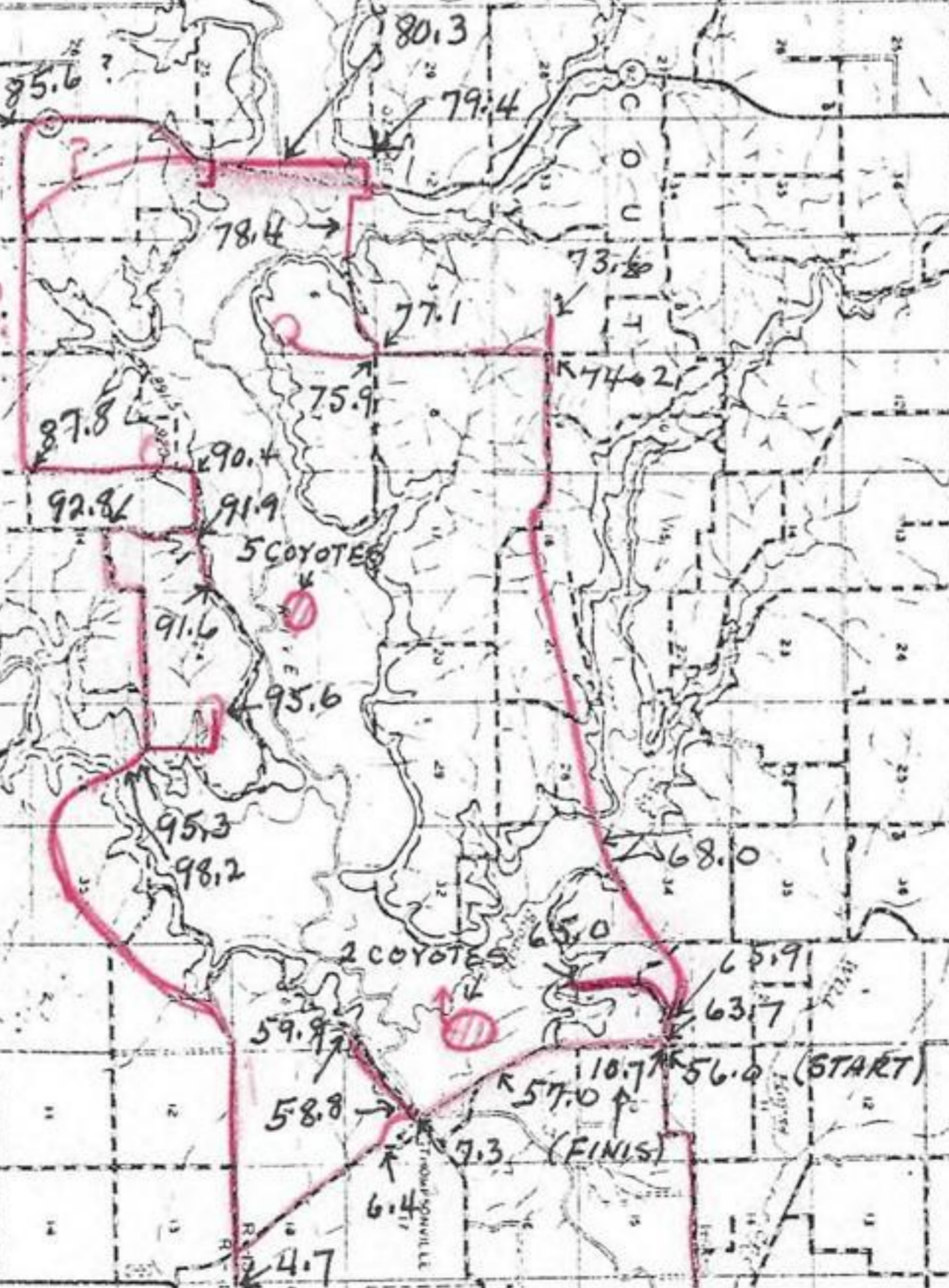
2 coyotes (10:25) First noted at 10:15 and watched them move
 across the floor of the valley of the future
 reservoir to 10:25 at which point they disappeared
 into brush. Noted the following behaviors:

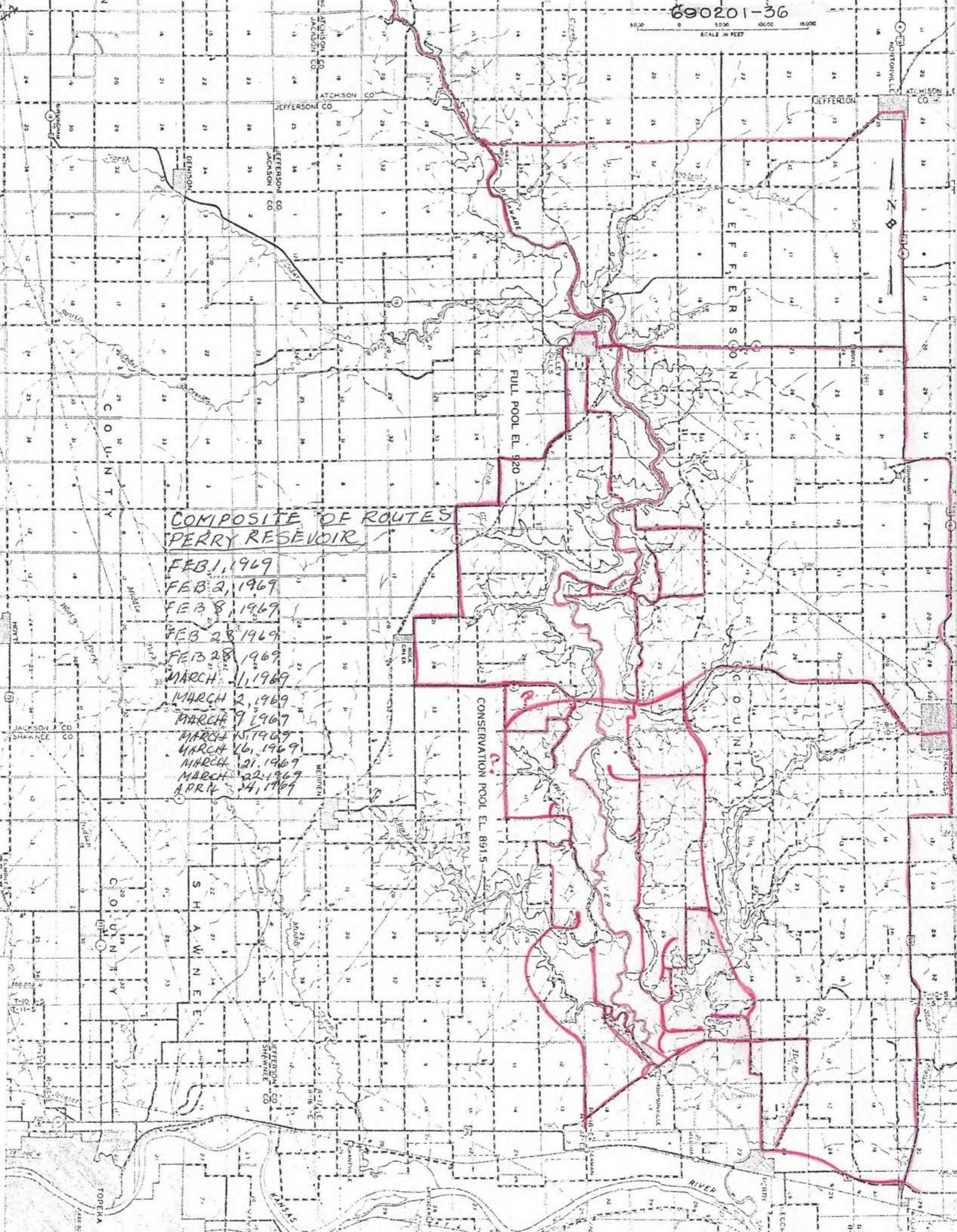
1. ♀ larger, especially width as noted in the pair as they moved directly away from me.
2. ♀ preceded ♂
3. most of the time they moved abreast, especially across open fields but trailing in channels etc. The separation (abreast) was generally 40' but up to 150'.
4. Generally both would stop & react to noises by turning head toward noise. Sometimes only one would react to noise.
5. On open fields they moved at a regular and consistent speed while along brush or banks of creeks they are deliberate in movement and search the area.
6. In open field the ♀ urinated. The

PERRY RESEVOIR
ROUTE FEB. 1, 1969

FULL POOL EL. 920

CONSERVATION POOL EL. 891.5





COMPOSITE OF ROUTES
PERRY RESERVOIR

- FEB 1, 1969
- FEB 2, 1969
- FEB 8, 1969
- FEB 23, 1969
- FEB 28, 1969
- MARCH 11, 1969
- MARCH 2, 1969
- MARCH 9, 1969
- MARCH 15, 1969
- MARCH 16, 1969
- MARCH 21, 1969
- MARCH 22, 1969
- APRIL 14, 1969

FULL POOL EL. 920

CONSERVATION POOL EL. 8915

CO. COUNTY

CO. COUNTY

SHAWNEE

CO. COUNTY

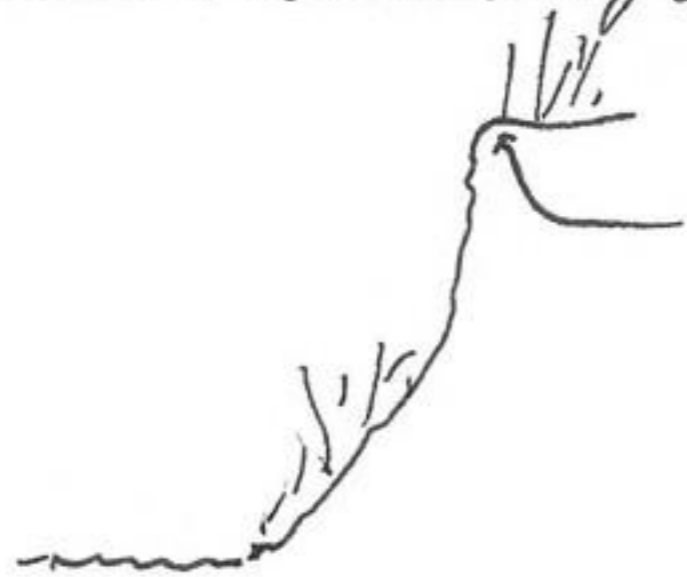
TOPEKA

KANSAS

RIVER

♂, who was ^{about and} approx. 30 feet away, turned 90° and came over to where ♀ had urinated and performed the same act. The sexes were differentiated on the basis of method of urinating. The ♂ then followed by trailing the ♀ across the rest of the field. From the top of the dam these 2 animals were very conspicuous below. Continued to west end dam. Water behind dam much the same as when last surveyed (see notes Jan 19) and all water frozen and covered with snow although the water areas were differentiated by a slightly different color. At west end noted an Eng. sparrow and 2 slate-colored juncos. Continued N on new road toward rock quarry. 58.8 fox squirrel. 59.0 redtail in top old tree. 4 crows in some tree but not calling. 59.5 join other ^{new} road coming down from hill. 59.7 turn off to quarry. 59.9 at quarry and returned to west end of dam. 61.6 west end dam. 62.2 a redtail flew up over dam from N and glided down to fields to S in a straight glide. Other redtails on previous trips have hovered at top of dam on S side. The dam would be a good place to check ^{traditional} movements of birds down the valley as one can observe the entire width with binoculars. 62.8 headquarters. 63.7 now to N. 64.1 to left toward tower. 64.8 redtail. 65.0 turned around and at 65.9 back at main road to continue N. 68.8 Cooper hawk in dead tree in open with 2 crows on top of tree and 2 crows in road below, neither of them calling. The hawk left the tree and flew straight into a stand of deciduous trees. One of the crows followed. 68.0 crossing Slough Creek on bridge. 68.5 red-tail. 68.9 marsh hawk hunting in extensive field of native *Andropogon*. There are many areas of these grasses and good sources for reintroduction to other areas of the reservoir area. 70.2 redbellied woodpecker. 71.4 3 slate-colored juncos. 73.4 old railroad car to right, continued N to point at top of grade where road was closed because of blasting at 73.6. Backtracked to 74.2 and turned west off main road on to county road. 74.3 4 cardinals, 4 tree sparrows 8 juncos. 74.6 5 tree sparrows, 2 cardinals. 75.1 8 cardinals, 30 tree sparrows, 12 slate-colored juncos, robin. This flock was associated with farm house. 75.5 4 bluebirds, 2 tree sparrows. 75.9 Entrance to Lakewood hills. 77.1 back to county road and thence N. A marsh hawk in field to E. 78.0 4 slate colored juncos, 2 cardinals, 3 tree sparrows. 78.4 Crossover of Little Slough Creek.

The bridge has been removed and a detour thru creek to left has produced exposed banks and open water below the crossover (culvert covered with dirt) exposing rock bed. An extensive weed patch to NW provides refugia for a host of sparrows. ^{at} In this crossover on ^{5 sparrows} sides of drainage channel noted. 18 Harris sparrows, 12 Cardinals, 15 slate-colored junco, 30 tree sparrows, 4 song sparrows, adult and juvenile white-crowned sparrow. The cardinal frequently fed at



top of drainage at edge exposed free of snow. The tree sparrows and junco used ice on water and edge of water for feeding. 78.6 marsh hawk. 78.7 12 tree sparrows, 2 Cardinals, 8 junco. 79.4 main road and now to W. Old lower Ozaukee removed and moved to W side of Milwaukee River on hills to NW. 79.5 redheaded woodpecker. 80.3 over Milwaukee River at bridge. 80.9 Ozaukee turnoff. Started down road to S but had to return because of deep snow drifts. Back to highway at Ozaukee at 81.6. 83.4 now to S. 2 tree sparrows. 84.0 Cardinal, 8 tree sparrows, 4 slate-colored junco. 84.7 redbellied woodpecker, 2 mourning doves ^{2 bluejays} 85.2 3 goldfinch, 2 slate-colored junco, 85.3 3 tree sparrows. 85.6 now to left to Hilldale. 86.4 5 horned larks. 86.6 Crossroads, now to S. redbird. 86.9 9 meadowlarks, 8 tree sparrows. 87.4 6 crows flying W and stretched out for 3/4 mile, marsh hawk. 87.8 left to Hilldale (new road out of Ozaukee has changed mileage on older maps and course up to this point shows variance). 9 meadowlarks, 5 tree sparrows. Continued to Hilldale and deep snow stopped me at 100' of office. Backed up to road ^{to} to S leading into valley and then E to main valley. 90.4 to right ^(S) redbird and marsh hawk. Continued S to road leading W but continued S to 91.6 when snow got to deep. From this point surveyed entire valley as far as I could see with 20x binoculars and counted 16 marsh hawks and 5 coyotes. The pack of 5 coyotes was formed of 2 ♂♂ and a female and another group of 2 (sex?). The three were concerned with breeding with the ♀ being followed and the 2 males contesting and at times copulating with the ♀. The two coyotes of the other group approached from the N and were met by the 3 other coyotes at which time there was general confusion and then acceptance as a pack of 5

This activity took place in an open field where they were clearly exposed and visible. They finally moved into a bushy area and lost to sight. Left this observation point and returned to 91.9 and turned w up graded road. This canyon had a flock of 12 Cardinals, 30 slate-colored juncos, 15 tree sparrows, 1 redtail 92.8 to left. Redtail. 94.3 slight bend in road, 2 tree ^{2 blue jays} sparrows. New road begins here. Continued to E end of bridge at 95.3 and returned to check Wind-n-Waves Estates. leaving ^{main} road at 95.5 95.6 turned around. 97.5 marsh hawk flew along upper edge of a cut bank free of snow and was definitely hunting birds. A slate-colored junco flew out and the hawk darted at it but missed. 97.7 main road. 98.2 bridge at point where Rock Creek passes directly below bridge. From here counted 8 marsh hawks and 12 crows in valley beyond. 99.5 2 marsh hawks on uplands. 99.8 marsh hawk and crow. 1.3 microwave station at side of road. redtail. 1.6 4 horned larks. 2.1 4 Harris' sparrows, 8 tree sparrows. 2.5 to E. 3 tree sparrows, 2 song sparrows. 3.6 to 5 redheaded woodpecker. 4.7 main highway 24. Returned to road leading NE at 5.6. Here 6 cardinals, 20 Eng sparrows, 18 tree sparrows, 12 juncos, 2 chickadees, 2 bluejays. 6.4 road to left upgrade. At farm house below 8 cardinals, 8 Eng sparrows, 30 tree sparrows, 10 slate colored juncos, 2 bluejays. 7.3 Overlook Point. (2:40 P.M). Can just see across reservoir valley but fog & mist beyond. This condition of sunless day has existed throughout observation today. 7.5 5 juncos, red ^{tail} 9.4 2 redtail hovering on ^{upper} edge of dam, south exposure. Wind from N. 2 marsh hawks in valley to N. 9.9 headquarters. Single robin. 10.7 east end of reservoir road at 4 corners at base of hill (2:50 P.M, temp 29°F). On return to Lawrence via highway 24, noted one group of 25 meadowlarks near midland. Otherwise numbers of meadowlarks and horned larks about as some as observed this morning and still on side of road where shoulder was free of snow. I have noticed that some birds of a group will fly out when cars approach and then return after car has passed. This was true with a flock of about 50 starling 1 mi. N Tepee junction. Half remain as cars passed 5-6 feet away and the other half flew away 20'-30' and circled and returned immediately after cars had passed. It is surprising that these birds along the side of the road are not killed by passing cars.

Summary: (Perry Reservoir area only). Listed as ^(except blue jay) first observed. number indicates natural groups.

cardinal - 1-4-2-8-2-12-2-1-12-6-8 = 58
 Coyote 2-5 = 7 (the group of 5 was originally groups of 3 and 2)
 Eng. sparrow 1-20-8 = 29
 slate-colored junco 2-3-8-12-4-15-8-4-2-30-1-12-10-5 = 116
 fox squirrel 1-
 redtail 1-1-1-1-1-1-1-1-1-1-2 = 12
 crow 4-4-6-12-1 = 27
 cooper hawk 1-
 marsh hawk 1-1-1-1-1-^{↓ dispersed}(16)-1-^{dispersed in valley}(8)-2-1-2 = 35
 red-bellied woodpecker 1-1 = 2
 tree sparrow - 4-5-30-2-3-30-(2-2-8-3-8-5-15-2-8-3-18-30) = 188
 robin 1-1 = 2
 eastern bluebird 4-
 Harris' sparrow 18-4 = 22
 song sparrow 4-2 = 6
 white-crowned sparrow 2-
 red-headed woodpecker 1-1 = 2
 mourning doves 2-
 blue jay 2-2-2-2 = 8
 Am. goldfinch 3-
 horned lark 5-4 = 9
 meadow lark 9-9 = 18
 black-capped chickadee 2-
 blue jay ~~2-2-2-2~~ = 8

species of
 Total 21 birds, 2 mammals.
 556 individuals.

54.7 miles of census

5 hrs in field.

The number of marsh hawk could be an intrinsic number as route covered today did not overlap except as ^{main Delaware} valley counts may be duplicates. There is even the possibility that the hawks could have moved across valley. I am of the opinion that the number is representative of different birds + or - 5.

In travelling 54.7 miles one is apt to miss some of the smaller birds and in each case of the above species, especially tree & junco, one could add perhaps 5%.

If one sees 3 or 4 crows in an old tree, separated from the main deciduous forest, they are generally associated with a hawk, if ^{the crows} they are there and not making unusual concern. If an owl, the crows are vociferous.

The valley of the Delaware could be made a good refuge for coyotes if dog running were prohibited. Organized dog hunting is the most disastrous form of wildlife depredation & annoyance.

Crows and marsh hawks are the two principally valley inhabiting birds (of the larger birds). Redtail are mainly confined to sides of valley and uplands. Crows & marsh hawks, however, are on uplands as well. The lack of titmice, kinglets, brown creepers etc. is an expression of manner of census. Roadside censuses will frequently miss these birds because of their size and difficulty of identification from a travelling car.

Except for larger birds, roadside censuses are concerned with exactly as titled - birds along the side of the road - and except as roads pass thru or by riparian or deciduous forest, do not reflect the true bird population of the overall community. It is, in a way, an artificial community account. Many of the larger flocks are associated with farm yards and are nearly always found in the same general area. Even with all its disadvantages, roadside censuses are better than nothing.

It is hoped that refugia are provided for hawks, coyotes, foxes and deer, in the planning of the area adjacent to the reservoir and also agreement be made with farmers adjoining the property beyond that surrounding the reservoir to establish their farms as buffer areas against hunting.

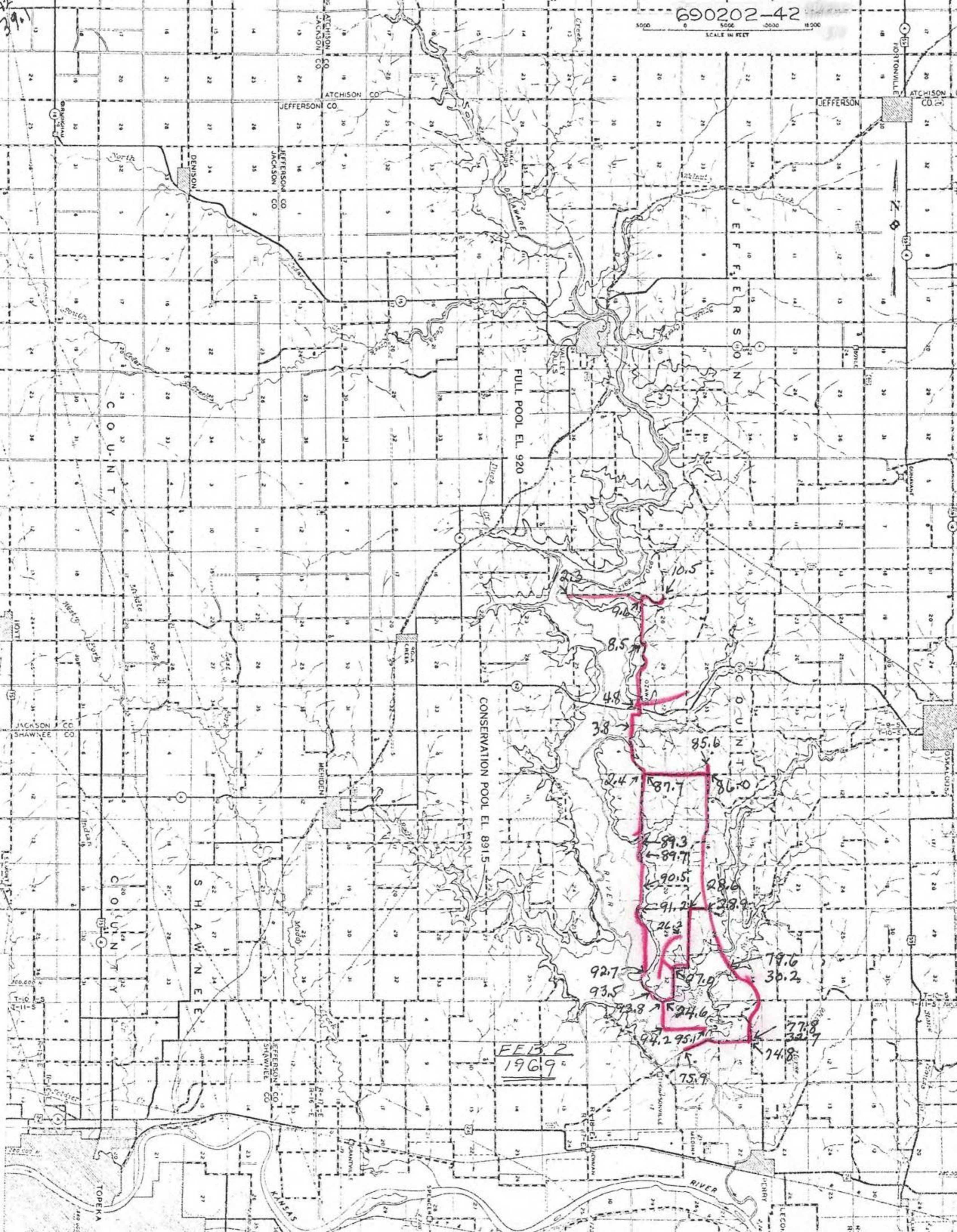
Univ. Kansas, Lawrence, Douglas Co., Kansas
Feb. 2, 1969

In an open drainage tract (from archeology building) east of Watkins Hospital) noted a brown thrasher. It left and flew east into adjoining residential area. The open water may have been a factor in keeping this thrasher from moving S this winter. Observation 8:00 A.M.

Perry Reservoir, Jefferson Co., Kansas
Feb. 2, 1969

Enroute from Lawrence to Perry Reservoir (highway 24) recorded the number of meadowlarks along side of road (see Feb. 1 for same area covered) on cleared shoulder. Time ~~8:45~~^{9:45} A.M. temp 34°F, wind 16 MPH from N. Mileage at Lawrence 59.4.

Meadowlarks · 1-1-1-5-1-4-2-3-1-2-1-2-3-2-1-3 (Wellborn town) 1-12
6-1 = 51 This number compares with 70 observed yesterday. From approx 1 mile W of Wellborn town the road is new to Perry and as a result of air in new soil there is greater insulation from ground below and ice and snow remains on shoulder up to cement of road. Because of this, there were no meadowlarks along the new road. One roadkill meadowlark.



FULL POOL EL. 920

CONSERVATION POOL EL. 8915

FEB 2
1969

Handwritten elevation data points (feet) along the red boundary:

- 91.6
- 8.5
- 4.8
- 3.8
- 2.4
- 87.7
- 86.0
- 89.3
- 89.7
- 90.5
- 91.2
- 28.6
- 28.9
- 26.2
- 92.7
- 93.5
- 93.8
- 94.6
- 94.2
- 95.1
- 75.9
- 79.6
- 30.2
- 77.8
- 32.7
- 74.8

CO. COUNTY

SHAWNEE CO.

JEFFERSON CO.

JEFFERSON CO.

JEFFERSON CO.

JEFFERSON CO.

TOPEKA

JEFFERSON CO.

RIVER

RIVER

Other kinds of birds between Lawrence & Perry were: sparrow hawk, horned lark in about same number as yesterday, starling, shrike, redbellied woodpecker. Arrived Perry Res. Turnoff 71.2 at 10:06, temp 34°F.

10:16 A.M.
 74.8 S-East entrance of reservoir area and beginning of complete census. 2 redtail circling above, wind from N. Temp 34°F. 75.0 Headquarters. redtail at east end dam, hovering. 75.9 outlet gate. Survey of valley to N disclosed 1 marsh hawk but no Coyotes in area where they were observed yesterday. One marsh hawk flying at crest of dam on S side in lee of wind. Snow covered rock field of down without birds. Fog with visibility approx. 1 1/3 miles. Turned around and returned to headquarters at 76.7. one robin on grounds. 77.5 Loggerhead shrike. 77.8 east end and now to N. 78.2 marsh hawk. 78.8 2 horned larks. 79.5 bluejay 79.6 Slough Creek 80.4 redtail. 80.9 2 slate colored juncos. 81.7 crow. 83.6 2 red-tails in tree on same limb and 2 feet apart. 84.0 12 tree sparrows at group of pines to left. 84.4 bluejay. 85.0 tree sparrow. 85.6 end road and returned to 86.0 and thence W. Old house (wooden) must be very old. Associated were 4 cardinals, 12 Eng. sparrows, 2 song sparrows, 4 slate-colored juncos. 86.4 3 slate-colored juncos. 86.6 group of 8 cardinals, 2 bluejays, 7 bluebirds, 1 mourning dove, field sparrow, flicker, 13 slate-colored juncos, 19 tree sparrows. 87.7 N-S road at Lakewood Hills entrance and now to S. marsh hawk in field to E. 88.0 2 tree sparrows, 4 juncos, redtail hawk. 88.4 20 slate colored juncos. 89.3 Crossing creek. Crow. 89.7 redtail at point. With 20x glasses noted 6 marsh hawks in Delaware valley, some bird whacking. 90.3 15 tree sparrows, 10 juncos at drainage. 90.5 crossroads. With glasses could not see any activity in road leading W across valley. 90.8 at small cement bridge area (corn field to W 30' beyond road) a group of 2 blue jays, 1 yellow shafted flicker, 1 redheaded woodpecker 2 red-bellied woodpeckers, 4 cardinals. They all flew E to trees and then returned after I left. Redtail on ridge to E. 91.2 at point. 5 cardinals, 8 tree sparrows, 3 bluejays. A redtail stationary in air and adjusted by rotating tail only. 92.6 base S hill where old creek bed contacts road. 92.7 boat ramp to left. 93.1 at point a 3 marsh hawks below. 93.5 drainage of valley to E. From here pair redtail to S at top hill; pair NE on ridge; one single on ridge to SE. Most concentrated redtail population so far. 18 juncos at drainage. 93.8 convergence road from NE off hill. 3 slate-colored juncos. 94.2 Slough Creek bridge. 95.1 base rock slope. 1:00 P.M., temp 33°F no sun so far. Returned along same route as followed from Lake -

wood hills and will keep complete record to check against census on way down. 95.9 Slough Creek bridge and frozen and water in channel as usual (not influenced by rising water from reservoir). 96.3 road convergence. Downy woodpecker. 96.7 4 juncos. 96.9 valley drainage 1 pair redtails. 97.1 trails from valley to W converge at this point for some reason! 97.3 entering gap at drainage. This gap was produced when erosional level of valley was higher and at a time when there was considerable more water in the Delaware River. The beautiful bay to N with curved erosional walls forced water thru this gap and at a time of the Pleistocene? high waters. The "island" to NW has not eroded much since ~~that~~ the time of the gap formation. This is one instance where a geological feature should have been preserved. As it is, a boat ramp, and extensive parking area deface this natural scenic formation. Marsh hawk in valley to W. 97.4 opposite ^{redtail} ramp. yellow-shafted flicker. 97.5 base of hill. Marsh hawk. 97.6 4 juncos, 3 tree sparrows. 98.1 marsh hawk. 98.6 base hill. 99.0 ^{redtail} point. Temp still 33°F Coyote tracks in snow in road and recent. From this vantage point counted 5 ^{single} marsh hawks (20x binocular) in valley to W. 4 crows also in valley. 99.2 old cement bridge (small). Same group of birds in same area as before (open, cut, corn field) 8 slate-colored juncos, 3 cardinals, yellow-shafted flicker, 2 bluejays, redheaded woodpecker, 2 red-bellied woodpeckers. They reacted in the same way as before by flying E to trees. This area was at one time a farm, since razed of all buildings and other evidence, but still birds remain as attracted to the ghost of the former site. The question is why are birds attracted to farm establishments? 99.5 meadowlark. 99.6 Cross roads. 8 juncos, 3 tree sparrows, meadowlark, 3 cardinals. 99.9 tree sparrow. 0.5 point (the new mileage figure is the new number beyond the mileage meter change to 00.0) 4 marsh hawks and 2 crows to W in valley. 0.8 drainage (ramp to W) marsh hawk. 1.2 main road that leads to ramp. Most of the new roads are incomplete and routes of today must be adjusted to old county roads and new segment of roads. These boat ramps seem to me to be below the 920 flood or full pool level. 1.3 flicker. 1.7 3 cardinals, 1 towhee, 8 juncos, 2 bluebirds, 28 tree sparrows. 2.1 3 juncos, 1 Eng sparrow. 2.4 Lakewood Hills. A comparison of birds in two directions of identical route is as follows:

original	return	3rd trip (marsh & redtail only)	towhee bluejay y.s flicker redhead woodp. redbellied " cardinal downy meadowlark	original	return	Totals:
Eng sparrow	0	1		5	2	118 original
bluebird	0	2		1	3	117 return
tree sparrow	25	35		1	1	
juncos	55	35		2	2	
redtail	9	4	6	9	9	
crow	1	6		0	1	
marsh hawk	10	13	9	0	2	

numbers average out but species were representative of other areas not originally observed on the initial trip 5. Some were exactly in same place. This would indicate a general movement of most birds in the area, except small birds associated with winter niches. From Lakewood turnoff continued to N, 2.9 3 cardinals, 8 juncos, 9 tree sparrows. 3.8 Little Slough Creek drainage. 14 cardinals, downy, meadowlark. 18 tree sparrows, 14 juncos, 19 Harris' sparrow, 2 white-crowned sparrows, 2 song sparrows

A comparison with yesterday census of this same drainage is:

	Feb 1	Feb 2
cardinal	12	14
Harris' sparrow	18	19
slate-colored j	15	14
tree sp	30	18
song sp.	4	2
white crowned	2	2
downy woodp.	0	1
meadowlark	0	1
	81	71

This represents an isolated niche created by a short stretch of partially open water below the culvert placed as a temporary detour below recently razed bridge. This correlation is perhaps too good for the usual conditions found in the field.

In the open water below culvert, 3 tree sparrows bathed in the icy waters (temp 34°F and windy), one would initiate the bathing of a second one. The tree sparrows and juncos used the snow covered ice & edge of water more than the other birds. 4.3 2 marsh hawks, redtail. 4.8 Ozaukee main road, now to E on new highway. Turned back at ~~5.9~~ ^{7.1} back at old Ozaukee road & now to N. junco, redtail. 8.0 meadowlark, mourning dove, 3 slate colored juncos, cardinal & tree sparrows. 8.4 8 slate colored juncos, cardinal. 8.5 point at edge valley. flicker, 3 cardinals. (2:10 P.M.) 9.1 loggerhead shrike. Can see good slope of native grass on hill to E. 9.6 road to E & W. and now to E. 9.7 8 meadowlarks, 20 slate colored juncos, 30 tree sparrows, 2 marsh hawks. 9.9 bluejay and song sparrow. 10.2 to N & uphill at new rustic home. 18 juncos, 4 tree sparrows. 10.5 road with too much snow and turned around. 10.9 back to road convergence & to W. New road just beyond. 11.2 2 cardinals. 12.3 end of road construction and returning. Windy on these low hills. This peninsula of low hills has been created by erosion from Delaware River when erosional level was higher or there was more water. This area should be cool from N or S winds off a lake in summer. Windy Peninsula would be an appropriate name for these low hills. Returned to main road at abandoned Ozaukee at 16.1 (2:45 P.M.) will follow same route ^{to down} as have already covered twice today and will keep record of total number of marsh hawks (9) and red-tailed (6).

Enroute to dam found the usual composition of birds. 24.6 road from hill and now fallowing. 25.8 bluejay. 25.9 main road (new) partially constructed. redbill. 26.2 redbill, crow. and end of ^{unusual} new road construction. Returned to county road at 27.0 (to east). 27.3 2 cardinals, 3 juncos. 37.4 loggerhead shrike. 28.4 14 quail, 4 cardinal, 8 juncos. 28.6 to E. 28.9 main road, bluejay. 30.2 Slough Creek bridge. 2 redbills to 5 on hills & 2 marsh hawks in valley to right. 31.3 slate-colored juncos, flicker. 32.3 cardinal. 32.7 east entrance and end of census. Temp 32°F, 4:10 P.M. Sun now visible thru overcast sky. No sun today otherwise. On return to Lawrence noted 2 meadowlark roadkill (3 all told in last 2 days).

Summary of birds and mammals ^(Perry Reservoir) Recorded as first observed sequence. Retraced routes not included unless new species.

redtail hawk 2-1-2-1-1-1-1-2-2-1-1-1-1-2 = (20)

marsh hawk 1-1-1-1-^{dispersed}(6)-3-2-2-2 = (19)

robin (1)

loggerhead shrike 1-1-1 = (3)

horned lark (2)

blue jay 1-1-2-2-3-1-1-1 = (12)

slate-colored juncos 2-4-3-13-4-20-10-18-3-8-14-1-3-8-20-18-3-8-1 = (161)

Crow 1-1-1 = (3)

tree sparrows 12-1-19-2-15-8-9-18-8-30-4 = (126)

cardinal 4-8-4-5-3-14-1-1-3-2-2-4-3 = (54)

Eng. sparrow 12-1 = (13)

song sparrow 2-2-1 = (5)

eastern bluebird 7-2 = (9)

mourning dove 1-1 = (2)

field sparrow (1)

yellow-shafted flicker 1-1-1-1 = (4)

redheaded woodpecker (1)

redbellied woodpecker (2)

downy woodpecker 1-1 = (2)

meadowlark 2-1-1-8 = (12)

Harris' sparrow (19)

white crowned sparrow (2)

bob-white (14)

number mammals = 0
 number of bird species = 23
 number of individuals = 487

^(Perry Res.)
 Total miles covered = 57.9
 miles not retraced
 and applicable to
 census above. 37.2
 (can be accurately
 checked from
 notes)

6 hrs 54 min in field in
 Perry Reservoir area.

This census can be compared to census of yesterday. Conditions of weather & temperature similar. Frozen soils and snow cover permitted travel over roads that will become impossible with warmer spring weather.

Recording here a few thoughts on uses and values for the Perry Reservoir and other similar areas. These ideas are based on multiple use of a reservoir and adjacent lands for recreational purpose. Natural features and values should be maintained whenever they do not conflict with the principal use of the area for recreation. Natural ^{wilderness} areas and uses are not miscible with recreational uses.

Boating: Of predominant importance. Of the forms of boating, speed boating and water-skiing are, today at least, the dominant type of boating and as such, the greater part of the reservoir should be devoted to their use. Education and time may shift the values in boating. Speed boats are inimical to sailing, canoeing, house boating etc. and the difference in using the lake cannot be safely resolved except by relegating specific area for speed boating. A possible solution would be to have certain days for the speed boats and other days for sailing etc., but this program would not be convenient economical or democratic. A space separation would be possible, say, the right hand side ^(from outlet gate at dam) of any particular bay or channel be delegated for canoes, sailing, house boats etc and the left hand side for high speed boats and water skiing, reserving in all cases a 200' strip bordering the shore where fishermen need protection for lines and other fishing equipment. Canoe, which frequently follow shorelines should be exempt but extending courtesy to fishermen by circling their sphere of influence by 100' or so. All speed boats should be adapted with sound mufflers ^{and some special areas.} High speed boats should have a racing course and this area held absolutely inviolate to other types of boats and their race course should be under official supervision. Boats of any class travelling under 5 m.p.h. could share the right hand lanes. For ^{some} house boats, yachts, and boats with overnight accommodations should have certain areas set aside that are away from the noise ^{and waves} of speed boats and ~~be~~ moving boat traffic in general. Ramps for unloading boats should be placed to accommodate people from any direction they enter the reservoir area which in turn is usually determined by population centers. Sailboats ^{and boats under way speed} should have areas free of wake or noise.

Fishing: Preparatory to filling the reservoir, certain areas should be lined with sand, gravel etc for breeding grounds and protective shelters (dome shape to eliminate snagging) for fish. The classification of fishing could be listed as; stream, pond, lake. Lake fishing

would including trawling, surface, stationary and bank. In other reservoirs where speed boats come in - fishing goes out. There is an injustice here and fishermen should be allowed equal rights which means separate areas for fishing and separate areas for motor boating and water skiing. Some bays or arms of lakes could be relegated to fishing and slow moving boats. Better yet, bank fishing only in certain areas. Pond fishing (mainly for children) could be possible by impounding drainage systems above the full or flood level of the reservoir. Marsh areas should be part of the pond system and fishing should be restricted to the outer limits of the pond in order to preserve the integrity of the upper end of the pond for marsh birds (rails, coot, snipe, ducks etc) and mammals (Synaptomys, shrews etc). Stream fishing would have to be, in part, artificial. In fact, a pump system could place ^(cold, deep) reservoir water at the upland level of the adjoining land and a stream course could be fashioned with water falls, cascades, pools, shallows, riffles etc, and the circulation of this water could produce excellent habitat for stream flowing organisms, trout etc. The area below the dam could also be organized into an artificial stream flowing fishing area, taking the cold water from the bottom of the reservoir. Aquatic mammals such as beaver might find a favorable niche in such a stream course.

Swimming. many possibilities but mainly for training of scuba diving. Underwater courses of rocks, tunnels and landscape in relief could be placed before flooding of the reservoir. Associated with scuba diving is underwater observation in the form of surface vessels and chambers placed underwater at locations of the reservoir that might have interesting natural ^{physical} features or wildlife (beaver, breeding grounds of fish, etc)

Village. This would be a centralized and compact ^(water associated) village for people whose interests are recreational minded or those seeking entertainment of a general nature. It should include a marina for rental, sales, repair + servicing of boats. Boats should be able to dock ^{temporarily} or receive permanent housing. With the marina as the center of activity, other facilities could be complementary such as a shopping center, restaurant, entertainment. The main theme should be water-land oriented and not an amusement park as such. Hotels could accommodate

* The village could be developed on the shores of an impounded lake with locks to main reservoir.

those individuals that might arrive by plane, which should have landing access to 'back door' of the village. A transient trailer park should be established in association with the village. Individuals interested in camping for pure recreational purposes would be provided with those facilities ^{elsewhere and} more commensurate with regular camping. A golf course should be combined with village. In all case of bodies of water with fluctuating shorelines, such water edge facilities have many problems, for one example, access of boats to marina docks.* Cycling and motorcycle facilities could originate from the village.

Housing. In restricted areas two types of permanent housing could be developed; one formal homes and second, cabin type buildings. If these facilities could be used on a rental basis they would serve a more democratic purpose. Private ownership on public properties should be discouraged. The regular home would replace the native countryside whereas the cabins ^{or tepees} would become part of the natural setting and would be inconspicuous, and in both cases should occupy the least noticeable position on the shoreline or uplands.

Roads. ^(all restricted) One main road should expose typical parts of the reservoir and should be either a main highway or a side branch from a main highway. These roads would be for tourists passing thru the area ^{who are} and not interested in anything more than a quick look at the area without stopping their car. A second type road ^{to accommodate heavy traffic etc} would be for ^{the} local population interested in touring the area only, ^{say} Sunday afternoon drives. This road should have turnoff places where cars, ^{horses, cyclists etc} could park and without getting out of the car, view the reservoir or countryside. This type of road could also support parking of immediately adjacent picnic grounds where tables are only a few feet beyond parked car. These area could be used for large groups of people and areas with amusement facilities for children. From the second type of road would be parking facilities (inconspicuous places) where people could leave cars to park into remote picnic areas, camping areas or isolated observation sites. A third type of road could be a one-way route, single ^{lane with raised center} track, with individual turnoffs, and with overhead canopy and inconspicuously routed. Speed not more than 8-10 miles per hour. Roads should be placed so as to leave undisturbed the greatest area of open space, especially bordering the reservoir. Uninterrupted open field give a

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Down should be irregular and planted. One lane should be good for parking or observation or camping. scenic value to the area. All other area by walking ^{or two}

Trails There are four classifications of trails, one of which could be incorporated in road systems - Cycle, ^{horse} and motorcycle trails. The present roads at Perry have not been planned for cycling or even ^{for} cars carrying boat trailers or camping trailers, because of the long grades of steep inclines & declines. Motorcyclers would have no problem but motorcyclist prefer obstacle type trails with curves, steep drops & inclines, of which a special trail would have to be constructed. This form of activity does not seem to be amenable to the usual values associated with reservoir type recreational areas but in motorcycling these are all grades of uses and purposes in the use of the motorcycle or scooter. Horseback trails can only successfully be used for horses only and should traverse the various natural and varied features of the area. Hiking trails should be dominant and if not be so encouraged thru education and publicity, first because of its greater value quality and because of the important health value. Hiking trails should be, for the most part, horizontal trails and wherever required to deviate, be so planned to minimize the grade. The best area for trails is the upper 1/4 level of the sidehills where there is a natural benchland of deciduous trees and the best position for viewing the lake and forest associated between the water level and uplands. Because of summer heat, all trails should be under the canopy of trees and connections between forested masses be the shortest route or a route that could be developed with natural extension of trees. If trails are held on a horizontal plane, they can be extended for several hundred miles in the Perry Reservoir area. Trails should not be planned to connect 2 points in the shortest distance but by the longest route possible. Along these trails (single path) should be lateral trails leading to shelters and accommodations for hikers who are packing thru the area. These trails could be interconnected with trail systems in the proposed Clinton Reservoir area, Lone Star Lake, Douglas Co. Lake etc. and other interesting ^{natural} areas not associated with government or state facilities. There are thousands of miles of deciduous forests that could be developed, by approval of private owners, into a maze of interconnecting trail systems. Property owners along the trail could provide shelter facilities, food and entertainment for hiker and of course charge for their services.

The program of hiking appreciation, trail packing both hiking and horseback packing as well as ^{fishing, sailing, camping} canoe trips, etc. should be managed by a Natural History Biological ^{Research} Station operated by the Univ. of Kansas.

Biological Research Station. Water side station to investigate biological problems associated with the new reservoir and to educate people in the natural history of the area as well as appreciation and techniques of packing, canoeing, ^{camping} scuba diving etc. A natural history museum should be established at the station. Actual research would be accomplished with assistance and actual participation of the public by appointment or thru Univ. of Kansas students. Kinds of research would be organized to fit into this type of public participation and education.

Inviolable areas: Certain areas should be set aside as absolutely inviolable to human trespass ^{for all time (research every 25 years)}. These areas would educate individuals to a policy that should be instigated in parts of all our national parks, monuments, federal and state refuges etc. There is some value in creating such area on a philosophical basis. One ~~area~~ drainage system with lake, hillside & upland would constitute a natural area to set aside. Other refugia, ^{with management and} strategically placed throughout the general reservoir area would act as places for larger mammals & birds to maintain themselves and an otherwise congested area of human habitation and would allow these animals (deer, coyote, badger etc.) to move about the entire reservoir area. Islands for nesting birds (gulls) should also be created and held inviolable (to within not less than 300'). All man-made facilities should be synchronized with the natural features & vegetation rather than at the expense of the natural conditions. Some areas, however, will require development at the expense of nature. The dam proper is an example of not synchronizing architecture with natural feature. This dam should have irregular outline and variable elevations and landscaped to conform with natural settings.

Hunting: Permitted only as it concerns reduction or control of overpopulation. Buffer areas should be extended onto private property beyond limits of reservoir area. If the reservoir area is extensive, a certain part (remote) could be set aside for hunting and managed for that purpose.

Miscellaneous Considerations.

Peninsula reserves should be set aside for native animals in a natural environment. These peninsulas could be easily fenced across a constructive part of the land thus providing a barrier to movement. Water should provide barrier and in winter when water freezes the animals could be enclosed in barns and fenced areas until the following season. Buffalo and antelope grazing under natural settings could easily be viewed from boats or by land trails.

Concrete platforms of cement on forested slopes overlooking the lake and supplied with ^{water} electricity, toilet, anchors for erecting tents, reclining chairs and a table would provide a facility with the least amount of damage to the forest community. Subvized paths would lead to these platforms and if they (trails) were placed horizontally would minimize the effort of reaching the platform. Individuals using these platforms would be expected to remain on the structures and not trample out the forests. These platforms could be placed so that they are inconspicuous to people on the lake and inconspicuous or separated by sight or noise from any other platform. Unlimited numbers of these facilities could be placed among the hillside forests with theoretically no wear or tear on the forest community of plants and animals. Otherwise, as is true with usual procedures, the entire community is trampled to dust. Other services could be provided such as meals supplied or other services provided by charge. The facilities could be used by reservation if the situation ^{so} required. Other housing such as teepees could be permanent and placed on flat areas of the uplands. These in turn would also be supplied with standard facilities. For primitive use the teepee must be where winds are constant and without downdraft.

Noise (singing, radios etc) should be controlled. Also boats, cycles, cars etc.

An ^{high} observation house should be placed for observing winter birds (ducks, mergansers, eagles etc) in areas providing protection and food. The most area of the lake should be seen so that telescopes could scan the winter activity.

The rivers above and below the reservoir should be maintained for canoeing and hiking, some parts as a pass along the edge of the native trees and water course.

A unisonid reserve should be maintained on river course.

One side of the shoreline or stream should be held in a natural state.

Subject material for course in systematics & ecology.

1. Analysis of national parks, nat. monuments, wilderness areas, rivers, natural areas etc. (visit one, or representative areas)

Geology

Climate

Fauna

Flora

Archaeology

Ecological problems

Policies, values.

Conservation problems

management

man relationships + contact

2. Recreational areas.

Planning villages

Engineering problems

trails

roads

Camping areas

picnic areas

boating

fishing

museums

wildlife

research.

sewage

sanitation

3. Techniques

sailing

canoeing

boating, speed, water skiing

hiking - skiing

scuba diving

camping

horse back packing

fishing - hunting

(sail full length ^{+ comp} Little, canoe, on

How to Perry, hike, Perry, horse pack

to Pomona - Clinton, fish + boat at Clinton etc)

4. Biological Stations

Research in field

scientific collecting

housing of specimens

relationship with public

educational program

Such a course could be a lecture-laboratory-field course with emphasis on actual field contacts. National Parks etc. could be examined on a representative basis, and visitation to one type or representative types. Recreational areas could best be studied as they are being constructed. Techniques are best developed in the field by practical experience. Biological Stations in recreational areas should assume the responsibility of educating the public and presenting opportunities for their participation in the actual research. Scientific procedures can be demonstrated at Biological Stations.

Lawrence, Douglas Co., Kansas
Feb. 3, 1969

In the last 3 previous days (including today as one of the 3) only approx. 1/30th the number of birds have visited the feeder at 1620 Tenn. Previously the feeder was heavily used by Eng. Sparrows, cardinals, ^{starlings} slate colored juncos, tree sparrows, blue jays and occasionally by goldfinch, red-bellied woodpeckers and downy woodpeckers. The fox squirrels continued to use the feeder on a regular basis.

Perry Reservoir, Jefferson Co., Kansas

Feb. 8, 1969

Annette and I made trip to Perry Reservoir to make census of birds along highway being constructed as part of the road system of the new reservoir (east side). Census began at east entrance at mileage 83.4 (temp 30°F, 11:30 A.M.). 2 redtails circling point to E. 84.3 headquarters. 3 redtails circling above dam. 85.1 outlet gate. 80% water in ice. One lake directly N of gate (beyond dredged channel) open. 88.0 E entrance. 89.4 Slough Creek. 89.4 blue jay. 92.6 stuck in mud and rest of day shot. In walking approx. 3 miles N for help, observed only one group of birds consisting of 6 cardinals, 28 slate-colored juncos and 18 tree sparrows. Elsewhere birds extremely scarce. Cold NE wind on ridges. Considerable meretric activity in fields. The individual who towed me out was a brother-in-law of John Sheppard of the Lawrence Police Force.

Kaw River, NW Eudora, Jefferson Co., Kansas

Feb. 9, 1969

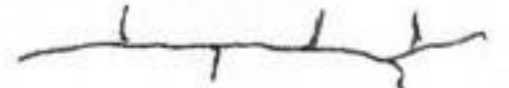
Pally and I made short trip along Kaw River. Late afternoon, temp 50°F. At a point SW of Eudora made photo 690209-1 of Kaw River framed with Cottonwood. Exposed sand, a channel and the Kaw River in distance. River free of ice and relatively high. Continued by car to R.R. tracks on N side river and walked E along tracks to river. Photo 690209-2 and 690209-3 of Pally at a cabin above river. Photo 690209-4 of river at bend below cabin. No ice in flowing river but some along sides, especially in protected areas. Small (2"-3") fragments of Indean soap floating in river (1 per 20') and accumulations at bends and eddies.

Lawrence, Douglas Co., Kansas
~~Lawrence, Douglas Co., Kansas~~
 Feb. 10, 1969

Cardinal singing as if on territory.

Wakarusa Valley, SW Clinton, Douglas Co., Kansas
~~Wakarusa Valley, SW Clinton, Douglas Co., Kansas~~
 Feb. 15, 1969

Started road census at Sigel School house at 8:45 A.M. Mileage 40.0. Temp. 30°F. Slight wind from N. At 40.1 noted a flock of approx 40 Lapland Longspurs and 60 horned larks. The horned larks had considerable white across frontal. These birds were, at times in, a single flock but at other times subdivided into small groups. They fed on plowed field with snow covering except uppermost projections of the plowed soil. In contrast, the horned larks moved with body low and horizontal while the longspurs were more upright, more continuously and temporarily active and generally faster in movement. The usual group consisted of 8-10 horned larks and 3-5 longspur, both species freely intermingling. 40.8 8 blue jays, 1 red-bellied and 2 cardinals. 41.3 Wakarusa bridge, water open with dots of slush. At a point 20 or so feet downstream from N end of bridge is a refuse pile of corn and other grain (?) as a talus on the slope of the river. At this point and immediate areas of the farm yard were 43 cardinals, 5 blue jays, 1 redbellied woodpecker, 30 slate-colored juncos, 12 Harris sparrows. The attraction seemed to be the corn and the cardinals while the rest of the birds were there because of the cardinal aggregate which in turn was controlled by a food resource. 42.8 main Clinton road & now to W. 42.9 sparrow hawk. 43.4 8 tree sparrows. 45.7 Clinton. 46.4 3 blue jay, 2 cardinals. 46.8 2 blue jay. 47.3 now to S. red-tail. 48.4 base of hill and parked car. Field covered with snow of last night (approx. 3 1/2 inches) Left car at 10:10 A.M. and will survey hillside community of S side of Wakarusa valley. (see map of route). Will observe activity of animals by movement in snow. As it is ^{sometimes} difficult to distinguish between cottontail and fox squirrel in snow will assess numbers by relative numbers and average numbers per unit of distance. At road at car noted 3 crows and 8 tree sparrows. 4 rabbit tracks at edge of road. 10:12 tree sparrow and redtail circling at head of canyon. 10:15 good redtail nest to left near top of hill. 10:20 creek crossing, open (80%). Considerable clearing of forests on left side of creek up drainage. Squirrel crossed creek at this point. 10:21 9 tree sparrows. 10:27 Point

at spring area. At these springs a cottontail had formed a nest at base of small tree. Sides of nest snow and bottom of icy soil. This nesting site was protected by a barrier of climbing vine vines with thorns which protected all sides except the front escape route. The rabbit left at 4 feet and ran uphill, some jumps 8 feet. There were no tracks around nest or resting site so presume the rabbit had not left the site since the snow of last night. 10:35 2 song sparrows, flicker, redbellied woodpecker, 2 slate-colored juncos, squirrel track. 10:35 squirrel tracks. 10:43 old fence and end of east dike. 10:44 approx 60 excavations of leaves by birds with tracks about size of cardinal, 5 cardinals in area. 10:45 2 black-capped chickadees, squirrel tracks. 10:50 2 redtails 2 downy woodpeckers, 4 chickadees. 10:51 Coyote tracks from east and made earlier in morning as about 1/4 inch snow in tracks (has been snowing slightly since leaving car), 2 squirrel tracks. mole working dead leaves and leaving snow overhead. There is laterally placed chambers from the general baseline . 10:56 squirrel track. 10:58 pond at mouth of canyon, 2 redheaded woodpeckers, 2 bluebirds, 3 sets squirrel tracks. 10:58 squirrel tracks. 11:01 beginning of forested area redbellied woodpecker, blue jay. 11:02 spring water open and flowing. 2 cardinals, 2 titmice, fox tracks, redhead woodpecker. From this point on will not be practical to list all tracks of squirrels as they become very numerous and checking tracks distract from forward vision of distance ahead and of upper tree story. 11:05 3 black-capped chickadees, 8 slate colored juncos, 11:15 Barred owl left 150 ahead and flew approx 200' and alighted. A second one was sleeping in tree and was able to approach to 50' before it turned its head from tucked position on back to forward position and then only when I clapped my hands! 2 redheaded woodpecker call at the owl when it alighted in another tree beyond. 11:18 2 chickadees, 1 Carolina wren flew into protection of fallen tree and attempts to dislodge it proved of no avail. 11:27 2 redheads and 3 chickadees. Raccoon tracks following upper banks of river and trending to E in a consistent cross country objective. Hairy woodpecker. 11:28 at old cottonwood tree 11:33 3 bluebirds. 11:35 5 redheaded woodpeckers, 2 cardinals, 8 slate-colored juncos, western race of towhee. Up to this point squirrel tracks cross the trail at approx 1 per 20 feet.

at favorable areas there are concentrations of squirrel tracks. Percentage are 4/5th squirrel tracks (predominately fox squirrel) and 1/5 rabbit tracks. 11:40 4 redheaded woodpeckers 1 redbellied woodpecker, downy, hairy, 2 blue jays. 11:48 3 cardinals. Coyote tracks crossed from right to left. 11:50 Coyote tracks from W to E. 2 titmice. Orange orange recently consumed. 11:55 3 redheads, 2 redbellied woodpeckers, 2 redtails circling and calling near a nesting site (160' W of old fence entering old field, now growing back into forest). 11:58 fence mentioned above. 2 sets raccoon tracks. 12:05 fox squirrel, 11 bobwhite, 2 redheads. 12:08 mouth of canyon and unusual concentration of fox squirrel tracks representing a breeding aggregate. The tracks covered an area of approx 1 acre and were every 4 or 5 feet, some in concentrated path formation. 7 fox squirrels were noted in this area and these were chasing each other. Left this area at 12:18 and continued W to creek at point where it enters the Wakarusa. Good examples of meanders at mouths of these small lateral creeks. Water open. Left creek at 12:30. Carolina wren calling, 2 redheads. Along Wakarusa there are large ^{sheets} blocks of ice 4"-6" thick about 5 feet above the present level of the river. Raccoon tracks crossed at point where creek enters the Wakarusa. 12:38 second drainage, 3 blue ^{jays} ~~birds~~. The drainage has a double drainage that enters near here and complicates the drainage pattern of meanders. 3 redheads, 4 chickadees, golden crown kinglet. 12:47 main trail at point. 2 blue jays. 100' beyond point in trail is an open spring. 12:50 redtail, hairy, 2 crows. 12:55 Synaptomenus bog. no evidence of bog being used but snow may conceal trails. There is considerable cutting of large trees from this area, and upper branches left after main trunk is harvested. Water of bog comes from sidehill above bog. 3 blue jays, 32 squirrel tracks and 1 cottontail tracks between 12:47 and 12:55. There is evidently a high squirrel & low rabbit population this winter. 1:02 3 black-capped chickadees, 1 redbellied and tracks of 11 quail (bob-white) following line of downed timber. 1:07 road up slope to right but continuing along trail. 8 chickadees, 3 blue ^{jays} ~~birds~~, 4 slate-colored juncos, 1 downy. 1:10 end forest to right. 3 redheaded woodpeckers, 1 goldfinch, 3 chickadees. 1:12 blue jay, 2 downy. 1:18 good redtail nest. 1:23 while watching a group of 42 tree sparrows and 3 black-capped

chickadees a sharp-shinned hawk darted into the ~~fe~~ birds feeding on the snow and although seemed to be in the center of the flocks, ~~she~~ was not successful. After the initial passing sweep of the birds it alighted in a tree 30' beyond where it remained for approx 30 seconds (only 20' away from me) and then left and flew up thru tree tops to about 50' above trees where it return from where it entered the area. As it passed the ridge it darted down on the opposite side as if in another surprise attack. The tree sparrows formed a close group as they left the snow and flew to a bushy tree 15' away where they remained low in the branches for about 3 minutes after which time they came to the upper part of the bush and then flew to another area some 150' beyond. This area is 80' east of drainage. 1:27 drainage Excellent cover of native grass at mouth of this canyon and has been protected by fence enclosure. Good microtine tracks. Redtail circling at point to W. 1:30 fence line (E-W) grass good to S of fence but not as good as those to N. Blue jay. 1:32 Coyote track to W crossing at creek. Marsh hawk hunting slope to E. 1:35 Coyote track to W and paralleling the set below. This coyote dug out an old red fox that had been partly eaten but bones & hide intact. The coyote did not seem to eat on this carcass but had pulled it from the snow, nor had it attracted the attention of its partner below. 3 juncos, 1 yellow-shafted flicker, 2 bluejays. 1:40 level of rim rock in drainage. water open and flowing. Red-tail circling at head of drainage. 1:43 hairy woodpecker in brush pile and only bird in area. It flew to tree at head of drainage. 1:44 Coyote crossing to W. This one could be the 3rd one in the group moving from E to W along this hillside. 1:56 point of ridge 2:00 mourning dove flew past to W. 2:03 pond. Open only at SE corner. Hairy woodpecker only bird in trees below pond. There have not been either rabbit nor squirrel tracks in open slopes away from trees, nor were there rabbit or squirrel tracks in drainage among trees below pond. 2:07 old eroded road. Dark colored redtail to E. 2:10 first minor drainage. 8 tree sparrows in down brush. 2:13 second minor drainage. 2 redheads in forest below. 2:15 bird roost in snow, size about meadowlark. ^(fence angle) 2:18 drainage above large juniper. Water open and flowing. Coyote tracks trending to W. 2:21 redtail. Male forcing snow into ridges with lateral extensions as noted

previously. This animal, while working under leaves and snow would be easy prey for coyotes. Coyote tracks to E and as it approaches a point of concern of what is ahead, it moves first to right and then to left. Noted some local digging along the route of this animal. 2:30 cross over, redbellied woodpecker, open water in creek. 2:31 noted fox squirrel in tree in resting position and I had to walk over to the tree and shake the tree before it would leave. This in addition to clapping my hands. This is unusual for this species. 2:35 foundation of old pioneer house. Yucca still growing around foundation. 2:41 crossing of drainage Coyote tracks to N. 2:47 Coyote to W. This coyote had trampled an area of approx 8'x8' in the snow as if it were attempting to dislodge an animal in the grass beneath the snow. There were only one set of tracks leading into and away from this trampled area. 2:50 entering forest at NE end field. Set Coyote tracks to E. 2 redheaded woodpecker. 2:51 an opossum moving slowly in snow. Its nose and feet were red from the cold because of lack of hair protection on this animal. This animal had covered extensively, but systematically and area about 1/3 acre at head of the drainage among trees. It dug frequently in the snow to expose leaves. The feet leave marks laterally to foot imprints, as does also the tail. 13 sets of tracks of this animal crossed the trail that crossed this minor drainage thru the trees. 3:00 redhead & 2 bluejays, Opossum trail. 3:02 tracks of squirrel show fighting action opossum tracks. 3:04 raccoon tracks crossed trail. 2 red-headed woodpeckers. 4 sets of coyote tracks, 3 moving W and older track trending E. 2 tomcats. 3:07 2 of these ^{a coyote} Coyotes urinated along side of trail 3:05 tracks showed that ^{a coyote} it had darted down slope after a cottontail, both with jumping intervals of 9 feet. The coyote stopped at edge of bench and apparently after survey below returned to trail above. 3:13 coyote tracks left trail. Opossum tracks. 3:15 2 redheaded woodpecker, 2 bluejays. 3:17 Cottontail left an oak-leave lined resting chamber and ran down slope. 3:20 trail into open field. From 2:50 to 3:20 there were 48 sets of squirrel tracks (presumably fox squirrel) crossing the trail that led thru the forest on this hillside and 2 rabbit tracks. 3:25 2 red-headed woodpecker, 2 bluejays. 3:28 rock fence at point and road leads down hill. 3:30 pond, 2 redheads & 1 blue jay

3:37 blue jay. 3:40 fence beginning of ^{partially} cleared slopes. 80 tree sparrows, 6 juncos and 5 chickadees feeding. 2 downys and 1 redbellied associated. 3:41 2 coyotes from open field to N, these tracks crossed my old trail of this morning and they did not deviate or were they curious about my tracks. 3:50 redbellied woodpecker. 3:54 spring at point. Cottontail had not returned to nesting or resting site. 4:00 car. 2 song sparrow, one very confident. Left 48.4 at melege 48.4. Temp 35°F. 49.1 6 crows flying S. 49.4 meadow-lark and yellow-shafted flicker. 49.5 to E. 50.0 now to left. redhead. Ripple in watawusa now smoothed out by high water. 91.2 bridge + to N. 3 mourning doves. 92.2 to E. Not one bird. 5:40 to S. 54.2 starling and mourning dove together on telephone line. 54.6 3 meadowlarks 55.0 18 slate-colored juncos. 55.1 23 meadowlarks, all on either a fence post or between fence post on wire. 55.4 to E. 6 meadowlarks. 56.3 18 meadowlarks. 57.8 Cardinal. 58.8 Sigel School and end of census. Time 4:55. Temp now down to 28°F or 7 degree drop in approx. 1-hour. Flock of horned lark + Lapland longspur still in same field at Sigel School.

Summary: (valley side census only) not part of roadside census.

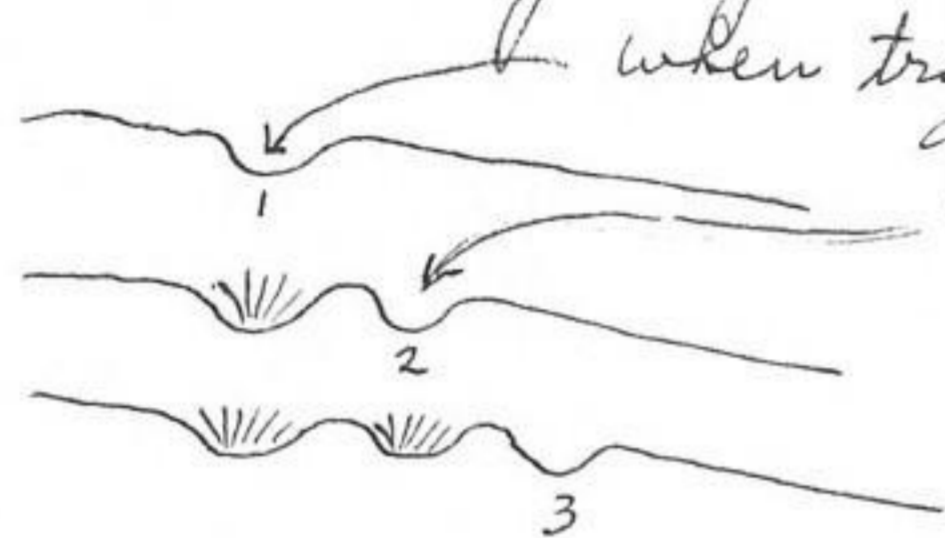
- Crow 3-1=(4)
- tree sparrow 8-1-9-42=(60)
- redtail 1-2-2-1-1-1-1-1=(10)
- Cottontail 1-1=(2)
- song sparrow 2-
- yellow-shafted flicker 1-1=(2)
- redbellied woodpecker 1-1-1-2-1-1=(7)
- slate-colored junco 2-8-8-4-3=(25)
- Cardinal 5-2+2+3=(12)
- black-capped chickadee 2-4-3-2+3-4-3-8-3-3=35
- downy woodpecker 2-1-1-2=(6)
- ~~black-capped chickadee~~
- redheaded woodpecker 2-1-2+2-5+4-3-2-2-3-3-2-1-2-2-2-2=40
- eastern bluebird-2-3=(5)
- bluejay 1-2+3-2+3-1+1-2-2-2+2-2=(23)
- titmice 2-2-2=(6)
- barred owl 2-
- Carolina wren 1-1=(2)
- hairy woodpecker 1-1-1+1-1=(5)
- towhee (western) 1-
- bobwhites 11-11=(22)
- golden crowned kinglet 1-
- goldfinch 1-
- sharp-shinned hawk 1-
- marsh hawk 1-
- mourning dove 1-

Estimate the following groups of coyotes: 2-3-1-3-2
raccoon 1-1
opossum 1-1-1

University of Kansas, Lawrence, Douglas Co., Kansas

Feb. 15, 1969

Heard and observed for the first time this year the sparrow hawk on campus (Chancellor's residence) It was calling. Starling are (at 5:15 P.M.) in tops of trees near their roosting sites and are calling. On slope of hill noted the shifting of trails used by students. There is a downhill migration. When a trail is formed and fills with water, a new one is made on the better drained slope immediately adjacent and on the downward slope side thus:



when trail supports water

a new trail is made

here. In the meantime

grass grows in the abandoned

trail. Apparently the edge of the trail on the downward slope is drier than the ^{edge of the} upward slope side, which is logical on the basis of drainage pattern of a slope.

Perry Reservoir, Jefferson Co., Kansas

Feb. 23, 1969

checked reservoir area at Valley Falls, Ozarkie and at dam via paved roads of main highways. Roads beyond highways are impractical and some impossible because of mud. In area between noon & 3:00 P.M. Temp. 37°F. Day calm, cloudy skies, fog and visibility approx. 2 miles. Light rain in air and periodic. At Valley Falls the water in Delaware relatively high and filling channel (about twice the amount in Wakarusa at equivalent stages of flooding). Water brown and ice fragments up to 1 1/2 square yards and 5 fragments per 10 feet. These ice fragments were in center of river. There would be no trouble in canoeing down this river the entire length if water were at this level, in fact one could profitably start at Arrington to the north. Continued to W and thence to Ozarkie. River in satisfactory condition here in new channel. Continued to Eskaloosa, thence S to Williamstown, thence to Perry and north to dam. From dam counted one group of 72 ♂ & ♀ mallards (predominantly ♂♂) and 21 ♂ & ♀ pintails. These birds were in flooded field approx

2 1/10 mi w of E end of dam. Another flocks in flooded field to n of gate of 38 ♂ + ♀ mallards and 8 pintails. Flying in the air were 10 mallards. There is a noticeable increase of water but the area still looks like flooded field and ^{isolated} open bodies of water instead of one large lake. The channel which was dug from gate to connect with the Delaware River is now flooded over most of the length of its banks. 1/3 of the water is in ice. 98% of water below dam covered with white foam (water clear above dam)

In the general area of the reservoir from Valley Falls to dam along route covered noted the following birds and their approx. numbers:

- | | |
|-----------------|---|
| redtail 9 | mackinbird 2 |
| sparrow hawks 5 | meadowlarks 18 |
| marsh hawks 8 | starling 500 (one flock ^{of which} were 400) |
| crows 14 | tree sparrows |
| juncos | cardinal |
| shrike 3 | blue jay |
| Eng. sparrows | red-bellied woodpecker 3 |

From dam to east entrance observed 1 sparrow hawk, 2 marsh hawks, 1 redtail and 3 meadowlarks. This stretch of road has not been productive this winter in the roadside census.

Perry Reservoir Dam, Jefferson Co., Kansas
~~my own in Perry in~~
 Feb. 28, 1968

Annette and I stopped at dam (near outlet gate) at 4:15 P.M. Day near freezing, windy and snow forecasted for this evening. From dam made estimate of mallards as 1000 of approx 60% ♂ + 40% ♀. They were directly below to left of channel leading to gates. Counted 249 pintails of about 65% ♂ + 35% ♀. They were associated with mallards and although they formed species groups, mixed with mallards in their feeding activity. One boldpate with above ducks and 2 scaup. In the lake next to west shore near dam counted 36 ♂ American or common mergansers and 32 ♀. They were diving and actively fishing. The most easterly lake n of dam supported 260 snow geese and 160 blue geese. They were mixed with some species aggregates however. 11 more blue arrived from the south and with a dare-devil descent of a speed I have never witnessed in geese, joined the main group. The entire flock left the ground at one time, circled around & then alighted again.

From below rapids at 1000' E of NW corner Seeb, T10S, R18E.
Collected the following unionids: (see opposite page)

690301-1	<i>Fusconia flava</i>	63 x 48 mm.
690301-2	" "	52 x 40 mm (m. only)
690301-3	<i>Crenadonta peruviana</i>	126 x 82 mm (m. only)
690301-4	" "	118 x 75 mm (m. only)
690301-5	" "	126 x 82 mm (m. only)
690301-6	" "	126 x 90 mm (m. only)
690301-7	<i>Lampsis radicata seliguesidea</i>	♀ 150 x 61 (m. only)
690301-8	" "	♂ 142 x 72 (" ")
690301-9	<i>Quadrula quadrula</i>	86 x 65 mm (m. only)
690301-10	" <i>pustulosa</i>	62 x 52 mm (m. only)
690301-11	<i>Proptera alata</i>	162 x 108 mm (m. only)

Delaware River, Perry Reservoir, Ozawie to Perry Dam,
Jefferson Co., Kansas

March 1, 1969

Made solitary canoe trip from bridge at Ozawie (old road) to water gates at Perry Reservoir Dam. Will keep complete census of mammal and birds. Left Lawrence at 8:23 A.M. and arrived Ozawie 9:10. Put canoe in river and left at 9:23. Temp. 32°F, water temp. 35°F. Slight wind from NE. 2 mallards flew N. 8 crows in field to E. 2 marsh hawks hunting field to E. 9:35 marsh hawk. Great horned owl left mouth of drainage to right. gravel bar on opposite side river and shells numerous. 9:36 drainage left and water flowing at 1 gallon per 10 seconds. 3 chickadees. 9:44 bend to left. marsh hawk. Some ice masses on side of river at high flood level. Raccoon tracks average 1 set per 100 feet and appear to be one individual. 9:52 drainage left and extensive rapids below. (See opposite page for shells) Good exposure of black shale of native rock exposure of hill. The soil profile in valley is extensive and consists of dark to brown loil above and sands below with mainly forest beds. Ice masses approx. 1 per 100 feet, some covered with soils above and well protected. 10:05 50 pintails flying N and all appeared to be ♂♂. Evidence of beaver from start of trip. Wherever small trees and willows are present there is evidence of beaver cuttings, mainly trees less than 1 inch in diameter. Beaver trails up banks common and every 50 or so feet wherever beaver are concentrated. Profile of banks.

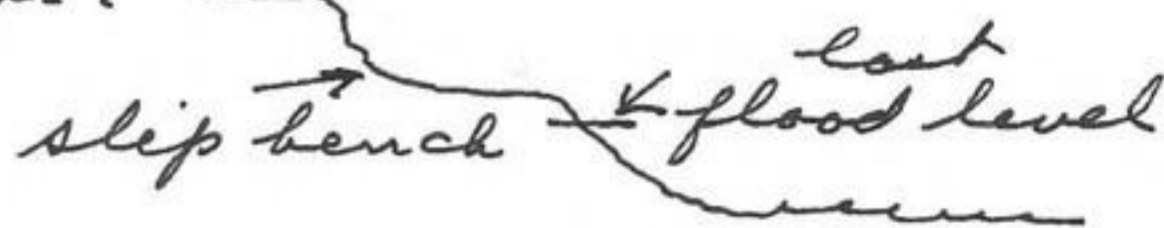
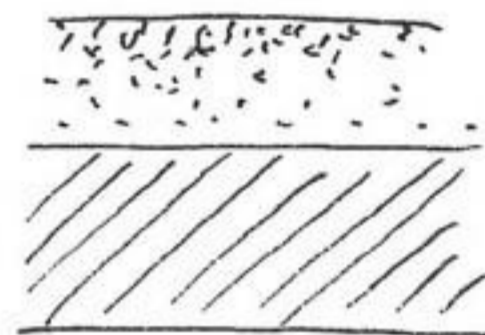
10:08 80 pintail flying to N and calling regularly.

10:09 In the last 2/10 mile

counted 42 beaver trails up bank of river and small trees cut all along route. Lone redwing blackbird ♂ flew NE. 10:14 beaver in shallow concavity on side of bank of the size of first year adult. 10:23 bend. 3 crows.

16'7" }
2' } high water mark
8'3" } of last flood

At this point the soil is less than 1/2 way down bank. The height of bank is 31 feet and well formed with about 30 percent slopepage





690301-65

BR 886

31

36

9:35

9:123

9:36

870

9:144

9:52

NORTH

BOUNDARY

Levee

850

1
10:30
DELAWARE

Graver Pit X

Hayes Sch

12
x868

10:58

866

13

867

18

11:35
11:45

F A I R

864

11:50

12:23

12:32

19

20

69030J-66

12:35
DELAWARE



Olive Branch Cem

Rock Creek

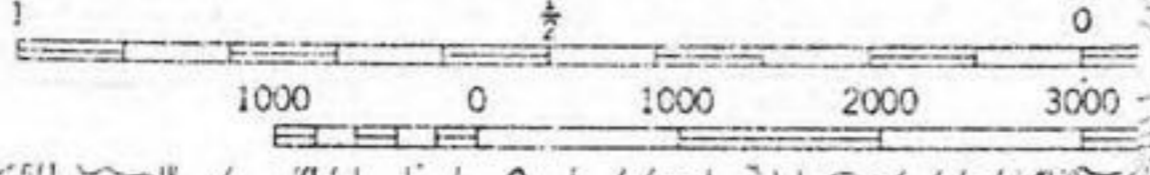
DELAWARE RIVER

K E N T U

DELAWARE

Slough Cr

Thompsonville



25

30

31

32

5

5

6

12

2:03

2:51

3:08

3:02

3:20

3:32

4:00

4:20

868

862

924

915

878

R 870

874

RR 864

858

859

860

BM

856

1039

878

874

854

856

F 551

900

950

900

900

875

852

855

BM 851

850

850

853

1050

1020

950

940

1000

940

900

1000

950

1000

950

1000

950

1000

950

from saturated soils or heavy overhead burden. The
 slippage does not compare in extent with that of the
 Wakarusa River. 10:30 N bend and drainage from
 right. water 1 gal. per sec. noted several whirl effect
 (4 ft diameter) in clays at base of cliffs. 2 tree sparrows.
 10:31 4 tree sparrows and singing. 1 long lone ♂ red-
 wing flying NE. 10:35 drainage right. 1 gal in 5 sec.
 10:36 12 pintails flying N. The water marks on slope of
 bank indicated a gradual receding of water from last flood
 level of this season (last week) 10:44 bend and rapids.
 stretch above with beaver trails on bank overlying 1 few
 20 feet. 10:46 Great horned owl flew from river channel.
 Rapids below extend to next bend. Killdeer heard to S.
 marsh hawk hunting edge river bank. 10:58 hillside con-
 tact. bluejay. drainage to left and water fast along entire
 contact with hillside. 11:24 beaver left root system at edge
 of bank. Most of the beaver house are of accumulation
 of debris or carved in root systems of dislodge trees. As
 the water has recently receded there are as yet no bank
 nest of sticks or holes in soils. Most of the nests are
 shallow and just being formed or temporary. Approx
 500 geese flew N about 400' high (70% blues & 30% snows)
 blue jay. 11:32 good beaver activity. 11:35 ^{old} bridge ^{site} ~~over~~ at
 river. 11:45 drainage left. 11:50 bend, now to SE. marsh
 hawk. 12:00 drainage left. 1 gal. per 5 sec. 12:04 bend.
 12:14 muskrat on limb 2 feet above water. It dropped
 directly into water 12:10 bend, now W. The highwater
 mark of last flood is higher than upstream. 12:23 last bend
 before straight to hills. Sky of clouds breaking and occasion-
 ally a few seconds of sun. Good development of alluvial
 fans at water edge. 12:30 marsh hawk. Beaver on bank
 2 feet away. 12:32 hillside contact, large boulder talus to
 edge of water. 2 marsh hawks. Profile of bank on east side
 at low angle. Receding water has left record on boulders with
 receding intervals of 1/2 to 1". 12:35 stopped to check valley
 from top of hills to W. On valley level above bank noted several
 sets of coyote tracks. Raccoon tracks more common than along
 edge of river. Few deer tracks. at pond at 12:50. Ice
 except near outlet. Moss on N exposure. On S side of
 pond at head is a sidehill slippage. 2 crows to S.
 4 bluebirds on ridge. From ridge above pond inspected
 valley but did not see coyotes or marsh hawks. In an

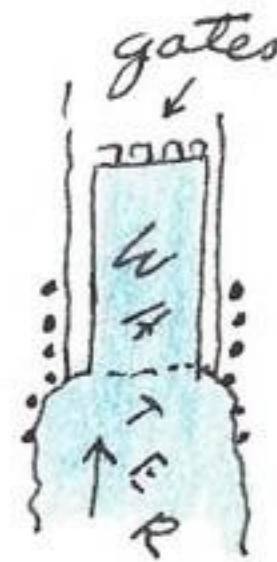
oblong lake to SE noted 65 American mergansers. One group were feeding in upper end of lake and were driving fish to end of lake in abreast formation. From top of ridge (wind & waves) noted unusual stand of native andropogon to W. This area should be preserved as example of long ^{blue} stem grassland. The point N of drainage is an excellent vantage point. Returned to canoe and left at 1:35. Temp 38°F. 1:40 22 mallards flying N. Some large tree stumps slipped to water level. 2:03 oblong drainage to left. 1 gal. per 5 sec. 2 redwing blackbirds. 2:12 hillside contact. 3 crows, 2 bluejays, redtail. 2:20 level of last flood (a week or so ago) ^{11" feet above} water and measured ^(5" 2" to top of bank) directly E of point. 2:26 now to E. 2:31 at a pile of debris 8 feet above level of water with beaver trail leading from water, 4 beaver left in the following succession 1 young, dark one, last year adult, another last year adult (both light), and a young dark one (young approx 1 foot long, exclusive of tail). All animal had dry hair. The last young remained half submerged for 5 seconds before submerging. These beaver were caused to leave by hitting the broad side of the paddle on the surface of the water. If the house is shallow or temporary, the beaver will leave upon hearing the report of the paddle sound. 2:35 past a last year adult in a concavity of bank (size of beaver) 2 feet above the water. It left at 10 feet distance. The concavity was lined with 2 inches of shreds of bark. This concavity was not associated with vegetation or limbs of any description but in plain soils and in plain sight. Exposed to sun. 10 feet away was a muskrat on a limb at water level. 2:43 mounds of soil on both sides of river. Drainage to left just beyond. North water flowing at approx. 1 gal per 10 sec. Marsh hawk. These birds are most frequently associated with drainage systems entering the river channel. I am impressed with the lack of contamination of these waters. There is only an occasional saw or bottle. The sands and gravel bars are without much evidence of glass or other manmade artefacts. Wind changing toward SE. 4 crows. 2:50 25 tree sparrows, 4 black-capped chickadees. Birdlife unusually scarce. 2:51 major ^{drainage} level to right and level of river continues up this lateral drainage. (Rock Creek)

Collected the following unsorted from 11/20 mi E and 4/10 mi S
of NW corner of Sec. 31, T9S, R18E (see opposite page)
as follows:

- 690301-13 *Leptodea laevissima* 140 x 84 mm (exclusion of wing) pair
690301-14 *Quadrula quadrula* 43 x 35 mm, pair.
690301-15 *Lampsilis radiata viliquidea* 115 x 60 ♀
690301-16 *Legumia recta lateralis* 158 x 65 mm
690301-17 *Crenodonta peruviana* 124 x 75 mm
690301-18 *Lasmigona complanata* 158 x 110 mm
690301-19 " " 131 x 89 "
690301-20 *Proptera alata* 168 x 102 mm
690301-21 *Titogonia verrucosa* 155 x 82 mm
690301-22 *Fuscaia flava* 64 x 48 mm
690301-23 *Quadrula pustulosa* 65 x 60 mm

2:56 a ♀ gadwall (injured but capable of flight) left river. This is the first duck noted on river. 3:00 mound on river valley. (Sheels from below rapids, see opp.) 3:02 hillside contact. Large slabs of rocks to water. Minor drainage to left just before hillside contact. 3:08 W bend (near sec. no 31 on map). Good hillside slope. Ice masses and saturated soil masses have slid down slope to water edge. Just around bend on W side are two masses of rock embedded in the Pleistocene sands & clay (1/4 and 1/2 way up bank). 3:15 mound right. good beaver activity to left. In fact the beaver activity is present wherever food and housing facilities are present. The entire length of river shows some evidence of use or inspection by the beaver. 3:17 this area consistently showing low angle slippage. 3:20 minor drainage left. 3:35 first fish activity. minor drainage left. The lower in this drainage system, the more mud and transported debris. There are good alluvial fans at water level and some are so perfectly formed and covered with such a perfect film of water, that they serve as mirrors of the bank & ~~the~~ small shrubs above. The slight convexity gives a converging character to the mirrored images. In the direction of the reflected sun the slopes up to the high flood line, and sometimes beyond, reflect a beautiful golden-yellowish-brown color, producing a foreign quality to the landscape. 3:32 first bend at hillside. Wind at certain point produce waves 6" high; most places protected from wind. Approx. 1000 geese flew north 400 feet high including 80% blue and 20% snow geese. They changed formation continually and moved up & down as they flew N. They called continuously. 3:34 drainage left. 3:37 minor drainage right at 1 gal. per 5 sec. Flood line now approx. 14" from top of bank. 3:42 4 mallards flew N. 3:43 moving away from point of hillside. 12 mallards flying from W to E. 3:46 wide bend to E. now to S. Debris of earlier floods on top of bank. Water noticeably muddier than upper drainage course. 3:50 drainage from W. now away from hillside. 3:53 duck feathers all along bank on both sides and first observed so far. Drainage to left. Can hear mallards (50) calling from impounded lake to E. 3:55 drainage to left. 4:00 mouth Slough Creek. Water too fast for navigating

so returned to main stream (Delaware) and continued to ward dam in excavated channel. 4:12 50 geese flew n over dam and alighted in flooded field to NE of outlet gates (60% blues and 40% snows). Arrived dam at 4:20 Beaver tracks along excavated channel to dam and at apron of dam the tracks continued up the slopes for 20 feet as if the beavers had reach the limit of movement along the river. At this level of water it would be possible for beaver to continue thru the dam, as I was tempted to do with the canoe, but the artificial diversion probably hindered their further movement to the south down stream. The fact that there was only sparse food supply along the artificially excavated channel leading to the water outlet would indicate that beaver are moving along the river course in search of new areas to set up territories. Checked S side of outlet and found one 4 foot wave barrier that discouraged taking canoe thru dam, so mary + I hauled the canoe from stream level to top of dam. English sparrows have entered the new man-made rock slide facing of n side of dam at a point where people stop their cars and have lunch. The refuse thrown over edge of dam is being consumed by these birds which, in turn, are roosting among the large boulders of the facing of the dam. Took 1 hr to get canoe to top and loaded on car. Mileage on river today 11 4/10 miles. 6 hrs 57 minutes in field.



Summary:

beaver. evidence all along route especially where young willows were present and where slopes were favorable. In areas of dens, the activity was concentrated. Observed 8 beavers and on the basis of favorable den sites and concentrated activity would estimate a population of 40 beaver for the 11 4/10 miles of river.

mallards 2-22-4-50-
 crows 8-3-2-3-4-
 marsh hawk 2-1-1-1-1-2-1-
 great horned owl 1-1-
 black-capped chickadees 3-4-
 pintail - 50-80-12-
 redwing - 1-1-2-

american merganser. 65
 muskrat 1-1-1- redtail 1-
 tree sparrow 2-4-25-
 killdeer 1- gadwall 1
 blue jay 1-1-2- Eng sparrow 22
 blue goose 350-800-30
 snow goose 150-200-20
 bluebird 4-
 tracks of raccoon, opossum, coyote, deer.

Collected the following unicones from rapids below
point marked 10:52 A.M. at 6/10 mi E and 6/10 mi S from NW
corner sec. 30, R18E, T8S. (see opposite page).

690302-1a *Lampsilis radiata seligeoides* 130 x 67 mm ♂

690302-1b. *Crenadonta peruviana* 118 x 75 mm

690302-1c *Quadrula quadrula* 85 x 64 mm

690302-1d *Tritogonia verrucosa* 138 x 70 mm

690302-1e *Leptodea laevissima* 79 x 46 (exclusive of wing) mm

It should be noted that only the gadwall (a wounded bird) was noted on the Delaware River proper, all other ducks & geese (except mergansers on oxbow) were flying overhead. This river is not used by waterfowl, nor are artificially impounded ponds or barrampits. Their preference is for the more stable bodies of water (obows, lakes & ponds).

Raccoon tracks were relatively scarce and where found were associated with lateral drainage channels and those sections of the river that contacted or paralleled hillsides of timber. I would estimate that tracks occurred at an average of 1 set per 1/2 mile.

Perry Reservoir, Delaware River, Valley Falls to Ozarkie,
Jefferson Co., Kansas.

March 2, 1969.

Mary drove me to Valley Falls for solitary trip down Delaware River. Left Lawrence at mileage 225960 at 9:00 A.M. ^{Kind of} Birds observed enroute were: 2 sparrow hawks, 4 redtails, 2 marsh hawks, mockingbird, loggerhead shrike, crow, robin, horned lark, meadowlark, cardinal, mourning dove, 3 flocks of male redwing blackbirds (400-800-300); blue geese 650, snow geese, 350 (lost entry of geese of one flock of 1000). At mileage 22630 two short eared owls sailed over field in circular motion as were 2 redtails and 2 marsh hawks at lower levels. Arrived Valley Falls at 10:10 at mileage 22637 (41 miles from Lawrence). Left from old bridge at 10:25 A.M. Air temp 36°F (28° at 7:00 A.M.), water 35°F, sky 50° clear with clouds moving in. 10:30 drainage at left with 3 gals. per second (10:31 old bridge (removed) with pilings only. The level of water is approx. 12 feet lower than one week ago when river was at spring flood level. 10:32 2 beavers (lost year ^{sets} adults) left debris on bank 3 feet above level of water. 10:35 collected shells from gravel bar on E side river. There are a few good exposures for shells and as water recedes there will be more extensive exposures. Group of 18 tree sparrows, 4 cardinals, 5 chickadees, killdeer (flew overhead). Redtail above and calling, 10:40 drainage left. 10:50 red-bellied woodpecker (see opposite page for unident. collected) 3 crows. 10:52 drainage right with 2 gallons per second, at rapid. flock of 800 redwing flew north. 3 crows, 2 blue jays, red-bellied woodpecker. 10:58 cliffs to edge of water.

690302-72

Valley Falls

24

19

20

BM-979

Creek

Quarry

St. Marys Cem

Quarries

10:25

10:30

Sewage Disposal

10:40

Farrar Cem

Rose Hill Cem

10:52

25

SANTA FE

30

DELAWARE

10:58

29

910

908

36

AND

31

11:09

20

32

RIVER

BM 1006

BM 978

1

6

5

12:35

12:20

12:18

12:03

12:08

12:44

12:11

894





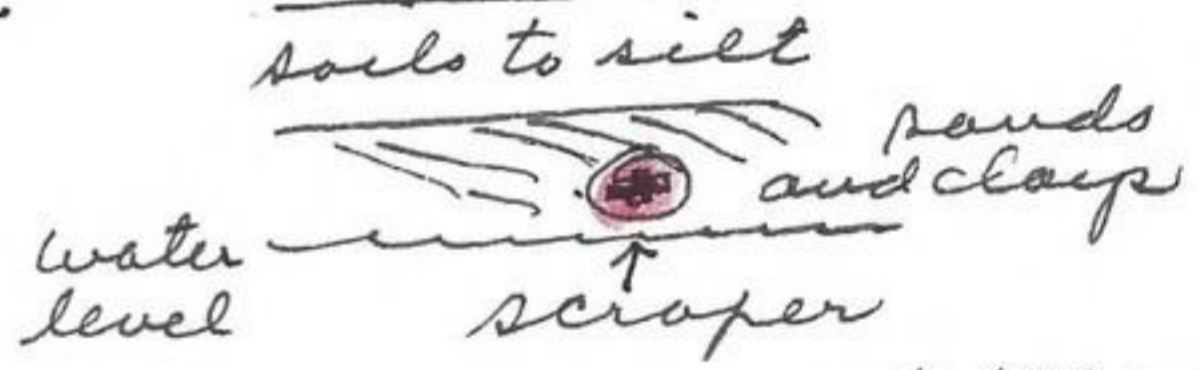
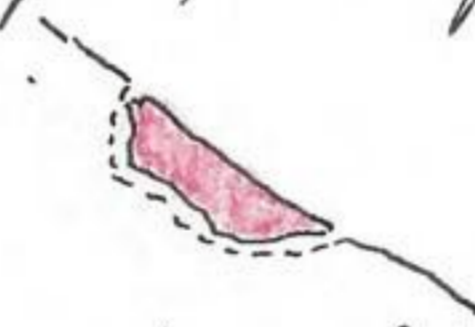
2 blue jays, redbellied woodpecker, 4 slate-colored juncos,
 2 black-capped chickadees, yellow-shafted flicker, 2
 cardinals. Good rapids below cliff area. There is evidence
 of native rock connecting the isolated knoll to left. The
 old channel is to the east of this isolated knoll and the
 river has pirated thru ridge at a time when waters were
 considerably higher. 11:04 2 fox squirrels chasing each other
 beaver left shelter under bank debris. 11:09 drainage to
 left with stream graded to the Delaware River. 5 gals per
 5 secs. 2 blue jays and 2 chickadees. The riparian growth
 has not been altered except in channel proper and then
 only up to $\frac{3}{4}$ height of bank having been cut. Clouds
 no obscuring sun. High water mark $\frac{3}{4}$ feet 3 inches
 above present level
 of river. 11:06 2 crows, great horned owl. 11:17 yellow-shafted
 flicker, 2 red-bellied woodpeckers. 11:20 drainage left with
 1 gal. per 3 seconds. 2 redbellied woodpeckers, hairy woodpecker.
 11:23 redtail, 2 redbellied woodpeckers, 1 hairy woodpecker.
 11:26 raccoon tracks are common and average approx. 5 sets
 on each side of the river bank. redbellied woodpecker.
 There is more sand in banks than lower in the Delaware
 River drainage. The surface of the bank below the last
 high water mark is either smooth or sculptured, both created
 by erosion of water. Smooth surfaces are more frequently
 associated with curves. 11:28 yellow-shafted flicker, 2 redbell-
 ied woodpecker, 4 chickadees, 3 eastern bluebirds. Coyotes
 tracks occasionally noted on bank and less frequently
 fox tracks. 11:31 downy woodpecker, 2 white-breasted
 nuthatches. 11:34 drainage to left and graded to river but
 only 1 gal of water per 15 seconds. I have noticed that size
 or graded condition is not always correlated with the amount of
 water being carried. In addition to established drainages
 there are local spring areas and water from melting ice blocks.
 One can hear water dropping into river before one can recog-
 nize the source. Good rock bank just below & to left.
 Turbulence of water sufficient to create Indian foam below
 rapids (2 inch mass every 1 foot). 11:36 3 chickadees, redtail,
 2 cardinals, 4 redbellied woodpeckers, 4 slate-colored juncos.
 11:44 drainage to right and 1 gal per sec. Large boulders to
 water level. Good rapids below. These rapids are characterized
 by long stretches of continuous rapids. 2 redbellied wood-
 pecker, 2 chickadees, 2 bluejays, 2 fox squirrels. Good

Good area for unionids. 11:50 beaver (subadult) from roots of tree. 11:50 bend and drainage, not graded to river but good rock accumulations below (200 feet below). In this area a group of 3 cardinals, 2 redbellied woodpeckers, 4 chickadees, 2 bluejays, 1 redtail, white breasted nuthatch, 4 slate-colored juncos, 3 crows, 2 fox squirrels. 11:58 good beaver activity. Ice masses not as common as lower in Delaware drainage. 12:03 drainage to left and graded to river, 3 gals per 5 sec. redtail, white-breasted nuthatch and 2 redbellied woodpeckers. Rocks of kayote, recessed above high water mark and were made at a time when flood water were at the high water mark. Some beaver scratches on bank at this level and were made at time water was at this zone. 12:06 good beaver activity. Beaver are all along river wherever willows or vegetation is available and banks are favorable. 12:08 drainage left and 1 gal per 10 sec. 12:09 redbellied & 3 chickadees. 12:11 sharp bend and ice on concave bank. 2 cardinals, 3 chickadees, redtail. Rock piles and good rapids below but not turbulent. 12:18 crow left partly submerged limb in river, first one noted in river channel proper. Slight bend, rapids below. 12:20 drainage left. rapids below. 4 crows, great horned owl, 3 chickadees. water 1 gal. per 10 seconds. Beaver left from roots of large tree. 12:35 bridge. 4 chickadees. flock of 280 blue and 90 snows. 12:44 drainage right, 1 gal per 5 sec. 80 blue and 60 snow geese. All geese flying north. Fox squirrel. Trees on concave bank are scared up to high water mark. 12:50 horned owl flew down stream just above water into tree & then left river by returning on outer edge of riparian growth. 2 chickadees. noted a redtail to deviate its circular flight by turning to a straight course & lower elevation as small plane past over its area. 12:55 first extensive tree destruction by bank erosion on curve. 1:00 beginning of complete removal of trees by Corp of Engineers. Considerable displacement of soils by caterpillars and large machine tree removal equipment. Beaver left bank directly below ^{area of} most recent tree removal. 1:02 drainage right. Left canal and inspected area beyond top of bank. Redheaded woodpecker in open field. marshhawk. High wind out of channel.

Left 1:10. Considerable beaver activity in recently denuded area, in fact there seems to be an increase in numbers of beaver and activity. Although trees have been removed, there is more lumber and roots available. 1:12 cross. 1:20 hillside curve. Redhead and 3 Chucks. Beaver are using every available avenue up steep bank to milo field beyond. If the valley floor is attained, the beaver will leave a muddy trail. Many attempts or routes are surveyed but most of them are too steep. There is very little evidence of the milo plant on the water edge. 1:46 drainage left. 1 gal per 5 sec. Considerable iron in basal layers in bank, in the form of nodules, sheets between layers of sand and silt and in fracture lines. Flock of 400 geese flew north (200 blues, 200 snows). The flocks have been similar in flight action with all groups finding it difficult to maintain V formations. They will form lines and then pass into disorganized groups and then back to line formation. They also move from side to side and from right to up and down. They call continuously. 2:12 collected an Indian artifact (fat scraper) ⁶⁹⁰³⁰²⁻² from 3 feet above level of water in basal sands and clays.

Height of bank approx. 20 feet.

The scraper ^(see 690305) was embedded in the clay with the flat surface exposed.

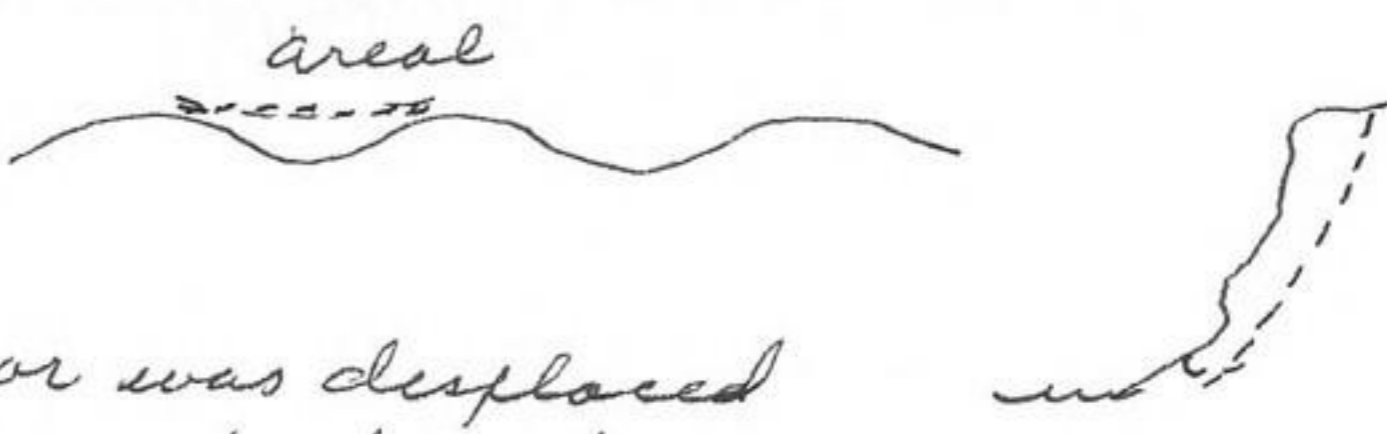


It measured 137^{mm} long; 95 wide, 40^{mm} high and was made from basalt. ^{wt. 689 gm} probably an erratic from the Kansan glacier. This fat scraper is larger than usual for this area and is crudely formed. The edges were sharp and showed no sign of wear. There is no evidence that this artifact could have migrated from the top of the bank to its present position. 2:13

Stopped to check gravel bar (left side run + approx 200' below site of artifact. No evidence of chips, potsherd or points here. temp 41°F. 2:26 left. 2:32 beaver from debris on side of bank. These beaver are occupying sites as high as 10' above level of water, although they prefer water within a foot or two and generally protected overhead. 2:41 bend and good hillside exposure. Present stream at contact with hill does not seem to have much erosional effect on the hillside. 2:50 Cooper Hawk & redtail. 3:04 beaver

from shallow concavity among roots 3:06 bend.
 250 blue + 250 snow passed overhead, 3:16 entire
 bank slid into river.

An area of bank
 between two concavities
 formed by eddies slide or was displaced
 by approx 10 feet, the lower part entering
 the water. The face created was slightly convex. It
 measured 10' x 20 feet x 3 feet. There was a definite
 noise for approx 3 seconds, ending as abruptly as it started.
 The movement is not as roped as one would expect. The
 wake was not damaging to the cones although I was only
 8 feet out from bank when it occurred. This slippage is
 a high angle displacement of dry soils and is not the low
 angle displacement of saturated soils. 3:18 drainage
 from right. 5 gals per second. white sand limestone rocks
 forming gravel or rock bar instead of the usual yellowish
 colored limestone 3:19 bridge (removed). 3:23 French
 Creek. 10 gal per sec. and water level of river continuing
 up creek as far as I could see. a ♂ + ♀ mallard left
 river at this point. 5 crows ^{over} ~~over~~ field to E. wind in
 back up to bridge, beyond in face. 3:29 muskrat swimming
 down river and followed for 300ft. 3:30 Contact with
 high cliff. 3:38 top of hairpin curve. convex side
 of bank a beautiful symmetry and rounded. 3:45 ♂ +
 ♀ mallard and probably same pair of birds observed earlier.
 3:48 beaver at level of last flood in debris pile. 3:50
 4 cardinals, 18 tree sparrows, 5 chickadees, downy woodpecker.
 3:51 8 meadowlarks in pairs + one pair chasing each other,
 all singing. 3:57 bend and now to S. Curve profile
 unusual. Reddish soil toward hell to W. 4:00 drainage
 to right. 8 gals per sec. 4:10 sharp bend. Large + small
 beaver left root system of dislodged tree. 4:25 beginning straight
 run to bridge. mourning dove, 30 starling. 4:35 new
 bridge. 4:42 old bridge (removed). 50 mallards + 50 pintails
 in pond directly E. Ducks prefer ponds with vegetation and
 are ignoring barrow pits and other recently developed
 ponds + lakes. will compare the several sections of the
 Delaware River, dividing it into Ozawie to down, Valley Falls to
 beginning of deforested area and from beginning of deforested area
 to Ozawie. Next week will compare Arrington to Valley Falls.



Delaware River, Half Mound to Valley Falls, Jefferson Co., Kansas

March 9, 1969

made solitary canoe trip from bridge west of Half Mound to bridge E of Valley Falls. The bridge at Half Mound is a high, fragile structure of unusual beauty. Annette and daughter Annette assisted in placing canoe in the Delaware. My first step on upper bank carried me to almost water edge on a slippery mud. After hundreds of experiences with mud surfaces on these mud west channels I am still fooled by their stable appearances. Last night's snows (3 inches since yesterday morning) helped to soak these slopes which at this time are 100 percent covered with snow in protected exposures and 90% covered in other southern exposures. Snow to edge of water and an ice level approx 10 inches above the present water level. This ice level supports a sheet of ^{thin} ice that either projects out or stream-ward for 6-10 inches or has dropped down as a slope-covering ice to edge of water. This receding of water from ice level has taken place since the last (or first freeze) of a day or two ago. Ice formations from the level of the ice sheet to present level have been formed as the water gradually receded and take on the following forms.

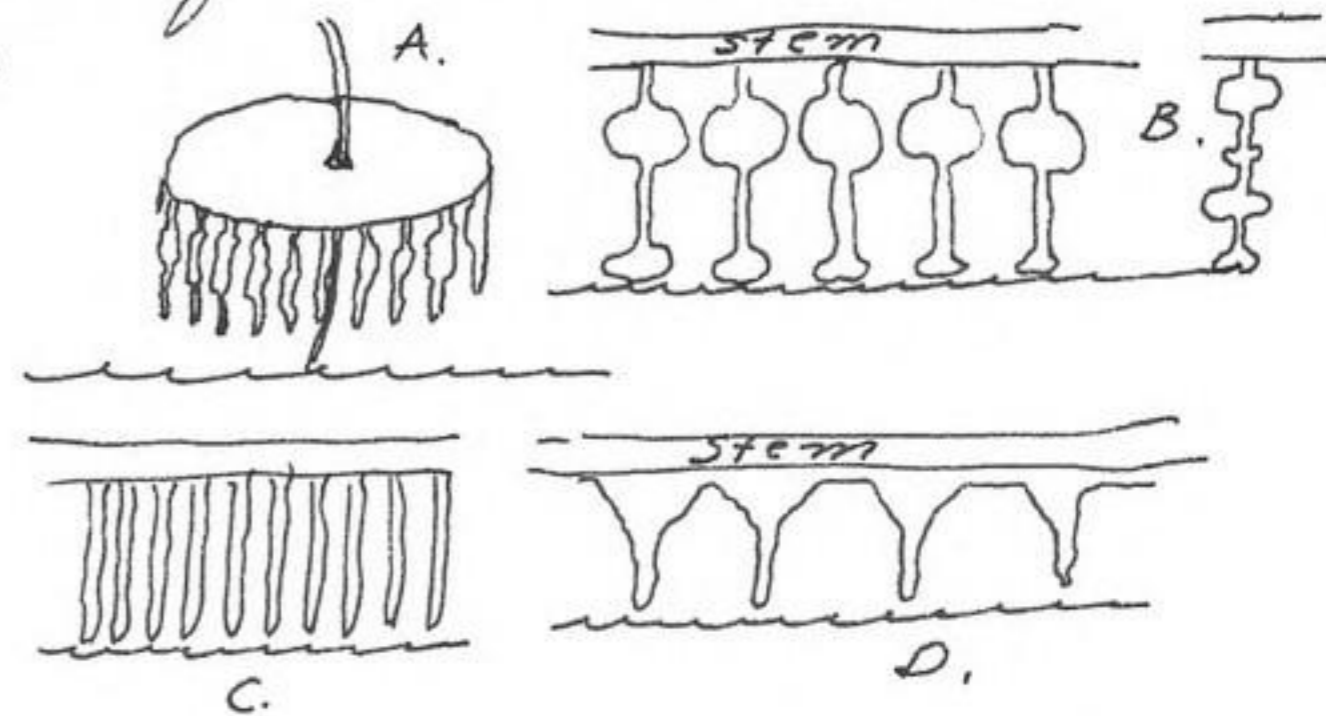
A. plate or disk of ice with crystals or ice formation at edge; some disks 2 feet wide and supported by stem + free of water below.

B. bulbous type with all kinds of variation according to how long the water was maintained at one particular level and the degree of cold temperature and freedom of wind agitation of surface of water.

C. long slender formations with basal plates. There is no end to variations of all the above and the subject would make an extremely interesting field for photography, especially as sun strikes opposite side to viewer. The ice chandeliers are not consistently distributed but seem to occur where all contributing conditions are favorable.

Water temp 32°F, air 25°F Sky 90% clouds and blue between. Clouds increasing. At bridge were approx 300 ♂ redwing blackbirds all singing. They stopped at our approach in a fraction of 1 second to absolute quietness. 2 blue jay + 1 redbellied woodpecker in area. 12:42

redbellied woodpecker, 2 chickadees, crow. 12:50 2 black-



Capped Chickadee. River with about 20% compact ice on either side and in eddies with channel of open water between. 80° clear to edge or only slight compact slush or ice masses ^{at} edge. 12:55 drainage right, 4 gallons per second. 12:56 great horned owl left bank and flew down river to tree. 2 Cardinals singing. Redtail hunting river. They usually are not as concerned with the river channel proper as they are today. 12:57 drainage left. A male cardinal concluding his call with not the usual 3 or 4 notes but 14 in succession as if like a broken record. This song behaviorism was very noticeable to me. I have no idea how it influenced the ♀ cardinal. This drainage produced 1 gal per 3 sec. 2 Crows chased a redtail which was circling trees on side of river. 1:00 redbellied woodpecker calling. Heard but did not see Killdeer to E. 1:08 bend. Fish have been active and more so than in lower reaches of the Delaware. Chickadee called. Passing by South exposure of bank and steam and heat rays rising (temp 25°F). Snow off most of bank on n side river but solid on S bank. 1:15 stopped on small gravel bar and collected several shells (690309-1 to 690309-10

- 690309-1
- 690309-2
- 690309-3
- 690309-4
- 690309-5 not recorded
- 690309-6
- 690309-7
- 690309-8
- 690309-9
- 690309-10

The Crenodonta were the dominant shells and shell ridges prominent.

Left gravel bar 1:30. Cardinal singing. A roccoon had excavated a small hole 3" deep in sands of this bar. 1:31 song sparrow singing. 2 crows (1:39 4 ♂ and 3 ♀ mallards left river. 1:46 bend river. 4 black-capped chickadees, 2 Cardinals, 38 tree sparrows, 3 crows working up river. fox squirrel, white-breasted nuthatch, 2 blue jays. 1:55 great Horned owl, downy, 2 black-capped chickadees. 1:57 bend of river with good exposure of black shale capped with thick layers of some material which in turn was capped by unconsolidated



690309-80

17
938

16

15

15

20
956

21
919

22

22

Catamount

Creek

ATCHISON CO
JEFFERSON CO

29
921

28
920

27

27

32
994

33
963

34
921

DELAWARE

LEFT 12:30

12:55

1:08

1:15

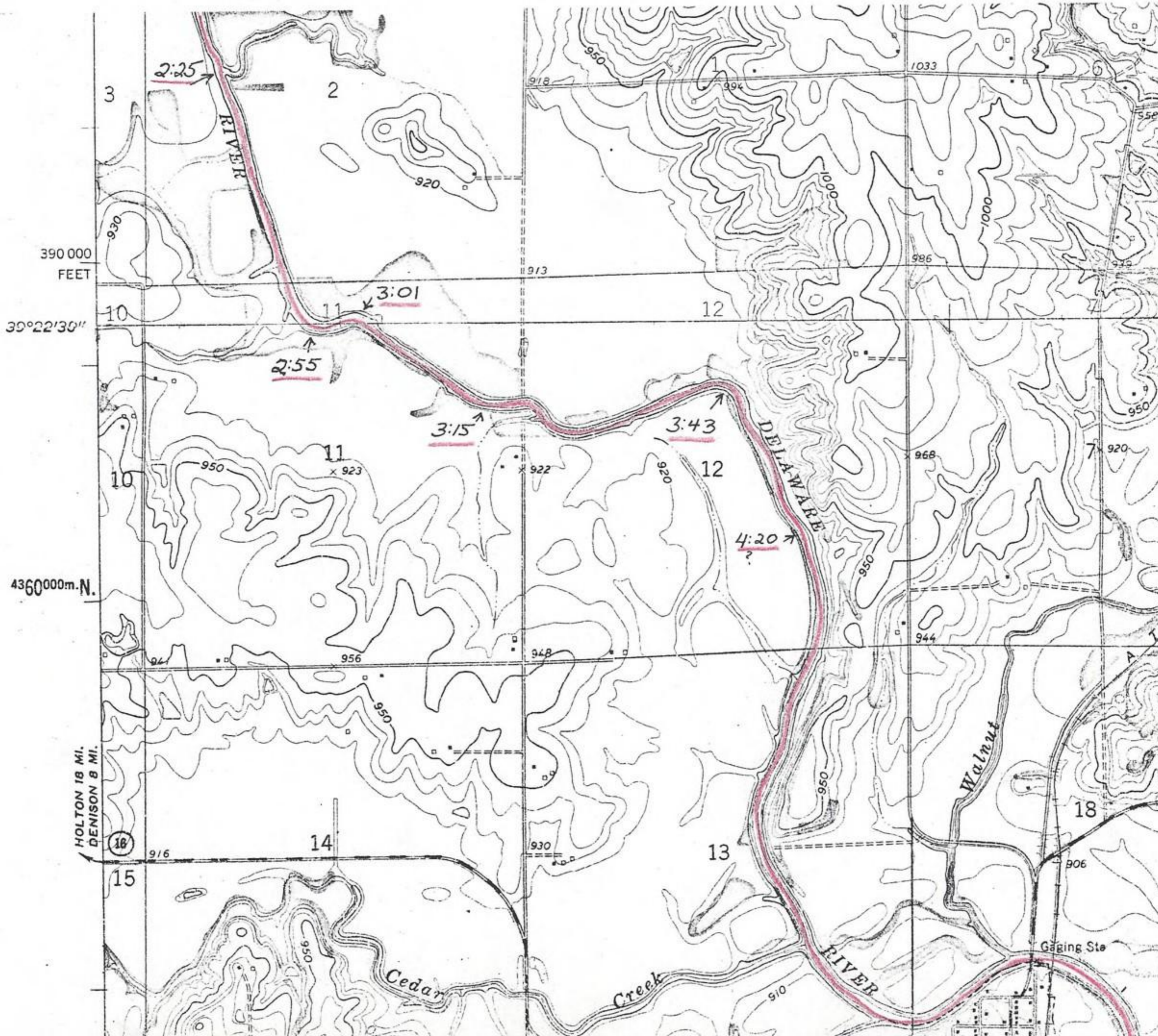
1:46

1:57

DELAWARE RIVER

Half Mound

75





Valley Falls

690309-82

24

19

20

BM 979

ARRIVED
5:25 P.M.

Sewage
Disposal

Farrar Cem

Rose Hill Cem

25

30

29

SANTA FE

DELAWARE

66

908

36

31

32

BM 1005

BM 978

1

6

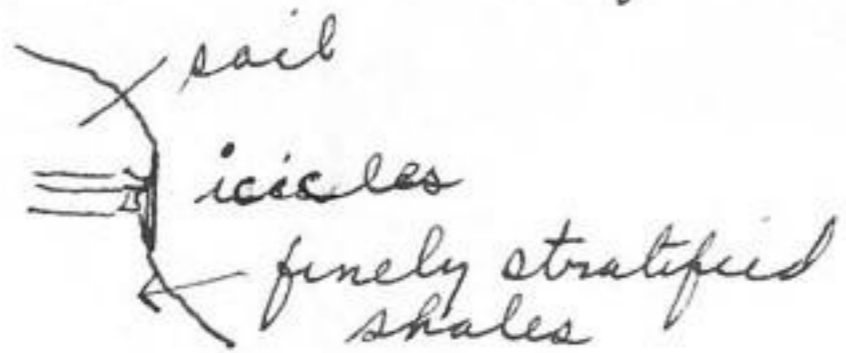
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984

967

894

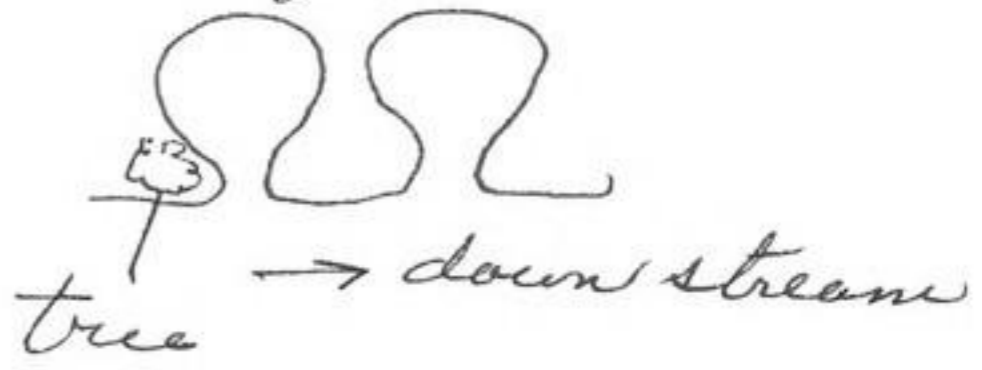
soils. water from thick shale layer and soil above formed



4 feet long icicles. No water in drainage. 4 juncos (slate colored) 2 titmice, redtail. 2:00 stopped at gravel bar. Good population dead shells. Left 2:21 2:22

5 cardinals, 15 slate-colored juncos, 3 black-capped chickadees. This river at this point is like the Wabassa with extensive bank slippage. 2:25 drainage left. 8 gal per second. Below drainage (in center of main river) 5 large fish churned the water and chased other fish in several directions. Redbellied woodpecker. 2:35 20 tree sparrows, 3 song sparrows, 10 slate-colored juncos, 3 chickadees, 2 cardinals. 2:38 two crows flying up river and diverted flight into tree at edge of water where a great horned owl was sitting in a tree. They remained in same position & called. At the same time 2 redtails flew out over river and one knocked the other into the water from which it immediately left and flew back into tree. A third redtail continued to sail over head in the same area. As I approached the owl left down stream followed by the 2 crows. One redtail remained in trees until I was about 100' from the bend at which time it left. There were no nests in any of the trees. 3 mallards flew up stream about 100' ahead. 2:40 24 mallards of about equal sexes alighted in river at bend just n. There is large ice blocks on bank at what would be the upper flood level of this season but does not appear to be as prevalent as in lower stretches of the Delaware river. 35 slate-colored juncos. These are about the only birds using the bank's slopes. 2:45 2 redbellied woodpeckers, 2 bluejays. Some light snow in air. 2:48 drainage right, 1 gal per 2 seconds. 2:52 drainage right, 1 gal per sec. downy & redbellied woodpecker. Bend 2:55, cardinal singing. Usual downed trees from bank erosion, along route. Coyote tracks in snow on bank. Raccoon tracks most common and then only about 1 set per 200'. They are relatively uncommon in this area although conditions are favorable. 3:01 bend of river. ♂ & ♀ mallard, 3:13 2 redbellied woodpeckers. 3:15 bend 2 redtails made aerial contact. 8 ♂ & 5 ♀ mallards

left river. Cardinal singing. 3:20 old bridge in water, 2 robins. A dead Raccoon in tree 5 feet above present water level. 3:22 bend. 3:24 drainage right. 3:26 bend. redtail, 2 blue jays, 20 slate-colored juncos. 80⁺ redwing blackbirds singing, 2 cardinals. 3:28 rapids and bar of black shale below. 3:30 rapids & bedrock. Some rapids and base rock beyond. 3:32 2 cardinals, 18 slate-colored juncos. 3:35 drainage, 1 gal per 3 sec. Beaver lift hole at water level. G. horned owl flew down stream. 6 ♂ and 3 ♀ woodchucks resting on log at edge of stream. ^{of which} Three pairs remained ^{together and} fed after leaving the log. 10 pairs Mallards associated with woodchucks. The mallards were all paired with ♀ always 5 or 6 inches behind & to the side of the ♂. On occasions they formed compact group but when separating formed pairs. 3:43 bend, Downy, 2 cardinals, redbellied woodpecker. 3:47 downy, 2 bluejays. 3:52 3 chickadees. redbellied woodpecker. 3:57 erosion of E bank with deeply eroded excavations. 4:07 chickadee, great horned owl. 4:20 odd type rapids not associated with ^{lateral} drainage systems as now delimited.



great horned owl. Below these rapids in an old log ~~with~~ deeply grooved. Temp. 28°F. Blue jay, downy, 4:25 2 mourning doves on slope of bank. Eight woodchucks left river and probably some group as noted earlier. 4:32 bed rock to left. Started paddling, other wise have been floating with current all the way. 4:38 mourning dove, redbellied woodpecker. 4:40 5 cardinals, 2 redbellied woodpeckers. 4:46 Cedar Creek. Good flow and same level as Delaware. 5 chickadees, great horned owl, 2 bluejays, robin. 4:52 12 juncos, 3 robins. redtail. 4:54 drainage right. Habitation beyond. 5:00 Walnut Creek and bridges just beyond. 5:14 4 slate colored juncos. Good rapids. Bridge (E of Valley Falls) 5:25 P.M. Eng sparrow 6.

Summary: (see end of March 2 account). Observed only one beaver but other beaver sign present ^{can} not ^{be} compared to area below ^{Valley} Falls to dam ^{in numbers}. Trapping may be allowed upstream from Valley Falls and prohibited below Valley Falls. Raccoon tracks not as common as below. weather may have accounted for inactivity of these two species of mammals.

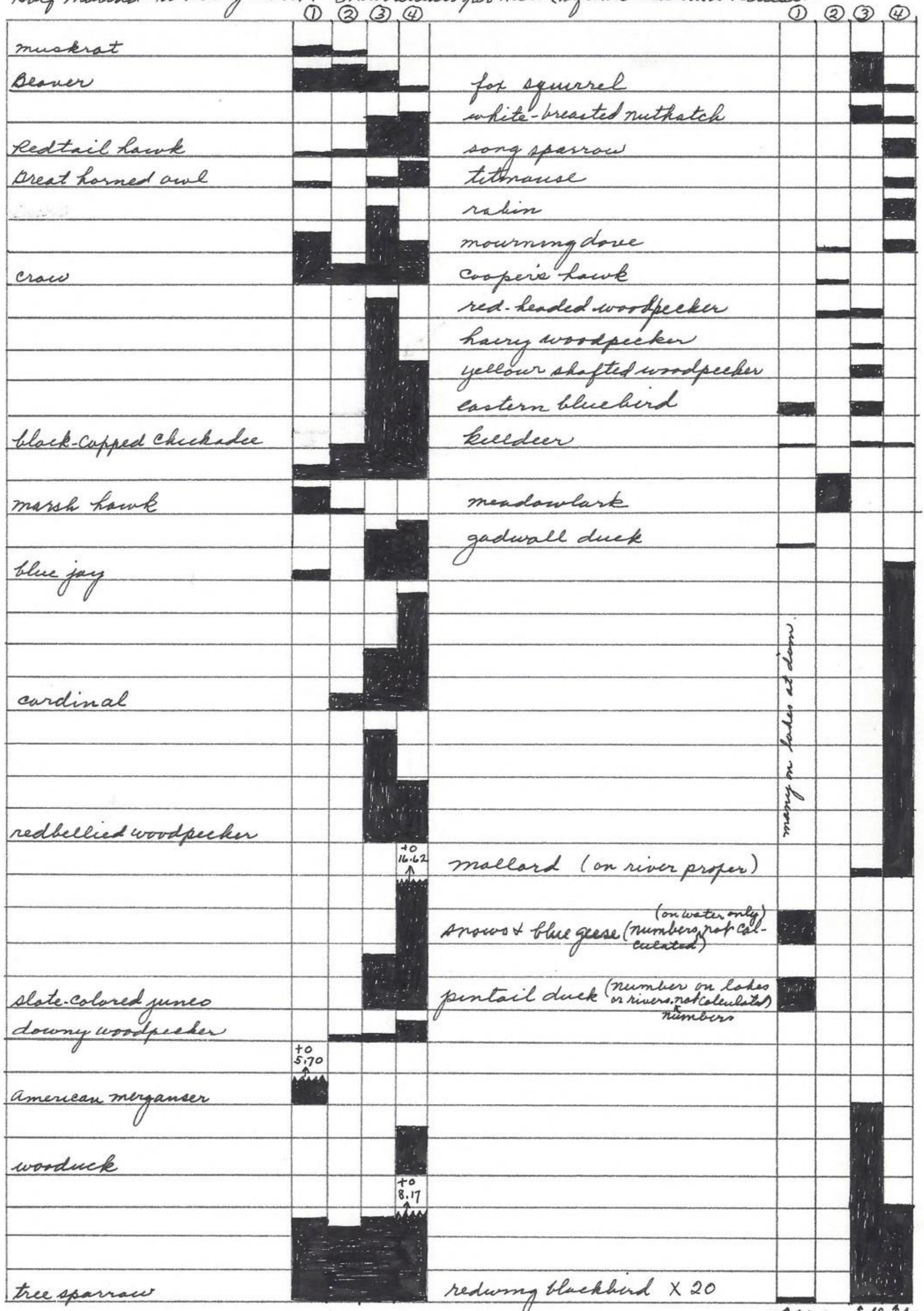
Summary:

	① march 1 Ozawie to dam (reparan forests removed	③ march 2 Valley Falls to beginning of cleared forests	② march 2 Beginning of cleared forests to Ozawie	④ march 9 Half mound to Valley Falls (forested)
• mallard	2-22-4-50 ^(6.84) = 78	(2.42)	2-50 = 52 ^(6.58)	7-3-24-2-13-20 ^(9.71) = 69
• crows	8-3-23-4 = 20 ^(1.75)	3-3-2-3-1-4 ⁽¹⁶⁾	1-5 = 6 ^(1.76)	1-2-2-3-2 = 10 ^(1.40)
• marsh hawk	2-1-1-1-1-2 = 10 ^(.87)		1 ^(1.12)	
• great horned owl	1-1 = 2 ^(.17)	1-1-1 = 3 ^(.45)		1-1-1-1-1-1 = 7 ^(.98)
• black-capped chickadee	3-4 = 7 ^(.61)	5-2-2-4-3-2 = 37 ^(5.60)	3-5 = 8 ^(1.01)	1-5-2-2-1-4-2-3-3 = 26 ^(3.66)
• pintails	50-80-12 = 142 ^(12.45)	4-3-3-3-4-2	50 = 6.33	
• redwing	1-1-2 = 4 ^(.35)	800 = 121.21		300-80 = 380 ^(53.52)
• American merganser	65 = 5.70			
• muskrat	1-1-1 = 3 ^(.26)		1 ^(.12)	
• tree sparrows	2-4-25 = 31 ^(2.71)	18 = 2.72	18 (at Ozawie) = 2.28	38-20 = 58 ^(8.17)
• killdeer	1 = .08	1 = .15		1 = .14 ^(1.83)
• blue jay	1-1-2 = 4 ^(.35)	2-2-2-2-2 = 10 ^(1.51)		2-2-2-2-2-1-2 = 13 ^(1.83)
• blue goose } in flight one flock {	350-800-30 = 1180 ^(103.50)	280-80 = 360 ^(54.54)	200-250 = 450 ^(6.96)	
• snow goose	150-200-20 = 370 ^(32.43)	90-60 = 150 ^(22.72)	200-250 = 450 ^(6.96)	
• eastern bluebird	4 = .35	3 = .45		
• redtail	1 = .08	1-1-1-2-1-1 = 8 ^(1.21)	1 = .12	1-1-1-3-2-1-1 = 10 ^(1.40)
• godwall	1 = .08			
• Eng. sparrow	22 = 1.93 ^(.70)			
• beaver	1-1-4-2 = 8	2-1-1 = 4 ^(.60)	1-1-1-1-2 = 6 ^(7.6)	6 = .84
• Cardinal		4-2-2-3-2 = 13 ^(1.97)	4 (at Ozawie) = .50	1 = .14 ^(3.66)
• redbellied woodpecker		1-1-1-2-2-2-1 = 23 ^(3.48)		2-2-2-5-2-1-1 = 26 ^(3.66)
• slate-colored junco		4-4-4 = 12 ^(1.81)		1-2 = 14 ^(1.91)
• yellow-shafted flicker		1-1-1 = 3 ^(.45)		1-1-1-2-1-2-1-1 = 11
• fox squirrel		2-2-2-1 = 7 ^(1.06)		18-12-4 = 118 ^(16.62)
• hairy woodpecker		1-1 = 2 ^(.15)		4-15-10-35-20
• downy woodpecker		1 = .15	1 = .12	1 = .14
• white breasted nuthatch		2-1-1 = 4 ^(.60)		1-1-1-1-1 = 5 ^(.70)
• redheaded woodpecker		1 = .15	1 = .12	1 = .14
• Cooper hawk			1 = .12	
• meadowlark			8 (at Ozawie)	
• mourning dove			1 = .12	2-1 = 3 ^(.42)
• starling			30 = 3.79	
• field song sparrow				1-3 = 4 ^(.56)
• titmouse				2 = .28
• robin				2-1-3 = 6 ^(.84)
• woodchuck				9 = 1.26

○ circles = totals in each of the 4 columns.
() near circle = per mile

19 species (11 4/10 miles) 21 species (6 6/10 miles) 18 species (7 9/10 miles) 22 species (7.1 miles)

690309-86
 Percent frequency of birds and mammals along Delaware River from
 Wolf mound to Perry dam. Individuals per mile (square = one individual.)



Information from summary (previous page)

single birds ↑ flocks
 (redwing only applies)

Delaware River, Jefferson Co., Kansas
March 15, 1969

Annette Christine and I made 2 day canoe trip down the Delaware River from old bridge east of Valley Falls to the Perry Reservoir Dam, camping the first night at a point north of Ozawie. materials included on trip: saw, hatchet, tent, center pole, 2 life preservers, knee rob, thermometer, reference books, pliers, tape for canoe repair, bandaids, binoculars, watch, journal, pencils, matches, cooking pan, butane bottle and cooking attachment, 2 catalypt gasoline heaters, cushions, canoe, paddles, gloves, cap, 2 sleep bags, gal. water, food, umbrella, maps, raincoat, reading glasses, camera, proper clothing, 25' rope (left 9:15 AM, mileage 23190)

Left Valley Falls Enroute to Valley Falls from Lawrence, noted 12 redtail hawks (2 of which were together), 26 meadowlarks, all singles except 2 pairs, 7 male redwing blackbirds on territories. Other ^{birds} birds noted were: shrike, cardinal, bluejay, crow, starling, redheaded woodpecker (1), redwings, Eng sparrow, mourning dove, junco, chickadee, tree sparrows. Ponds are about 50-50 water and ice (each pond) and snow only in drifted areas. Arrived Valley Falls 10:00 AM at mileage 23230 or 40 miles from Lawrence in 45 minutes. Left Valley Falls at 10:30 sky clear, slight wind from S, air temp, 41°F, water 35°F. 10:32 black capped chickadee, 10:40 cardinal, 10:48 flock of 800 geese (560 (70%) blues and 240 (30%) snow geese) flying south at approx. 600 ft and in good "V" formation. They continued 5 out of sight and hearing range. 10:50 stopped on gravel bar and collected some shells. The dominant form is *Crenodonta peruviana*. Left 10:57. Chickadee and 2 cardinals. 10:58 cardinal, 2 chickadee, 2 titmice calling. 11:08 cardinal. 11:10 bend, 2 ♂ and 2 ♀ mallards left river. 5 crows chased a great horned owl. cardinal. 11:18 medium size beaver left hole at water level. cardinal and 2 titmice singing. There is a definite increase in occurrence and singing of the titmice. 11:20 rock bank to right, fox squirrel, 3 redbellied woodpeckers, 3 bluejays, 2 ♂ ♀ mallards, 2 titmice, chickadee, 1 Harris ^{sparrow} woodpecker. This sparrow was in brush pile on slope of bank and as far as I could ascertain, was not associated with other Harris' sparrows. 11:25 ♂ ♀ mallard left water. cardinal. 11:27 6 slate-colored juncos. Flock of ⁵² geese flew N at about 700' altitude and in usual V formation. This flock consisted of 20 blue geese (38%) and 32 snow geese (63%). 11:31 Flock ^{flying N.} 700 geese (210 blues (30%) and 490 snows (70%). 11:35 400 geese flying N. (320 blues (80%) and 80 snows (20%).

CONOE ROUTE
VALLEY FALLS
TO
PERRY DAM
MARCH 15-16

CAMP
MARCH 15 5:15
MARCH 16 8:55 A.M.

FULL POOL EL. 920

CONSERVATION POOL EL. 891.5

10:30 4:30

11:10

11:59

12:52

1:05

2:30

1:19

4:45

4:21

9:20

9:40

10:18

11:10

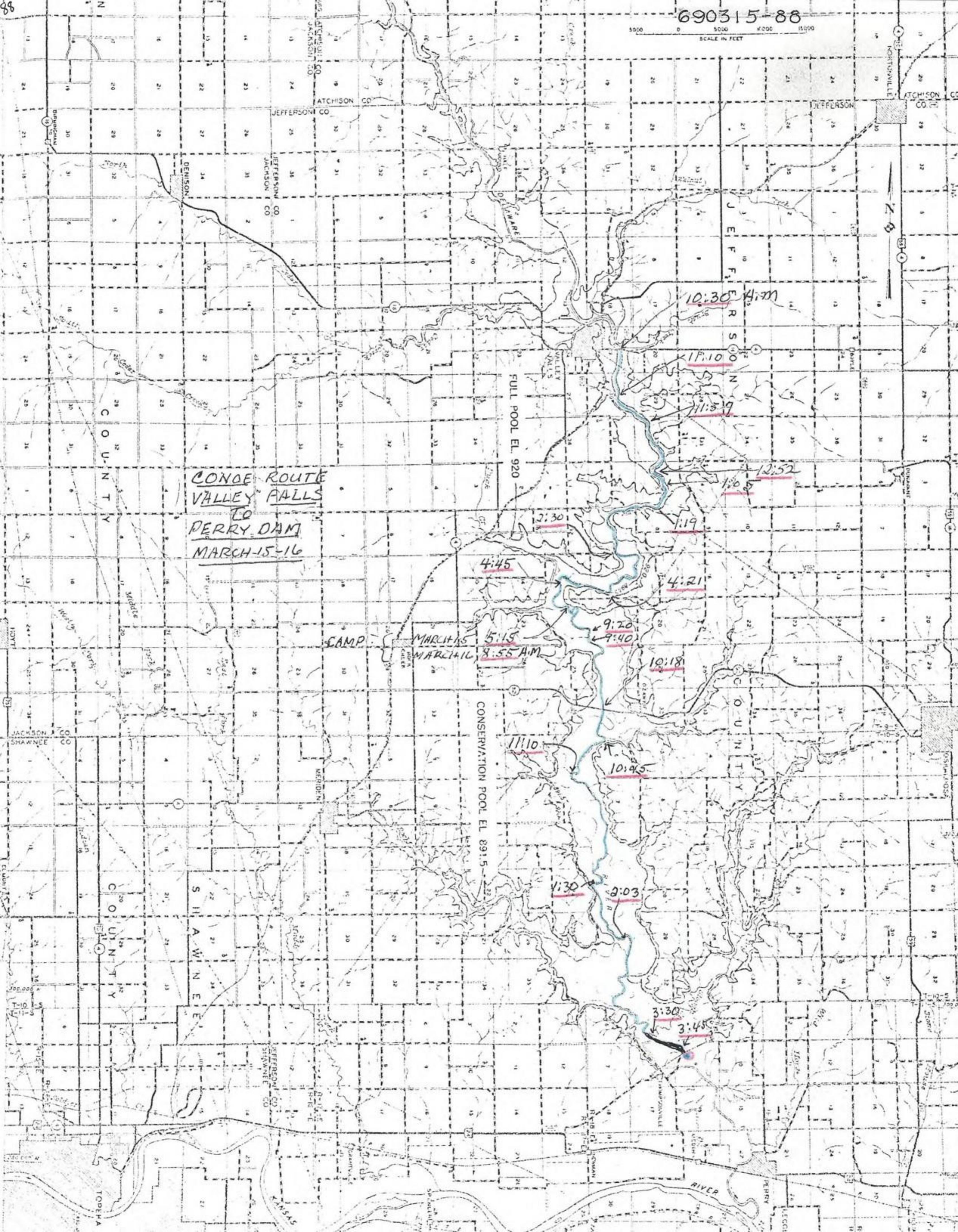
10:45

1:30

2:03

3:30

3:45



11:38 examined unopened on gravel bar. Left 11:57. Titmouse call-
 ing. 12:00 2 Kingfishers, one chasing the other. These are the
 first ones noted this year on the Delaware. Flock of 120 geese
 flying NE at 700' (36 blues (30%) and 84 snows (70%). Red
 bellied woodpecker and 2 Titmice. 12:05 2 crows chased a
 great horned owl from the owl's position in a tree along side of
 river to another tree some 300 feet down stream. The owl
 made several sounds when pursued too closely. 8 slate-
 colored juncos, 2 redbellied woodpeckers and 3 bluejays in
 area. This association of small birds and great horned owls
 is a frequent occurrence. 12:07 2 ♂ and 2 ♀ mallards.
 12:52 side hill contact. 12:53 beaver leaving hole at edge of ^{to} water.
 Chukadee, 2 titmice, 1 bluejay in area. Overhead
 at approx 600' or higher were 150 geese (105 blues (70%), and
 45 snows (30%). Approx 4 minutes later 1000 geese moved
 south at about 700' ~~high~~ high included were 700 blues (70%),
 and 30 snows (30%). 11:04 Chukadee. 1:05 bend. 2 titmice,
 3 cardinal, 2 crows. Snow covering ground (bank) on north
 exposures, elsewhere only where deep snows have drifted.
 Chukadee and 8 juncos. 1:07 beaver left bank hole. 1:14
 redbellied woodpecker, cardinal. Flock 200 geese flying S
 included were 140 blues (70%) and 60 snows (30%). 1:19 bend
 of river. 18 tree sparrows, 3 cardinals, 2 crows, 2 chukadees.
 1:37 2 titmice, 2 chukadees, 2 cardinals, 1 white-breasted nuthatch.
 1:45 bridge. Left 1:56. Flock geese flew N. 200 of which 120 (60%)
 were blues and 80 (40%) were snows. 2:06 35 mallards left
 river and flew N. Flock 300 geese ^{flying N} consisting of 150 blue
 geese (50%) and 150 snow geese (50%). 2:08 8 mallards left
 river. 2:10 350 geese flying N consisting of 245 blues (70%)
 and 105 snows (30%). Great horned owl left side of bank
 (in tree) and flew down stream for approx 300 feet. 1 minute
 later 5 crow descended upon the owl as if the owl had been
 recognized flying for some distance. A redtail hawk
 was associated with the general area of the owl. 2:12 begin-
 ning of a group of approx. 300 mallards in river. They
 were aligned on bank and in water for approx 1/10 mile
 and left in groups as the horse advanced down river.
 It was evident that sight is depended upon as ^{only} those mallard
 left the water ~~that~~ when horse first came into view. Those
 individuals that could not see the horse because of obstruct-
 ions in the river left only when the horse could be observed.

At one bend two mallards were completely submerged and came to the surface after the surface feeding ducks had departed. In all cases, the mallards left and flew upstream or to the N. 2:22 beginning of deforested area. Up to now only trees in channel had been cut. Can still hear crows harassing the owl upstream, 2:30 redtail at sidehill. A large whirlwind cross the river from SW to NE and was not of the ordinary kind for this area. Annette & I both thought that a tractor was approaching the river. In addition to a loud noise, it pulled soil & debris into the air for approx. 100' high. As it ~~passed~~^{crossed} the river it did not seem to displace or pull water from the surface. 2:39 great horned owl. 2:46 flock 250 geese^{flying} consisting of 150 blues (60%) and 100 snows (40%). 2:51 10 mallards in river. 2:53 100 geese flew N consisting of 70 blues (70%) and 30 snows (30%), 2:55 stopped at site of Indian artifacts to check further evidence of Indian habitation (see next page for details of this site). In addition to the scraper collected march 2, collected a stone axe no. 690315-4 from under 3 inches of water between the stream bank and a slightly raised gravel bar just off the bank some 8 feet. It was among other rocks of smaller size and probably represented part of a gravel deposit from a lateral drainage some 150' beyond. The most likely source of this artifact is from the drainage. The clay below the artifact were hard. This artifact measured 108mm long, 80mm wide, 33mm thick, 387gms weight and was a stone axe. Several photographs show this site and are as follows:

- 690315-5 To SW down stream. Axe from just above ripples in foreground
- 690315-6 Same as above. Scraper from left bank just over point bar.
- 690315-7 Same as above. A few feet farther W than above
- 690315-8 To NE. Axe in ruffle to right of tree. Lateral drainage at block stump
- 690315-9 Same as above, river level. Concre on downstream continuation of outwash from lateral drainage. Trees on shallow of outwash.
- 690315-10 Half way between axe and scraper. Concre bank.
- 690315-11 Same as above. Top rails on slope of bank to water.
- 690315-12 Same as above. (center of picture on shoreline)
- 690315-13 From sand & gravel bar. Scraper from bank to right of snow patch. ^{Buffalo + sheep from strip bar}

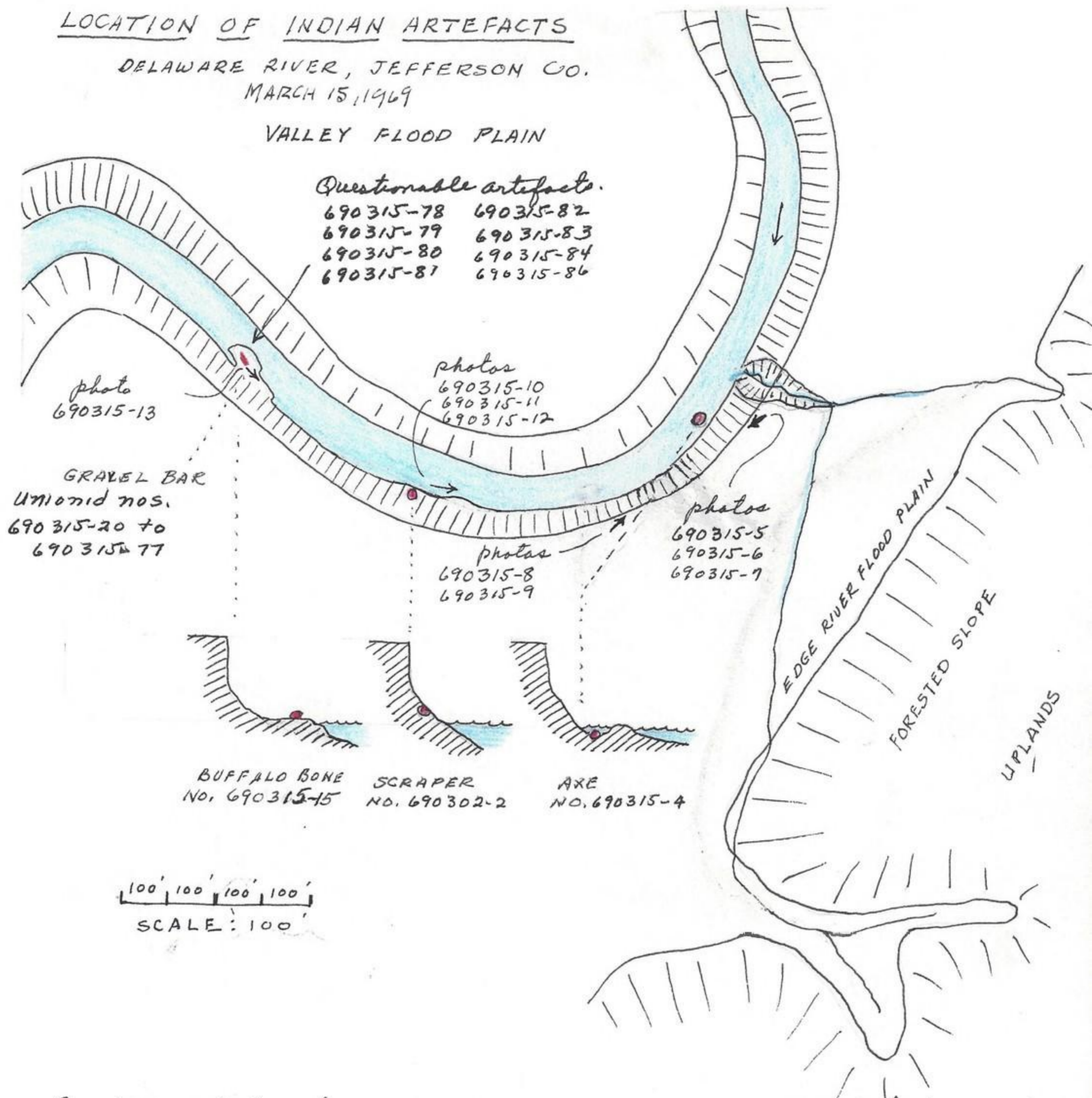
While checking this archeological site noted the following flocks of geese: 3:00 700 (525 (75%) blues and 175 (25%) snows); 3:05 400 (260 (65%) blues and 140 (35%) snows); 3:30 250 (200 (80%) blues and 50 (20%) snows. 4:00 350 (210 (60%) blues and 140 (40%) snows; 4:10 200 (120 (60%) blues and 80 (40%) snows. All going north except 3:05 and 4:00 groups which were flying south.

LOCATION OF INDIAN ARTEFACTS

DELAWARE RIVER, JEFFERSON CO.

MARCH 15, 1969

VALLEY FLOOD PLAIN

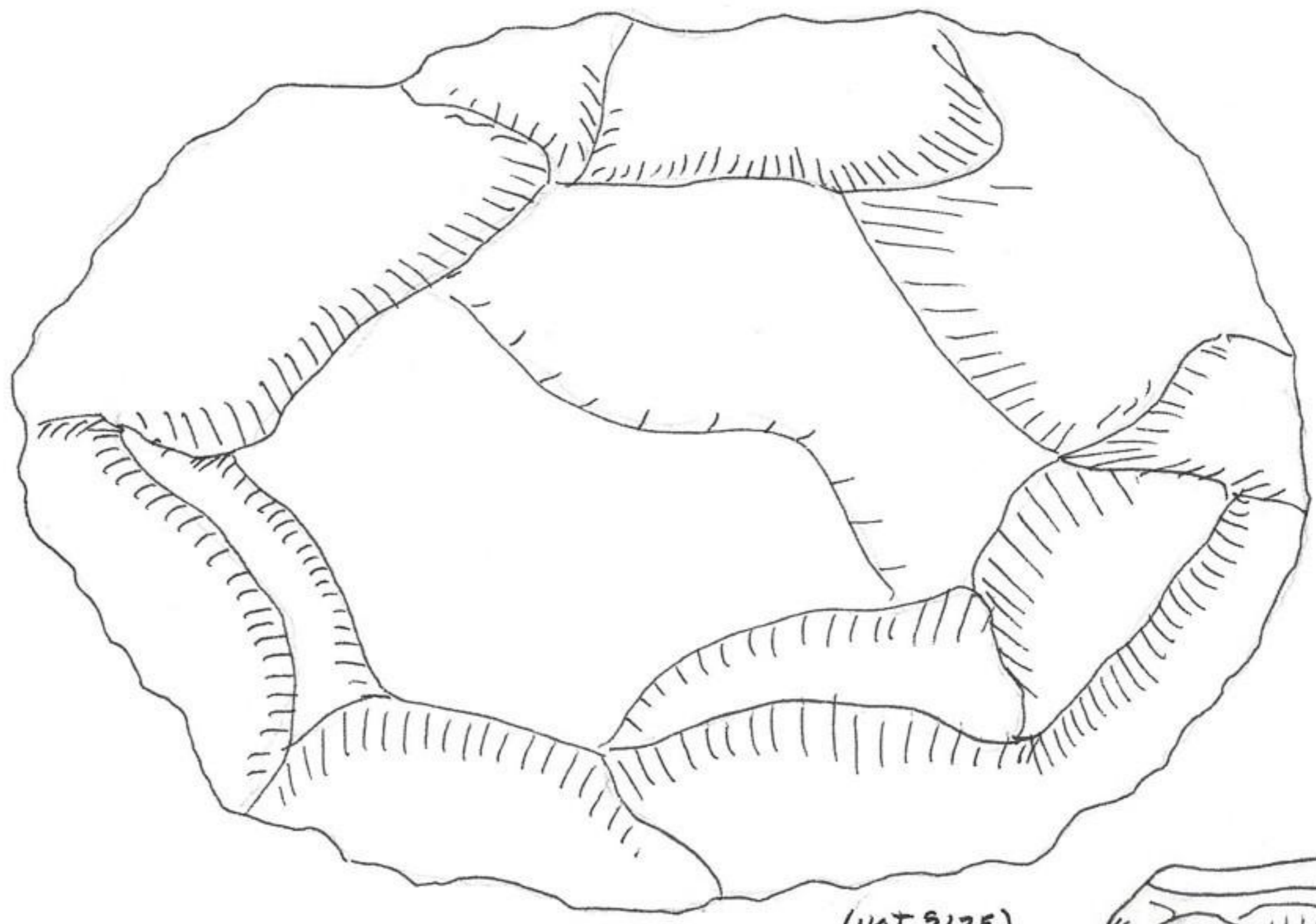


Possible explanations for occurrence of artefacts (in order of probability):

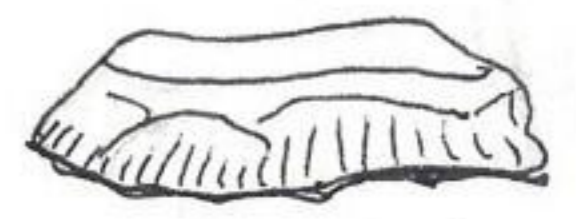
1. Artefacts from lateral drainage system.
2. Artefacts from surface of valley floor by lateral erosion of river bank.
3. Artefacts in original position in river bed (highly probable).

Approximate distance of major positions from mouth of lateral drainage: axe 150', scraper 775', Sandbar 1075'.

77a

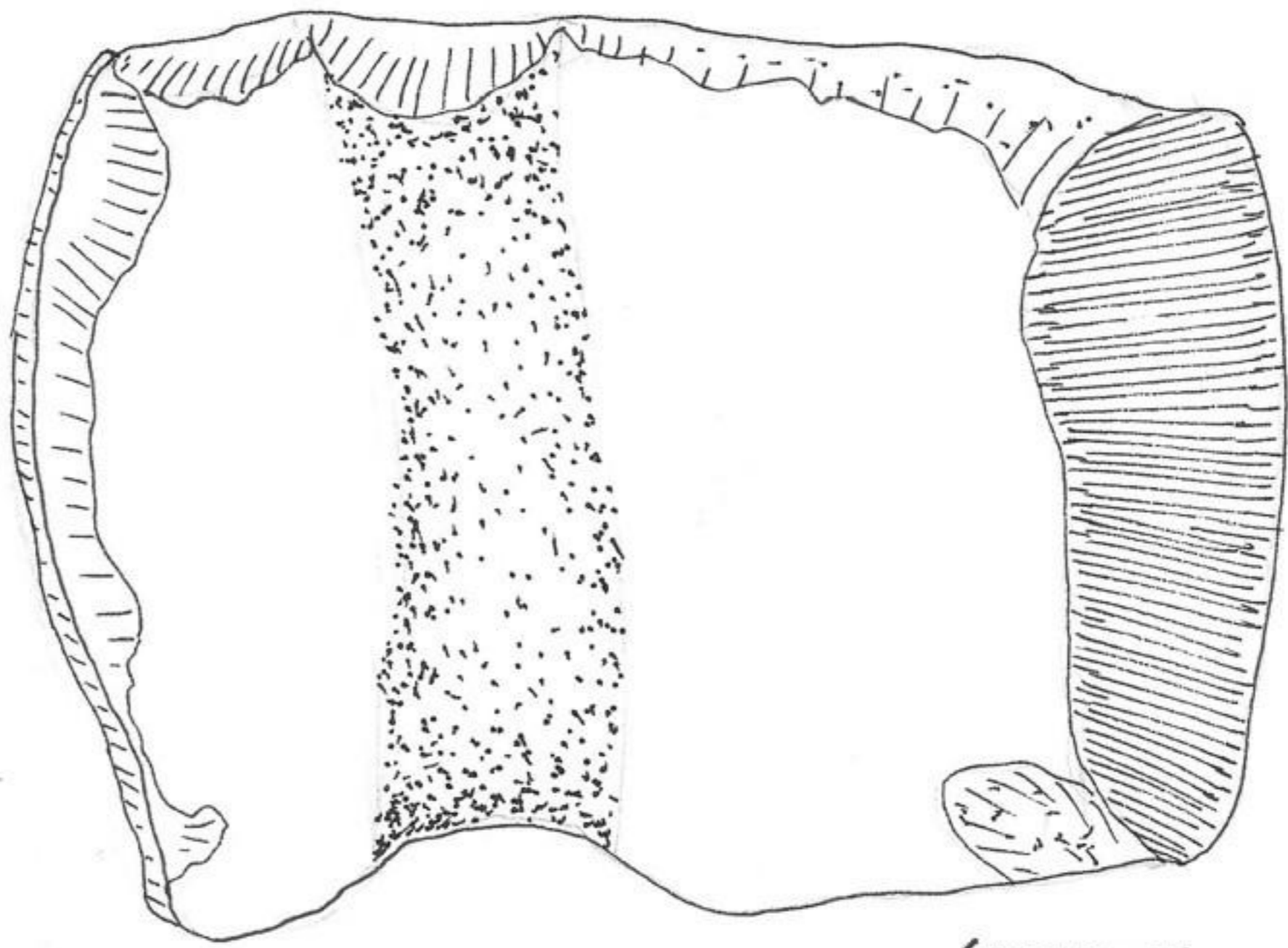


(NAT. SIZE)



SIDE VIEW

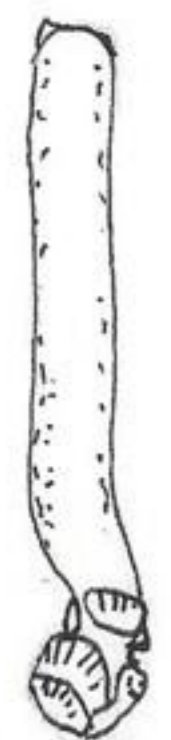
SCRAPER NO. 690302-2
 1,242' n and 900' w SE corner Sec 18
 T9S, R18E.



(NAT SIZE)

AXE NO. 690315-4
 2600' n and 250' w of SE corner Sec 18
 T9S, R18E.

BUFFALO VERTEBRA
 NO 690315-15

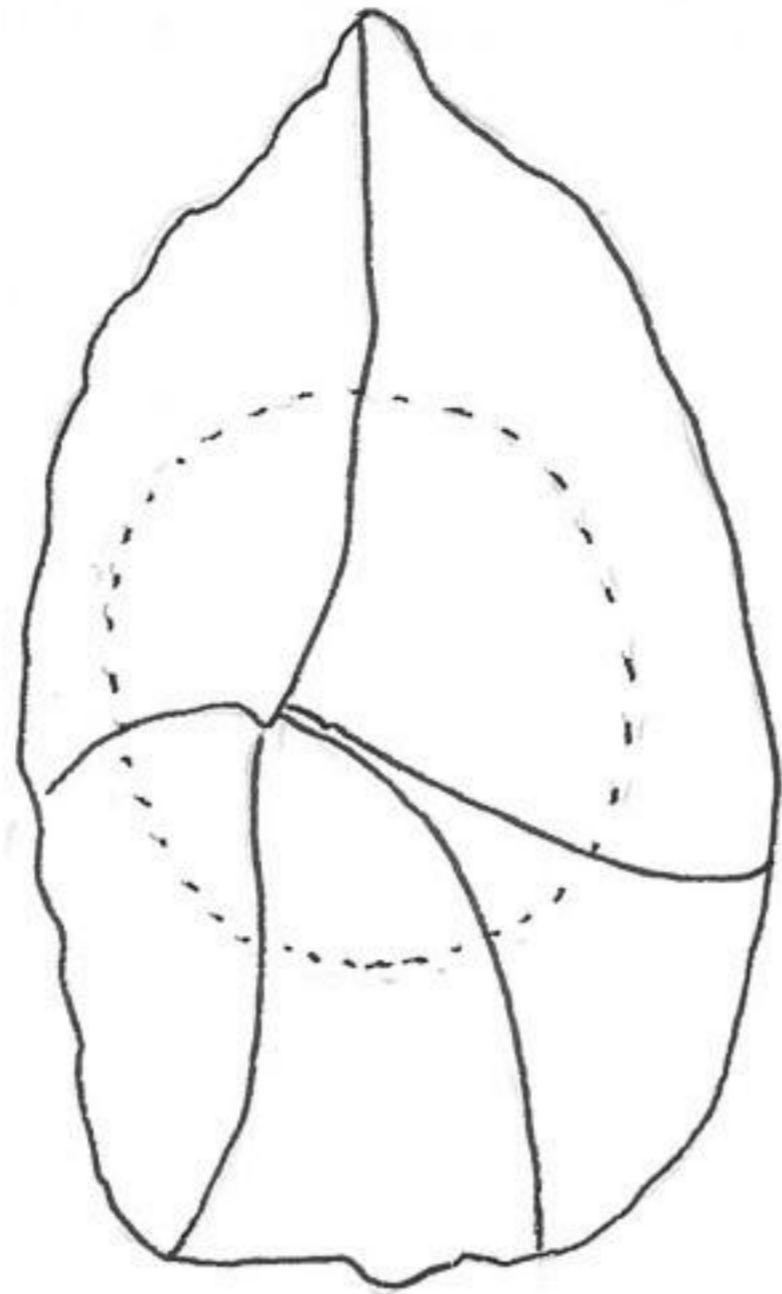


410 mm length

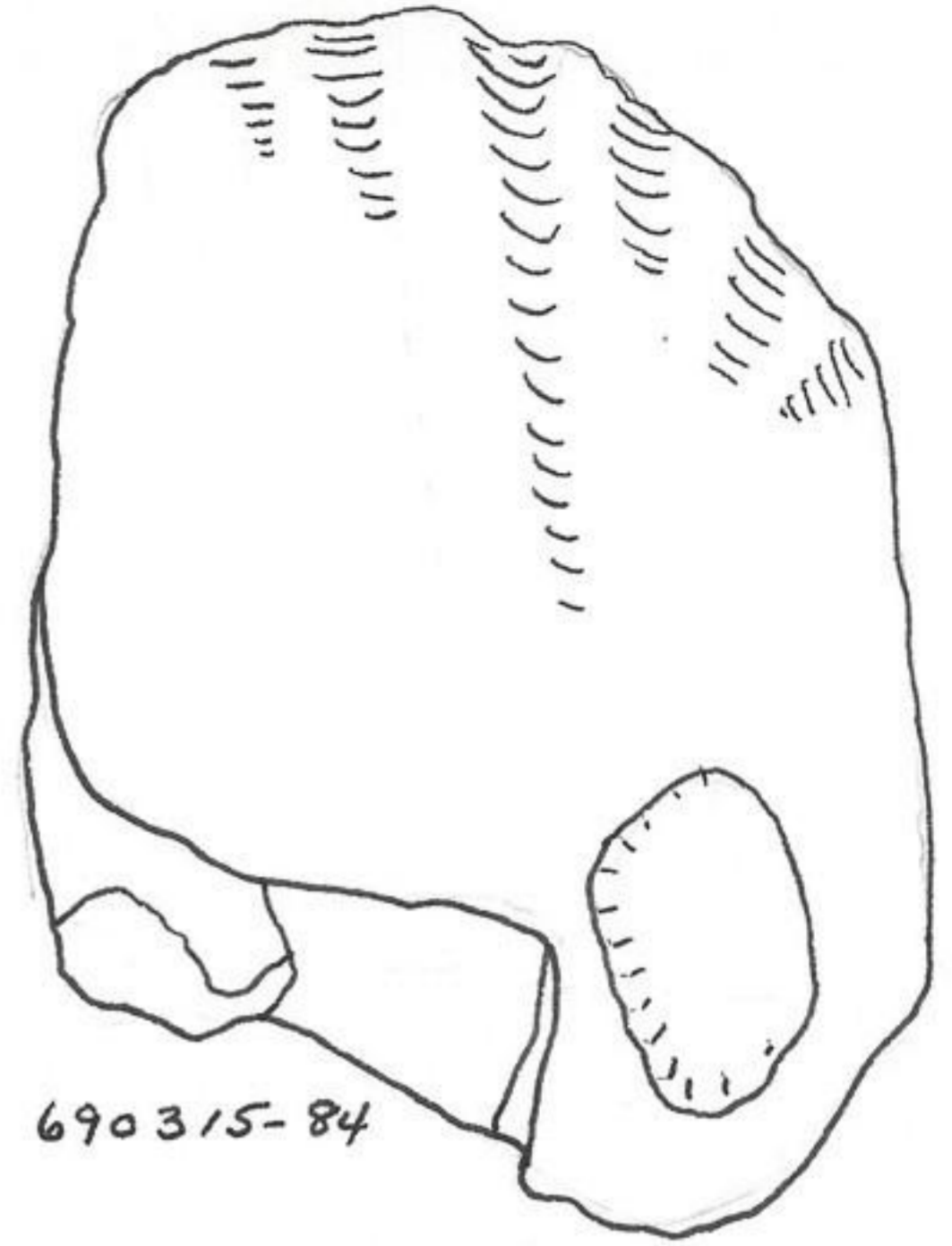
2
716

ALL NAT. SIZE.

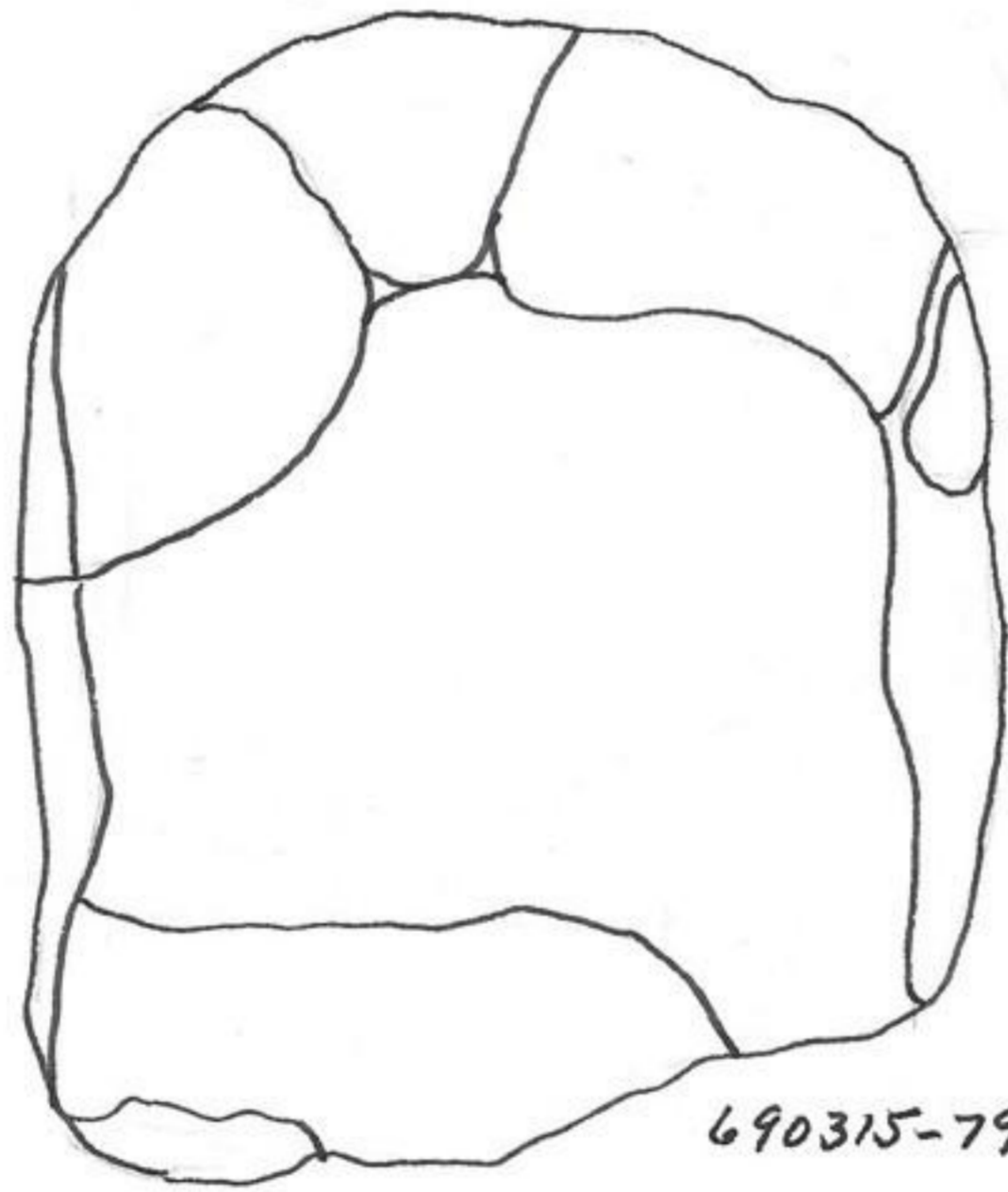
690315-93



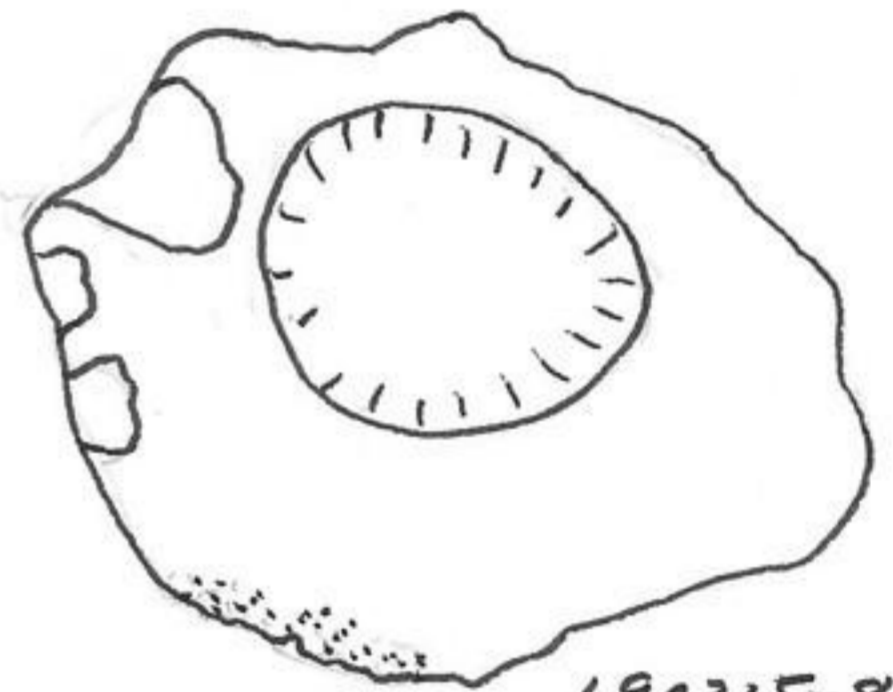
690315-82



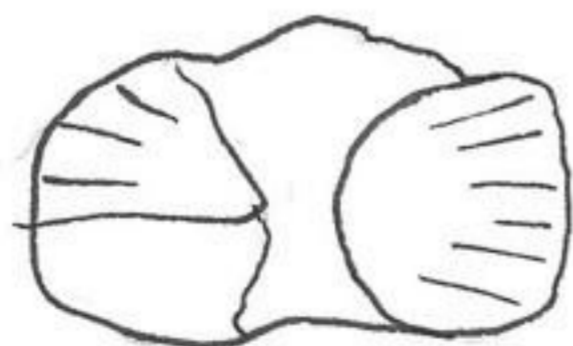
690315-84



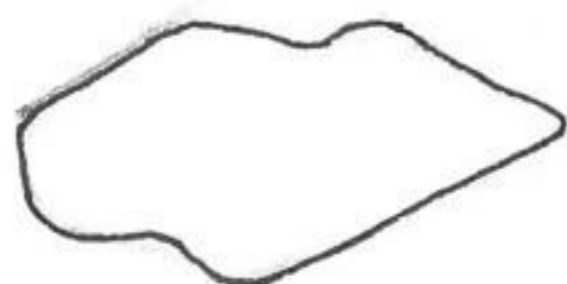
690315-79



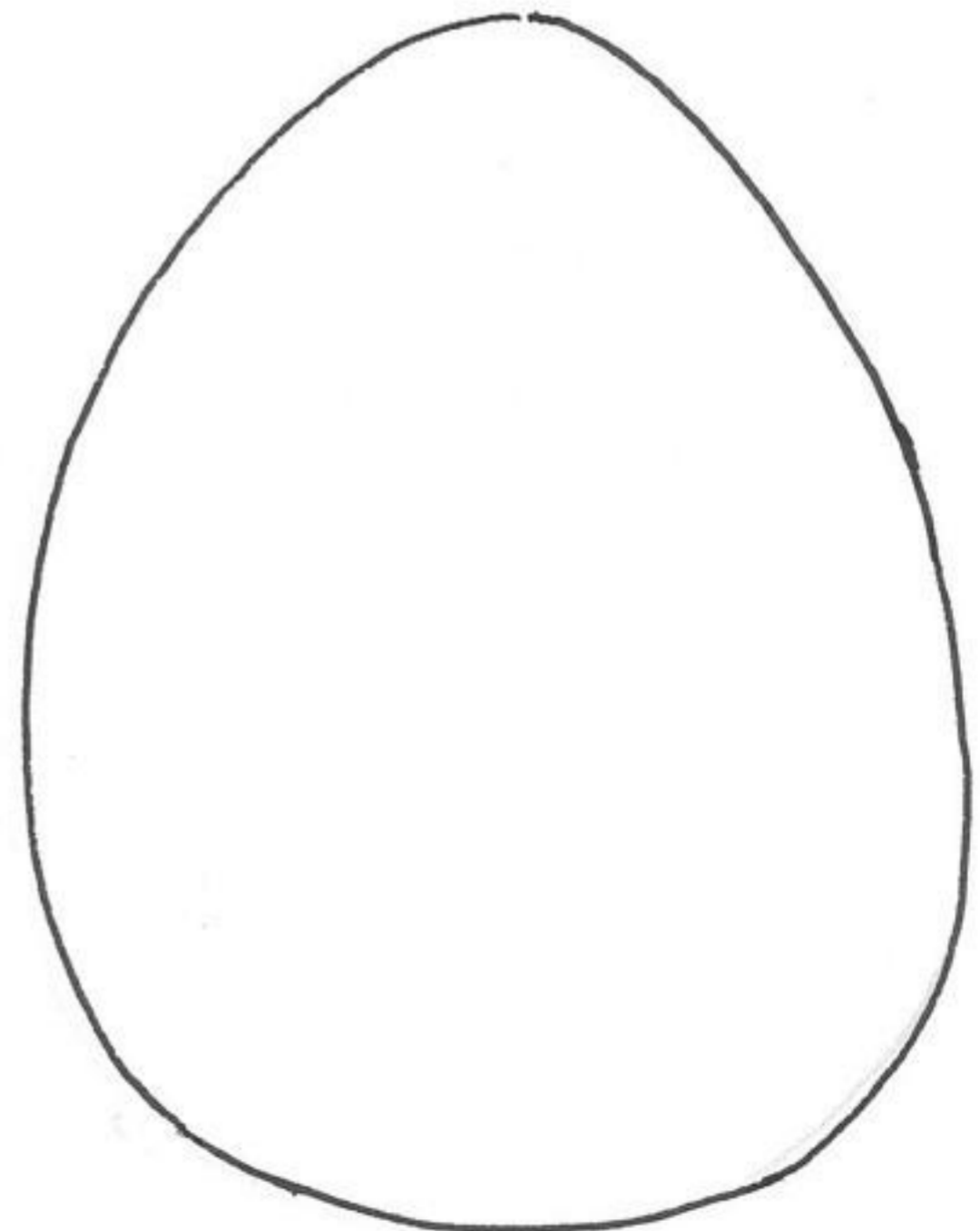
690315-80



690315-81



690315-81



690315-78

Measurements of unionids from sandbar below Indian artifact site, at 2700' N + 1250' W of SE corner Sec. 18, R18E, T9S. (See following page for position).

690315-20	<i>Leptodes laevissima</i>	146 x 98 (excl. wing) mm.
690315-21	" "	144 x 97 (" ") mm. m. only
690315-22	" "	136 x 89 (" ") mm. m. only
690315-23	<i>Lasmigona compluvata</i>	52 x 100 mm
690315-24	<i>Lampsilis radiata relicuoides</i>	115 x 57 mm.
690315-25	" "	130 x 66 " m only
690315-26	" "	127 x 65 " "
690315-27	" "	115 x 60 " "
690315-28	" "	115 x 62 " "
690315-29	" "	114 x 61 " "
690315-30	<i>Ligumia subrastrata</i>	43 x 24 mm. ♀
690315-31	<i>Lampsilis anodontoides</i>	100 x 47 mm
690315-32	" "	105 x 52 " m only
690315-33	" "	85 x 42 " "
690315-34	" "	63 x 29 " "
690315-35	<i>Tritogonia verrucosa</i>	157 x 76 mm.
690315-36	" "	135 x 65 " m only
690315-37	" "	152 x 71 " "
690315-38	" "	138 x 71 " "
690315-39	<i>Crenodonta peruviana</i>	140 x 87 mm
690315-40	" "	58 x 41 " m. only
690315-41	" "	120 x 76 " m. only
690315-42	<i>Fusconia flava</i>	86 x 59 mm. pair
690315-43	" "	65 x 49 " m only
690315-44	<i>Quadrula quadrula</i>	58 x 48 mm pair
690315-45	" "	66 x 55 mm
690315-46	" "	43 x 37 " m. only
690315-47	" "	48 x 39 " "
690315-48	" "	43 x 36 " "
690315-49	" "	40 x 35 " "
690315-50	" "	40 x 33 " "
690315-51	<i>Leptodes fragilis</i>	150 x 91 (ex. wing) mm. pair.
690315-52	<i>Proptera alata</i>	163 x 99
690315-53	" "	137 x 91
690315-54	" "	0 x 102 mm m. only
690315-55	" "	159 x 100 " "
690315-56	" "	160 x 109 " "
690315-57	" "	159 x 96 " "
690315-58	" "	150 x 96 " "
690315-59	" "	160 x 99 " "
690315-60	" "	136 x 96 " "
690315-61	<i>Quadrula quadrula</i>	115 x 87 mm. pair
690315-62	" "	94 x 69 " "
690315-63	" "	115 x 80 mm m. only
690315-64	" "	112 x 81 " "
690315-65	" "	110 x 82 " "
690315-66	" "	99 x 78 " "
690315-67	" "	84 x 68 " "
690315-68	" "	82 x 62 " "
690315-69	" "	70 x 53 " "
690315-70	" "	70 x 53 " "
690315-71	" "	65 x 51 " "
690315-72	" "	64 x 53 " "
690315-73	" "	86 x 64 " "
690315-74	<i>Ligumia r. lotusima</i>	151 x 61 mm
690315-75	" "	139 x 59 mm
690315-76	" "	141 x 63 mm
690315-77	" "	160 x 65 mm m. only

just as we were preparing to leave sandbar (gravel bar) below site, there were 500 geese (300 (60%) blues and 200 (40%) snows) approaching the area from the SW and flying high. They descended in several circles and were definitely preparing to alight in the river valley. 4 of the geese (blues) were definitely being attracted by our presence and were within 30' of the surface before they continued S. The geese appeared to me to be from the south and were preparing to stop for the night. On the gravel bar collected a buffalo cervical vertebra no. 690315-15 and may or not be associated with the artefacts above. Several unionids were collected from the bar including:

- 690315-20
- 690315-21
- 690315-22
- 690315-23
- 690315-24
- 690315-25
- 690315-26
- 690315-27
- 690315-28
- 690315-29
- 690315-30 to 690315-77

See previous page for complete listing.

From this same sand and gravel bar collected the following Indian artefacts, probably moved downstream from their original position upstream near the scraper & axe.

- 690315-78 sand stone, basalt. 85x72
- 690315-79 flint hand instrument, percussion 73x64
- 690315-80 flint hand " " 57x41
- 690315-81 shell head 34x21mm
- 690315-82 hand knife 80x46mm
- 690315-83 tibia sp. ? 288mm long
- 690315-84 fat scraper 85x43

The above items may or may not be artefacts but were associated with the Indian site

Left Indian artefact site at 4:00. 4:21 2 large adult beaver from debris on bank. Chickadee. 4:22 hillside contact. fox squirrel. Small frog (sp.?) jumped into water from 3 inches above. 4:30 redbellied woodpecker. None noticed, especially at above artefact site, that raccoon and coyotes use hard pan directly below water at edge of river, rather than walk on mud on ^{edge of} bank. 4:33 3 chickadees.

Flock 400 geese (240 blues (60%) and 160 (40%) snows flying north. (and 9 Canada geese). 4:45 just beyond bend and gravel bar with buffalo bones identified by long spinal process of vertebrae. 5:03 bridge (now completely raised) Crow. Flock of geese of 160 (to 104 blues (65%) and 56 snows (35%) flying N. One slope of bank are remnant of ice blocks covered with mud. Those exposed are about 10 inches thick and are melting. Those completely melted have formed a crater on the slope with drainage to river at which point a alluvial fan has been formed. These ice masses are more common in the lower Delaware drainage than in the upper drainage, 5:15 hillside

contact and stopping for the evening. Camped on vent-
age point. Sundown at 6:30 P.M. Geese (approx 4000
consisting of approx. 2400 blues (60%) and 1600 snows (40%)
had (at 6:30) already settled for the night in a field
SE of our camp. Between sundown and twilight they
frequently adjusted their position in the general area of
the valley. After twilight they remained quiet until
shortly after daybreak. When these geese changed local
areas they all called at one time and made a loud con-
fusing noise in contrast to the call given by a select-
ive few when in normal flight in migration. Used
wood stove in tent with complete comfort but cold
after fire went out after we retired. The camp will
be designated as Windy Peninsula Point because of
the nature of this main E-W ridge that separated the
meandering Delaware River. Apparently this ridge
was formed by waters of the Delaware at a time during
the Pleistocene when the river level was high enough
to cross between the individual knolls of this ridge.

Windy Peninsula Point, Delaware River, Jefferson Co., Kansas
March 16, 1969

Sun up at 6:55 A.M. Temp at this time 28°F. no wind
last night and skies absolutely clear. Great horned owl
called from tree above tent last night as did coyotes nearby
on three occasions. The same flock of geese were active
at sun-up and flew adjusted their location 5 times, each
time with a loud confusing call offered by all the individ-
uals. The skies were slightly hazy and wind moving
in from the SW. Birds called at camp and included:
meadowlarks, flicker, slate-colored juncos, g.h. owl, chickadee
and, one of the earliest calls a pheasant. Photos 690316-1 to
690316-16 at camp.

690316-1 Annette at camp at staircase Point on Flow-three Peninsula

690316-2 Annette at camp with Delaware Riv. to S. Point bar to right.

690316-3 same area as above.

690316-4 Annette at camp. Temp last night to 28°F.

690316-5 Ibid. wood stove from this side of tent.

690316-6

690316-7 } not recorded

690316-8 }

690316-9 }

Left at 8:55 A.M. and continued down river. 9:03 bend of hairpin curve. 4 meadowlarks on flat to east, 3 cardinals. 9:10 song sparrow. 9:15 great horned owl flew from bank (1/2 way up) and flew down stream to alight on bank (1/2 way up). 9:20 stopped and photographed part of the flock of geese in area where they had stayed last night.

Photo 690316-11 Blue + snow geese. 272 individuals in flock
 690316-12 " " " " individuals in flock
 690316-13 Annette at above area
 690316-14 Point bar to S showing typical angle of this formation. These bars are the most consistent and regular feature of the river banks. Left again at 9:35 At this time approx. 3000 geese left area and flew south (¹⁸⁰⁰60% blues and ¹²⁰⁰40% snows). These geese continued S in usual migration formation. 9:40 lateral drainage to right. Kildeer at edge of river. Beaver left hole at edge of river. 10:04 Flock of 5000 geese consisting of 3000 ^{60%} blues and 2000 ^{40%} snows flew N in usual "V" formation and at about 7000' high. These geese are probably part of the group that left to south at 9:35. Yesterday and this morning group are characterized by unsettled movements and flights in several directions. These movements represent local movements within the Perry Reservoir area. 9:41 a single herring gull flew low over field to E in the area used by the geese of last night. 10:18 new bridge at Ozawie, 10:23 old bridge ^(refused) just south of new bridge. Strong wind from S and SW and white caps 10 inches high. 10:45 hillside contact and good rapids. The bench land of this hillside is one of the major erosional level of the Delaware Valley. 11:10 lunch. ^{and photo 690316-15 and 690316-15a of Annette} Left 11:30. 11:35 granite erratic boulder 4" in length in center of river and first one observed of this size. 11:40 redtail. *Lana pepiens* (approx 3" body length) floating down river in perpendicular position and very torpid as if just emerging from hibernation. 12:05 bridge abutments. 12:40 stop for refreshment. Photo 690316-15 of conae, brush and river bank beyond. Left 1:00 a fly at conae. A spider was frequently observed on rocks at edge of river. At next bend ^{1:30} made several photographs of bend, point bar, eroded sidehill etc.
 690316-16 To SW near contact with hill. Excellent vantage point from ridge point beyond. Wind & waves development beyond to right

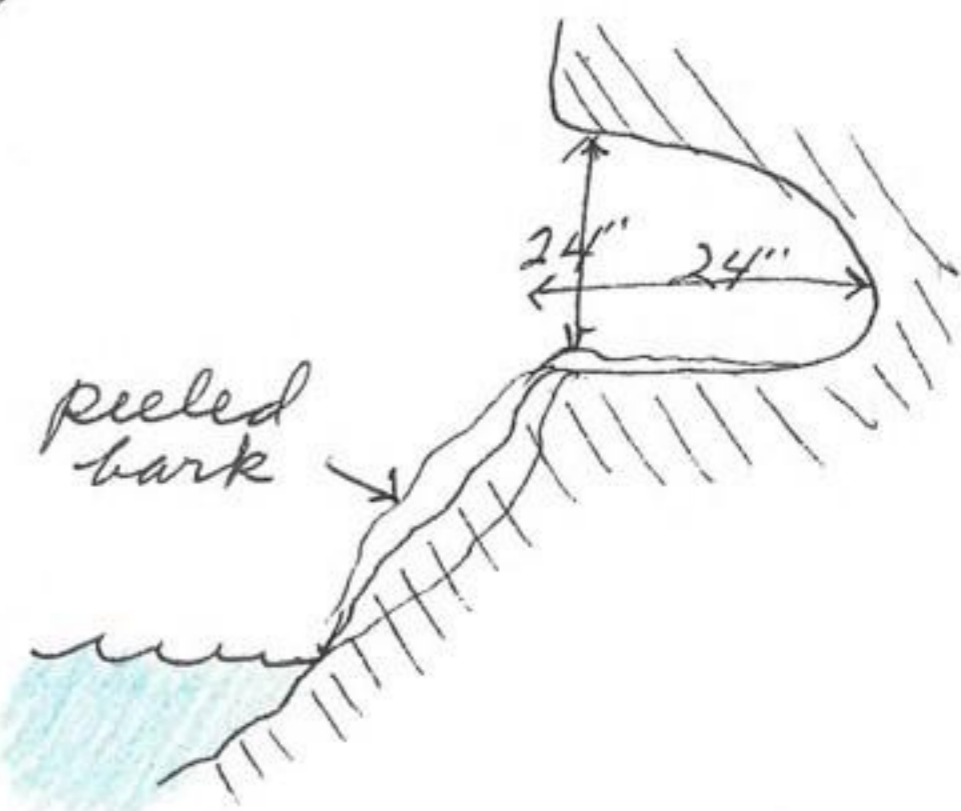
690316-17 same as above

690316-18 From same point but to E. willow good food for beaver to left

690316-19 not recorded.

690316-20 Annette asleep on canoe.

many mud craters on upper slope of concave bend from melted ice masses. 1:40 river narrowest so far and approx 45' wide. On some bends the river is as wide as 250' wide. 1:57 ♂ & ♀ green winged teal flew from edge of bank. 1:58 starting N at bend. 2:03 on east side of this N trending part of curved on a west exposure noted 4 beaver in a concavity 24" x 24" 3 feet above the surface of the water. They left in the following order: last year young (3/4 size adult); large adult; large adult; small blackish young 1/2 length of adult. This group probably represents a family unit with two age groups of young. The larger young will probably be forced to leave family unit. On the last occasion to pass by this concavity (dug by beaver) a single last year subadult was occupying the chamber. Because of its west exposure, this concavity is dry, warm and in a position to receive direct sun rays. This site is of long duration and represents a special structure in the behavior-pattern of beaver. It would be worthy of checking from an observation post on W side of river. 2:30 1000 geese consisting of 100 blues (10%) and 900 snows (90%) flew N at about 100 ft. This is the first flock of this low a blue goose proportion. Rowa (3" long) left bank. Temp 53°F air and 43°F water. 2:50 ♂ & ♀ mallard. Large beaver swam and quietly dove in succession for a length of 2/10 mile down stream. 5:52 bullfrog at edge water (4" long). Have noticed that the black soils in this area are now stratified ~~as if~~ as if successive layers of soil development and then subsequent deposit of sands from flooding (from Faw?). 3:04 beaver. Bullfrog calling. 3:30 Slough Creek. Flock 100 geese of 20 blues (20%) and 80 snows (80%) flying N. 3:45 Perry Reservoir dam. Portaged equipment to top of dam and then navigated canoe thru dam. At outlet on south side we captured thus:



Photos of water turbulence below dam

690317-1 from W embankment showing general view. Apron to left.

690317-2 " " " " " " " " " " " "

Conoe entered turbulence at point $\frac{1}{3}$ up from bottom of picture.

690317-3 ibid

690317-4 ibid

(see page 690317-102)
for proper entry.

1. Contact with white water at high velocity and immediate flooding of conae.

2. Immediate stop of forward movement and abrupt jolt and thrust of conae to left by back wash from right.

3. Another abrupt jolt and shift of conae toward apron. Conae 2 feet under water and we were precariously riding in kneeled position.

Between position 3 and 4 the conae abruptly submerged with last foot contact at 5 feet deep. Temporary submergence of our bodies for a second or two and then re-surfacing at position + where surface waters carried us to right toward wall and thence down stream.

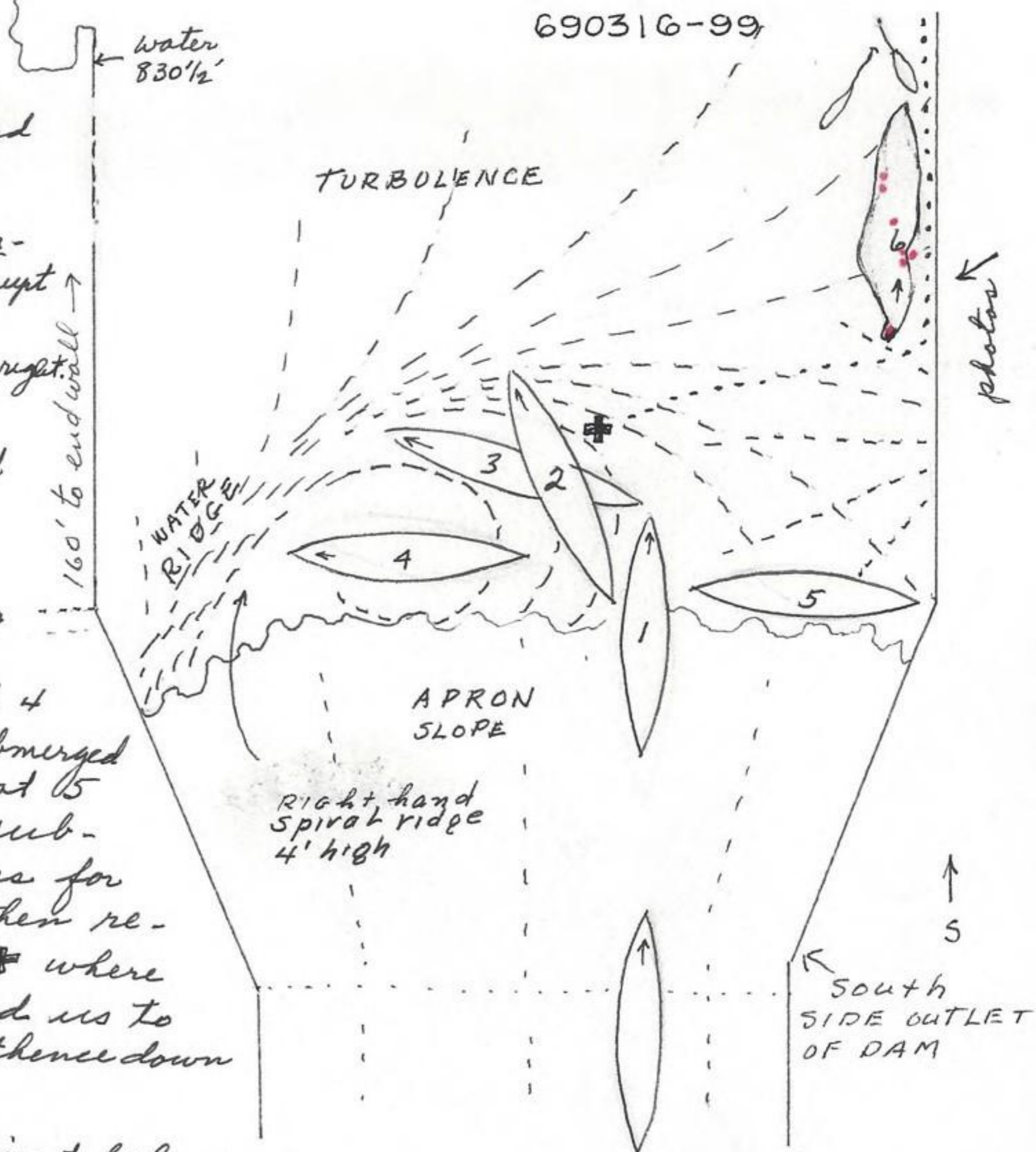
4. Conae circulating first below and then above water in perpendicular toppling, moving slightly to left, then in spiral ridge moved right to position 5.

5. Conae toppling in horizontal position for 10 seconds with considerable conae noise.

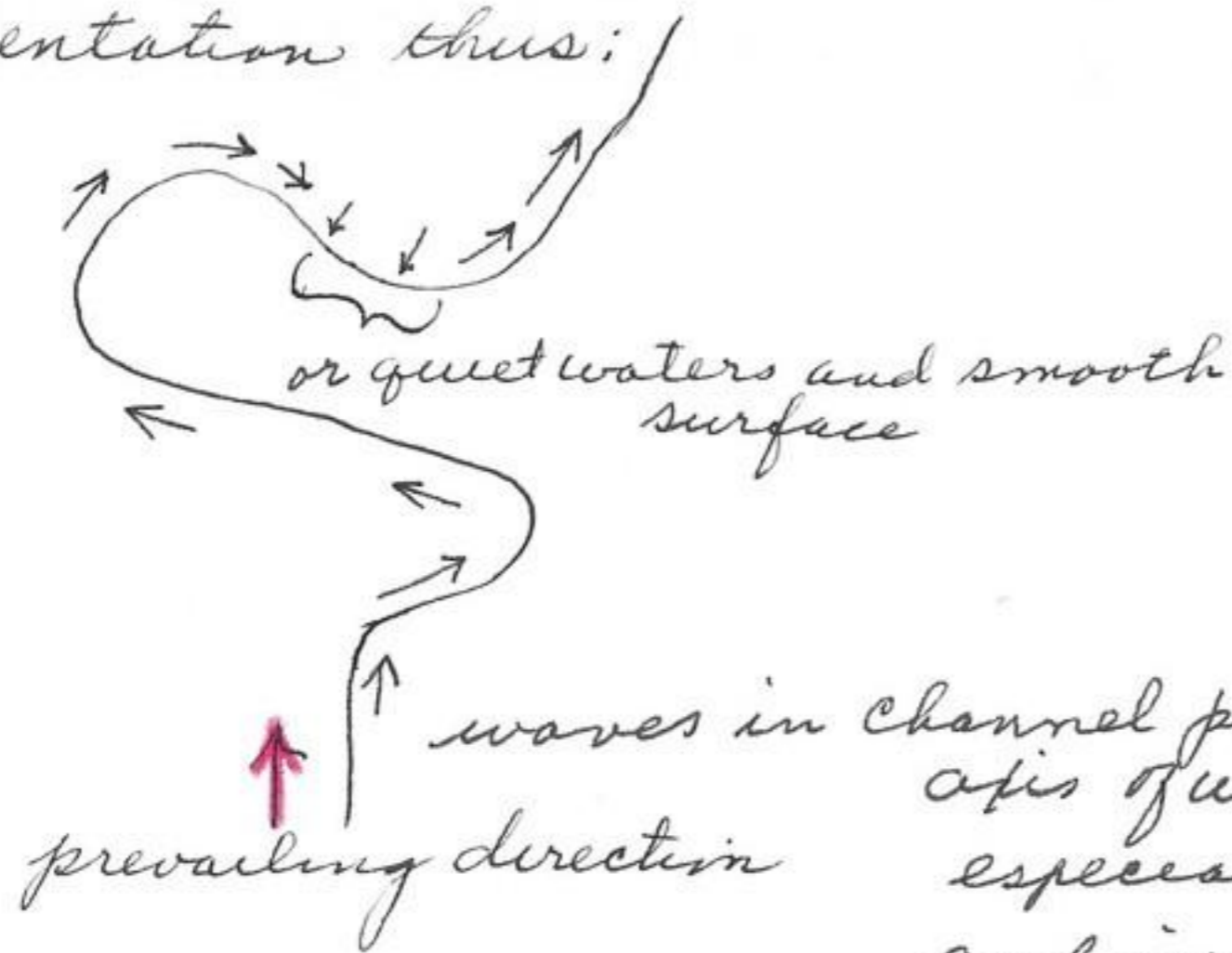
6. Reappearance of conae and paddles preceding.

General observations:

1. speed of apron greater than anticipated
2. abrupt change of velocity at instant conae becomes inundated at first contact with turbulent water. No gliding ^{from entrance speed} movement. Forward movement stops immediately and all control of conae is lost.
3. Shock and abrupt change of conae physically impressive.
4. Great power of undertow underestimated
5. Superficial appearance of water not indicative of subsurface action.
6. Great power in turbulent water.
7. Life preservers are effective in buoyancy and should be official kind. Head protection a necessity.
8. Rapids with consistent forward movement are navigatable and safe.
9. Rapids with counterflow and water moving laterally are non-navigatable with open conae and dangerous.
10. Shift weight forward, not posteriorly in entering turbulence.
11. Have rescue crew standing by with rope and hook ^{and cracked}.
12. Extent of damage to conae: Stern bent to left, right side at first thwart bent 6" and hole torn below in side. Floor (2nd) support broke in several push-in areas and mainly in stern area. 2 holes on left side bow



I have noticed that the wind conforms to channel orientation thus:



Although thousands of geese were observed we did not see geese in the river proper. Mallards utilize river however,

Summary of birds and mammals: (Valley Falls to deforested area S of Valley Falls); (excluding geese), deforested area to dam

black capped chickadee	1-1-2-1-1-1-1-2-	1-3-
Cardinal	1-2-1-1-1-1-3-1-3-2-	
titmouse	2-2-2-1-2-2-2-2-	
mallard	2-2-2-4-35-8-300-	2-
crows	5-2-2-2-5-	1-
great horned owl	1-1-1-	1-
beaver	1-1-1-	2-1-4-1-1-
fox squirrel	1-	1-
redbellied woodpecker	3-1-2-1-	1-
blue jays	3-3-1-	
Harris sparrow	1-	
slate-colored junco	6-8-8-	
kingfisher	2-	
tree sparrows	18-	
white-breasted nuthatch	1-	
redtail hawk	1-	1-1-
frog		1-1-1-1-1-
meadowlark		4-
song sparrow		1-
killdeer		1-
herring gull		1-
green-wing teal		2

High wind all day.

Flock Composition and per cent frequency of geese.

number in flock	no. blues	% of flock	no snaws	% of flock	direction
march 15. (Valley Falls to NE Ozaukee)					
800	560	70	240	30	S
52	20	38	32	63	N
700	210	30	490	70	N
400	80	20	320	80	N
120	36	30	84	70	NE
150	105	70	45	30	N
1000	700	70	300	30	N
200	140	70	60	30	S
200	120	60	80	40	N
300	150	50	150	50	N
350	245	70	105	30	N
250	150	60	100	40	N
100	70	70	30	30	N
700	525	75	175	25	N
400	260	65	140	35	S
250	200	80	50	20	N
350	210	60	140	40	S
200	120	60	80	40	N
500	300	60	200	40	NE SW
400	240	60	160	40	N
160	104	65	56	35	N
4000 (excluded) →	2400	60	1600	40	IN FIELD

(21 flocks in migration (in air) today)
10:30 AM to 5:15 PM

(only 2 flocks in air today)
5:55 AM to 3:45 PM

march 16 (N of Ozaukee to Perry Res. dam)					
3000 (excluded) →	1800	60	1200	40	IN FIELD
5000 (excluded) →	3000	60	2000	40	N (from field)
1000	100	10	900	90	N
100	20	20	80	80	N
<u>8680</u>	<u>4655</u>	av. 55%	<u>3747</u>	av. 45%	20 N 4 S

average 377 per flock (52-1000) average 202 (20-80) per flock (20-700)

average 163 per flock (30-900) (20-90)

Counting those also on ground the average is: 795 (52-5000) which does not reflect the size of flocks that are passing north in migration.

Counting those on ground the average is: 456 (20-2400).

Counting those on ground the average is 328 (30-2000)

20,680 geese total in 26 flocks.

11,865 total in 26 flocks

8817 in 26 flocks

TOTAL SUMMARY
11,865 blues
8,817 snaws
20,682.
numbers in flock by partial count and estimation based on partial count.

Lawrence, Douglas Co., Kansas.

May 17, 1969

James Robert Bee reports geese (blue & or snows) flying north across city at 2:30 A.M. March 15, 1969.

Perry Reservoir, Jefferson Co., Kansas
May 17 (see May 16 for photo of water turbulence below dam) ^{position of}

May 19, 1969 ^{page 690316-98}

A flock of 120 blue geese and 108 snow geese flew north across compass at position of Mus. Nat. Hist at 5:15 P.M.

March 20, 1969

Chipping sparrow calling.

North of Ozawie, Jefferson Co., Kansas.

March 21, 1969

Checked NE peninsula (Flow-Thru Peninsula, named because of flow of water across this peninsula during the Pleistocene and present day wind) N and east of Ozawie and area between here and Perry Reservoir dam. Left Lawrence at 7:55 at mileage 42.4. Sky clear, temp 20°F. Followed route N of Midland and recorded kinds of birds between Lawrence and Ozawie and all redtail hawks. Redtail 1-1-1-1-1. ♂ redwings on nesting territories, starling, Eng. sparrow, crow, cardinal, meadowlark, mourning dove, robin, bluejay, bluebird. Ponds steaming and no evidence of snow in countryside. Ozawie 8:20 A.M. at 56.2. Continued N from Old Ozawie to Flowthru peninsula where I visited campsite of March 15-16. (Staircase Point). Birds in this area are: meadowlarks common in field of grass. One tree on top of knoll supported 18 meadowlark, all singing. Another group moved N across valley on N side peninsula as if major movement. Large deer tracks in mud, also coyote tracks common. Cardinals singing. Slate-colored juncos singing. 29 tree sparrow at fence line at old camp grounds & singing. 12 green-wing teal in Delaware below. Flock goldfinch. Single marsh hawk & ruffed bluejay calling. Titmouse and Carolina wren singing. Flock ♂ redwings flying N. Downy & chickadee together. 2 redheaded woodpeckers flew out into open field N of peninsula as did 6 bluejays ^{and 4 cardinals}. Redwing established on territories. In cut corn field on E side of Delaware River NE of New Ozawie, were approx. 3000 geese consisting of approx 1800 snow & 1200 blue geese (60 + 40%) They moved locally 3 times and in each case made considerable noise,

The following flocks were observed and numbers counted:

8:25 208 of 100 blues + 108 snows. 8:33 flock of 52 of 24 blues + 28 snows. Blue geese led formation at the time observed. 9:00 113 of 73 blues and 40 snows. 9:06 160 of 57 blues and 103 snows. At a point NW of artefact site on ~~west~~ side of Delaware not 4 great blue herons resting on tops of high trees on point. One left one tree and flew to another one in same group. 9:26 flock of 20 blues and 18 snow geese. Left the Flow-three Peninsula at 9:30 at mileage 6:20 at point where valley road joins new road. 6:21 ♂ redwing on territory. Meadowlark singing. 6:24 4 meadowlarks. 6:25 meadowlark, redwing ♂. 6:30 cliffs at mouth of canyon. Cardinal, 8 slate-colored juncos and 2 titmice. 6:36 cardinal, 4 meadowlarks, 4 juncos. 6:40 bluejay, cardinal. 6:43 2 bluebirds, Eng sparrows. Meadowlark. 6:46 main Ozaukee Road and continuing S. 6:47 2 meadowlarks, 4 tree sparrows, 2 meadowlarks. 6:50 2 killdeer 6:55 crossing drainage. no snow in any exposure. 2 song sparrows. 6:58 bluebird and 2 bluejays. 6:63 6 slate-colored juncos, 2 black capped chickadees, 2 cardinal. 6:69 Lakewood turnoff. Redwing ♂, redtail hawk, meadowlark. 6:74 redtail, 4 bluebirds. 6:75 bluejay, 5 redwings, yellow-shafted flicker. 6:76 cardinal. 6:78 ♂ redwing. 6:80 3 meadowlarks. 6:85 drainage. 6:88 3 redtails, one replaced another one sitting on a limb. One of them was a Harlan. From this point surveyed the valley below but did not see a single marsh hawk where in winter there would have been a dozen. The marsh hawks in winter are definitely a winter population. 15 ♂ redwings on territories below. 6:90 2 meadowlarks. 6:96 valley crossroads. 7:00 redtail, redwing ♂, 2 redheaded woodpeckers, 4 cardinals, 8 slate colored juncos, 2 bluejay. There were in same area as observed on several occasions this winter. 7:03 point on hill. redtail. 7:06 redtail. 7:08 cricket frogs calling. 7:18 divide at point at ramp. redtail. 7:21 many cricket frogs to W. 7:22 redtail. 7:27 redtail. 7:29 convergence of roads. 7:32 Slough Creek bridge. Lone snow goose flying around in area immediately N of dam and calling continuously. 2 mallards in area. At a point just N of gates of dam took 2 photographs to show stage of water

690321-1 (operation of gate)

690321-2 same but further N showing channel and debris on side of bank. This material is periodically removed.

73.8 top of dam at east end. A flock of 21 geese, all blue, flew north over the dam at 10:30 A.M. At south side of dam at outlet made ^{four} three photos of water. The apron could be seen and the amount of water was about $\frac{1}{3}$ less than at the time Chris & I conoed thru the dam.

690321-5 turbulence at outlet below apron. N to top. Conoe thru to left.

690321-6 " " " " " "

690321-7 " " " " " " S. at top.

690321-8 Delaware S of dam.

Continued E and in area east of dam noted a marsh hawk, 2 meadowlarks and 1 loggerhead shrike. This shrike made a buzzing sound.

Summary:

Birds in area of Staircase Point on Flow-three Peninsula meadowlark, cardinal, slate-colored junco, tree sparrows, green-winged teal, goldfinch, marsh hawk, redtail, bluejay, titmouse, Carolina wren, redwing, downy woodpecker, black-capped chickadee, snow geese, blue geese, great blue herons.

Birds between Hawthorn Peninsula to Perry dam via valley road.

redwing ♂	1-1-1-5-1-1-15-1-	Eng. sparrow.
meadowlark	1-4-1-4-1-2-2-1-3-2-2	tree sparrow 4-
Cardinal	1-1-1-2-1-1-4-	killdeer 2-
Slate-colored junco	8-4-6-8-	song sparrow 2-
titmouse	2	black-capped chickadee 2
bluejay	1-2-1-2-	redtail hawk 1-1-3-1-1-1-1-1-
bluebird	2-1-4-	yellow-shafted flicker 1-
redheaded woodpecker	2-	cricket frogs
snow goose	1	deer tracks
blue goose	21	mallard 2
marsh hawk	1	loggerhead shrike 1.

Number of geese flying N could not be ascertained as most of the time was in driving and geese can not be heard, in contrast to walking or conoing when they can be easily heard and seen.

Lawrence, Douglas Co., Kansas
March 21, 1969

Approx. 5000 geochles and some redwings flew E across home at 1620 Tennessee Street. This is the group of birds which fly east along S side of mt Oread ridge.

Perry Reservoir, Jefferson Co., Kansas
 March 22, 1969

Annette P. and I made roadside census of Perry Reservoir. Left Lawrence at mileage 509.0. SE end dam road at mileage 27.4 at 10:10 A.M. Continued N to road leading W toward radio tower. 28.3 marsh hawk. 28.8 redwing on territory 4 robm. 29.7 flock of 5 ♂♂ and 5 ♀♀ mallards in pond to left. 30.0 Slough Creek bridge. 30.3 fork of road & now to NW. 2 redtails circling above ridge. 30.9 2 redtails. 31.5 by ramp. 1 crow and 2 keeldeer. 31.9 redtail hunting open valley but near hills. 32.6 crow. 32.9 redtail. 33.7 2 crows, 5 starling, group 14 keeldeer. 34.4 cricket frogs calling. 12 redwing blackbirds on territories in area to be flooded, 3 meadowlarks. 34.5 Harlan hawk flew from point N across to trees beyond ramp, 3 other redtails in area. ~~35.1~~ sharp-shinned hawk flew W across valley. Crow. 35.7 bluebird, meadowlark and 8 slate-colored juncos. 36.0 2 meadowlarks, mourning dove & Eng. sparrows. 36.3 Lakewood Hills entrance. Return 37.4. 39.1 2 lesser scaups and 2 Coot in lake to right. 2 redwings on territories. 39.7 main Ozawiee road and continuing N. 40.5 4 meadowlarks. 40.9 titmouse, 2 bluejays. 41.1 rock cliffs at valley level. 41.6 valley drainage 8 redwing blackbirds. 42.2 new road & now W along Flow-thru Peninsula. Redtail in long tree at edge of valley. Approx. 5000 geese (2000 snow & 3000 blues) feeding and resting in corn field NE Ozawiee on E side Delaware. They were aroused 5 times while we were on peninsula but always returning to general area. 2 redtail. at Staircase Point noted 2 cardinal, 8 juncos and 4 Harris sparrows. Checked at point we disembarked last week and found fresh tracks of raccoon crossing our old tracks. 2 bluewing teal in river below. Flock of geese passed overhead and consisted of 586 blues and 3 snows. The 3 snows were separated by blues in the line formation. Left peninsula at 46.1 at end new road & continued E & then N. at 11:48. 46.6 3 robms. 47.5 great blue heron left bank of pond to right. 47.9 end

of road at bridge out. 2 Song sparrows. 49.0 back
 to main road to E. 2 crows. 50.1 to N. 2 robins and
 Cardinal. 51.2 robin and mourning dove. 51.5
 3 meadowlarks. 51.7 to W. shrike and flicker. 52.1 meadow-
 lark. 52.3 14 robins and another group of 25. These
 birds inhabit short cut green fields. 53.0 2 robins,
 3 meadowlarks. 53.7 60 robins in field and evenly
 distributed for approx 300 ft. 55.9 3 meadowlarks.
 54.3 bridge. 2 woodducks ♀ & ♂ left. Along wood on
 N side noted 3 juncos, 2 crows & cardinal. 54.6
 Cardinal, 3 robins, 2 titmice. 55.1 2 juncos, flock
 41 robins, 200 ♂ redwings in tree. 55.9 mallard ♂,
 4 ♂ and 4 ♀ ring-necked ducks in pond. 2 redwings on
 territory. 56.3 meadowlark. 57.2 R.R tracks and new
 to Valley Falls to N. meadowlark, 1 sparrowhawk &
 2 redtails between RR tracks & Valley Falls. Had lunch
 and returned to Ozawie by main paved road to W
 of reservoir area. Noted 4 redtails in addition to
 other kinds of birds but no complete census made.
 From Ozawie to down fallowed roads W of reservoir,
 many of them impassible in valley & required retracing.
 Mileage at Ozawie 74.2. (now 5 along valley road. 75.1
 meadowlark, 2 redwings ♂. 75.5 redtail hawk (2). 76.3
 bridge out & return to 77.9 & to W. 16 killdeer and redtail.
 Both birds hunting or feeding in burnt over area. 78.3
 5 robins, loggerhead shrike. 80.8 to left. 5 meadowlarks,
 2 robins, 81.1 2 horned larks, 2 robins, meadowlark. 82.3
 meadowlark. 82.9 to E (Helldale). 3 meadowlarks. 83.4
 meadowlark. 83.9 3 crows. 80 robins. 83.2 off
 main road. 85.8 to S. 86.5 Helldale. redtail. 87.1 to S.
 meadowlark. 88.5 flicker, bluebird, meadowlark. 88.7
 to S. 3 meadowlarks, 8 treesparrows. 89.3 12 juncos,
 2 crows in one group, 3 meadowlarks. 90.6 redtail and
 main paved road. 93.8 Lock Creek bridge. There is an
 area W of Helldale that is extensive and supports excellent
 native grass and should be trapped. The route from
 Ozawie has been irregular & not exactly recorded as
 travelled. 98.0 radarlike station. 4 meadowlarks.
 99.4 redtail. meadowlark. 00.5 4 redtails. 01.1
 road to E to Thompsonville. 2 bluebirds. 01.7 30 redwings
 singing in one tree. 02.4 to N up hill on reservoir road.

Across dam and photo 690322-1 from W end of dam
and showing lake of the old Delaware River Channel,
06.0 east end of road at hell and end of complete census.

Today has been characterized by lack of small birds
mainly because of highwind and response to pending
stormy and cool weather which birds are able to sense
from changing atmospheric changes.

Summary: (Reservoir area),

marsh hawk 1-

redwing blackbird 1-12-2-8-200-2-2-30 = 257

robin 4-3-2-1-14-25-2-60-3-41-5-2-2-80 = 244

mallard 10-1 = 11

redtails 2-2-1-1-1 (Harlan's redtail) -3-1-2-2-4-2-1-1-1-1-4 = 29 of which one was
a Harlan

Crow 1-1-2-1-2-2-3-7 = 19

keeldeer 2-14-16 = 32

starling 5

cricket frogs

meadowlarks 3-1-2-4-3-1-3-3-1-1-1-5-1-1-3-1-1-1-3-3-4-1 = 47

sharp-shinned hawk 1-

bluebird 1-1-2 = 4

slate-colored junco 8-8-3-2-12 = 33

mourning doves 1-1 = 2

Eng. sparrow 6

lesser scoup 2

Coat 2-

titmouse 1-2 = 3

bluejays 2

snow geese 2000-3 = 2003

blue geese 3000-286 = 3286

cardinal 2-1-1-1 = 5

Harris' sparrow 4

bluewing teal 2

great blue heron 1-

song sparrow 2-

loggerhead shrike 1-1 = 2

yellow-shafted flicker 1-1 = 2

wooducks 2

ring-necked duck 8-

sparrow hawk 1-

horned larks 2-

tree sparrow 8-

32 species of birds.

6028 numbers (predominately
geese)

These geese do not represent all the geese
in area. As census was made by car
many geese are missed because geese
cannot be heard over the noise of a moving
car. Flocks of geese are almost always
heard before observed.

Lawrence, Douglas Co., Kansas
 March 24, 1968

Rain yesterday afternoon and today which represents first rains of spring season. Angle worm on walks as result of soaking of soils. Elm trees shedding bud capsules today for first time this season. Get Clementi - Sorata in 7 sharp minor. Phoebe (?) called yesterday for first time this season.

On way to K.M. noted 2 starling ^{in contact} in middle of road, ^{one} calling vigorously. One was on cement in prostrate position with wings pointing upward in two directions. A motorist stopped his car and thinking the bird was injured, ^{left car and} approached ^{the 2 birds} and at about 15 feet the two birds left the road and flew up into a nearby tree. The starling being attacked accepted the aggressive action without defense. Between 1620 Tennessee and the football field at end of 17th street W noted 4 cardinal, 1 titmouse, 15 English sparrows, 7 starling, 1 yellow-shafted flicker and 1 robin.

Lawrence, Douglas Co., Kansas
 March 26, 1969

at 7:00 A.M. a flock of geese (snows & blues) flew N over 1620 Tennessee Street. Individual call approx 1 per 2 seconds.

March 28, 1969

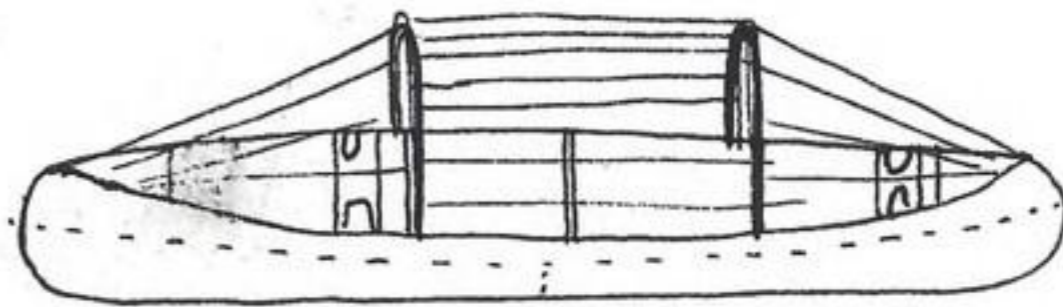
At 11:30 P.M. heard flock of geese (probably snows & blues) flying N at 1620 Tennessee St. They called.

March 29, 1969

Cold wave yesterday & today with occasional snow flurry but no deposit on ground. N wind strong & cold. Tonight temp predicted as 20°F.

Lawrence, Douglas Co., Kansas
 April 2, 1969

Prepared canoe for Delaware River trip tomorrow. Provision was made to adapt canoe for sleeping purposes by forming a support for a plastic canopy. Two curved aluminum bars bent to Ω a covered wagon canvas support and attached to side of canoe at most forward ^{and posterior} gunwale thwarts by viceclamps. The plastic supports were threaded with small rope. A long rope around canoe held plastic against the canoe to keep out insects and drafts. Center thwart remove at night.



Muscotah, Atchison Co., to Valley Falls, Jefferson Co., Delaware River, Kansas

April 3, 1969

Made solitary trip from Muscotah to Valley Falls via Delaware River. Enroute from Lawrence noted 2 sparrow hawks from Lawrence to 5 miles E of Muscotah and 12 between here and Muscotah. 5 redtail. In the general area E of Muscotah there were more birds (robins, bluebirds, shrike, grackles) than between here and Lawrence. Left Muscotah by canoe at 12:30 P.M. Overcast, some sun occasionally. River above usual summer level. Phoebe at bridge (W of town). Titmouse calling. 12:35 cardinal, titmouse. 12:40 cardinal singing. 12:45 fat scraper artefact, ⁶⁹⁰⁴⁰¹ on clay bank near water level. This fat scraper is about 3 inches long and crudely made. No other evidence. 12:50 ♂ & ♀ woodcock left river. Flock 60 redwings ♂. Wind from S. 12:54 drainage left. 2 fox sq. weasels. 1:10 robin singing, 2 black-capped chickadees, 2 bluejays, yellow-shafted flicker. Cricket frogs calling from ponds beyond river. none on bank. 1:15 great horned owl left trees and, in an exceptional move, flew up stream overhead. There is a large nest on E side. Cardinal singing. 1:20 this is the beginning of what appears to be the straightest stretch of the Delaware explored so far. Bluejay, flicker and cardinal singing. There is considerable evidence of beaver on the river with trails, cut limbs, imprints and bank digging. I would estimate ^{beaver} 1 per half mile. Raccoon tracks always present on bank and from 1 to 4 set. Muskrat less common. 1:22 2 bluebirds, downy woodpecker, 2 bluejays. 1:25 drainage left (1 gal. per 5 sec.). This position is on a section line. 1:28 drainage right (5 gal. per sec.) 2 titmouse, black-capped chickadee, red-bellied woodpecker, 3 bluejays, 2 cardinals, 8 slate-colored juncos, phoebe. Bank shows levee or artificial bank of sand above black soil and tree (large) growing on top of bank. 1:35 bend of river and area of flat and circular eroded native rock in stream bed. Photos ⁴690302-2 and ⁴690303-3 of these erosional plates. This formation of erosion does not occur at any other point on Delaware. In area a group of 2 redbellied woodpeckers, 3 bluejays, 4 black-capped chickadees, 2 cardinals. 1:56 robin singing, 2 bluejays, 2 cardinals. 2:00 bend of river. G. B. owl, 2 bluejays, kingfisher. 2:02 drainage left. 1 gal. per 5 sec. Phoebe, 15 slate colored juncos, 2 robins



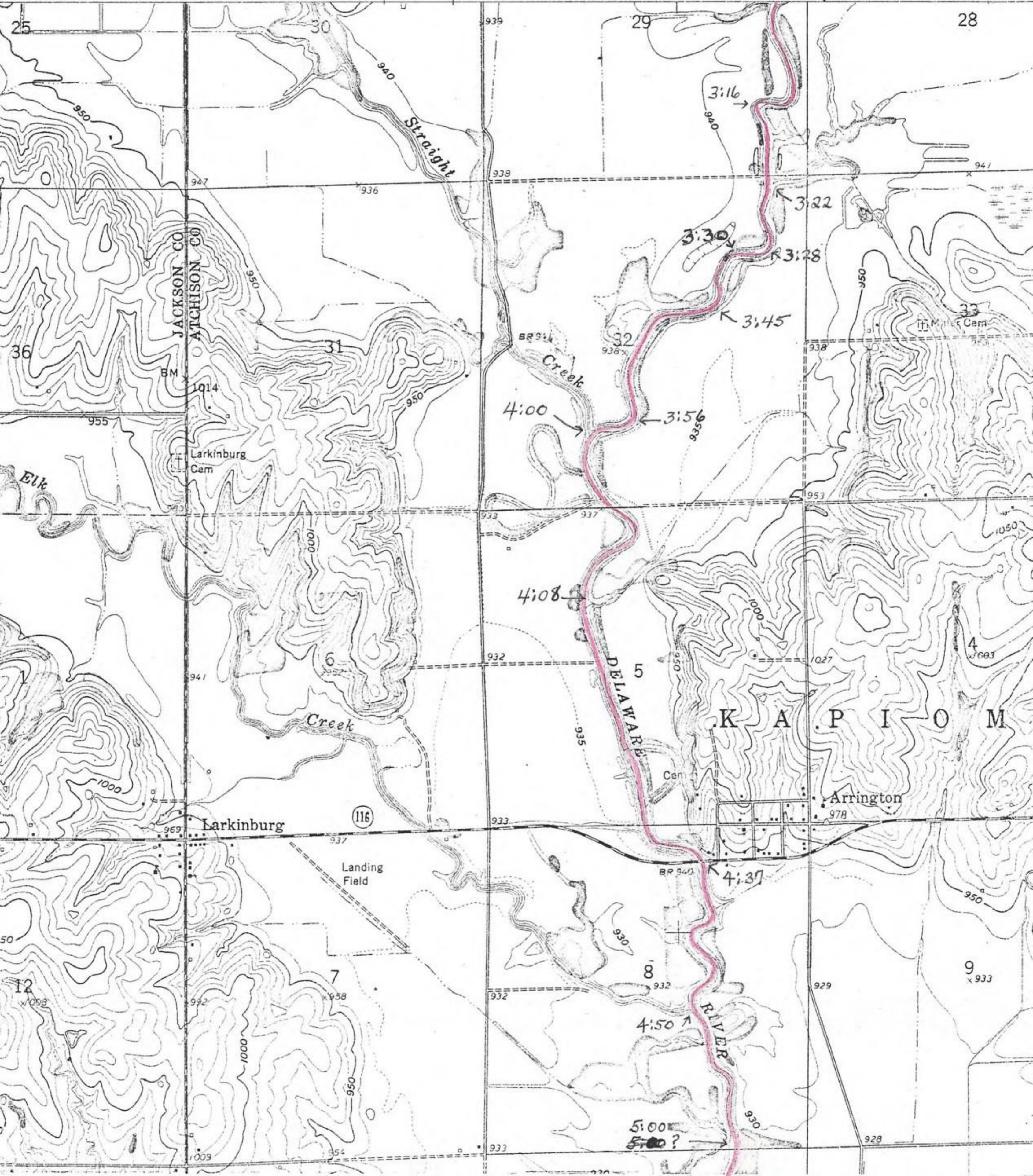
958.
976

690403-111

R. 16 E. R. 17 E. (WHITING)

32'30"

2700 000





690403-12

15
5:00

5:45
5:46

6:01

6:03

6:30

8:00 AM
APRIL 4

APRIL 3
7:00 - CAMP

8:08

Catamount

Creek

ATCHISON CO
JEFFERSON CO

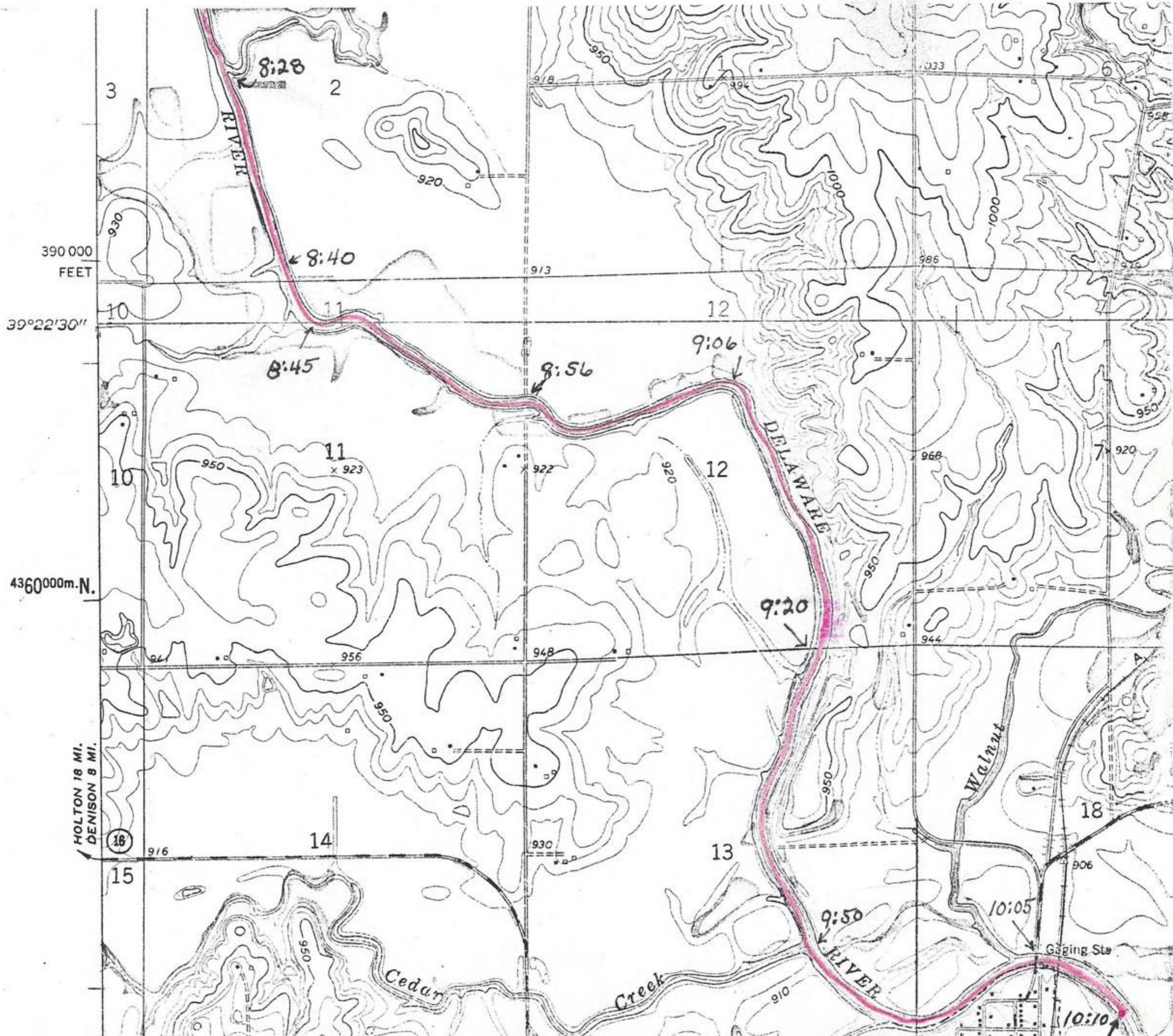
DELAWARE

DELAWARE

RIVER

DELAWARE

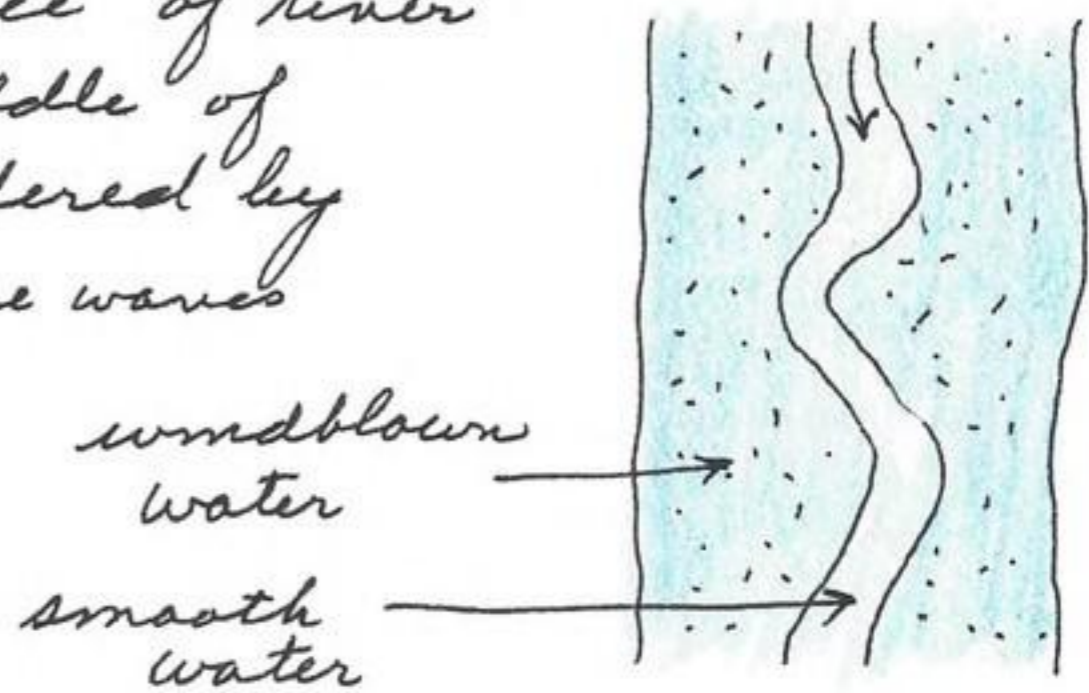
1200
77d



2 cardinals, 4 black-capped Chickadees. 2:05 One wooduck.
 3 chickadees, The previous g. h. owl now returning up river but
 as usual, thru riparian growth or area facing open fields. Card-
 mal. 2:08 bridge. 2 red bellied woodpeckers, one constantly
 chasing the second one from one side of the river to the other. Mourn-
 ing dove, flycatcher?, pheasant calling. 18 tree sparrows, 10
 slate-colored juncos, 4 black-capped Chickadees. 2:15 drainage
 right (1 gal per 3 sec). redbellied woodpecker. 2:20 ♂ ♀ wooduck.
 G. horned owl flew down river and then back again. This behavior-
 ism of ^{adults} returning is associated with ^{new} young birds of the year. Ordinarily
 the owl continues down river for 110 mi or so. bluebird and
 flicker in area. 6 chickadees. 2:25 150 geese flying north
 at about 1000 feet. Approx. 50-50 snows & blues. This area is at
 boundary line. Also in area a flock of 2 cardinals, 2 mourning
 doves, 6 chickadees, 4 juncos and 2 Cardinals. 2:28 drainage from
 both right and left but no flowing water. yellow-shafted flicker and
 6 goldfinch. 2:31 drainage right. 2 cardinal. 2:34 2 redbellied
 woodpeckers and 3 bluebirds. 2:35 drainage left but no water.
 Beaver have made broad thoroughfare up the drainage. Drainages
 not graded to river are frequently used as passage-ways to up levels
 and beyond edge of river as if used as protection ~~when~~ ^{avenue}
 when feeding beyond confines of riverbank. Air temp 58,
 water 48. 2:47 bridge, 2 cardinals. 2:50 drainage
 left. On right side of river across from drainage found a
 segment (1/4) of a metate ⁶⁹⁰⁴⁰³⁻⁵ which originally was about 1' x 10" x 6".
 There were other rocks associated with this artefact and may
 have represented a campsite. 3:04 river crossing end of map. (U.S.E.S
 topo). mourning dove. 3:09 great horned owl 3:16 at end of NW
 trending hair-pin loop of river. Redtail and flicker here. 3:22
 drainage left (1 gal per 2 sec) Good forested area. Cardinal,
 downy woodpecker, 2 red-bellied woodpeckers. 3:25 2 cardinals,
 titmouse. 3:28 bend. great blue heron left bank. There have
 been a few tracks of this bird along river, especially in this area.
 2 cardinals. Photo ^{and 690403-6} 690403-6 of bend ^{3:30} with lonsae along right
 side. Gravel bar from log in river on left side. There is
 an extensive wooded area to left. Mud slippage showing on right
 side. Left this area 3:40. 3:45 great horned owl, 8 juncos,
 fox squirrel, 2 redbellied woodpeckers, 2 song sparrows. There is
 frequently a relationship between g. h. owls and small birds.
 3:52 6 bluejays together. Large beaver left debris 1 foot above
 level of river. These mammals can be encouraged, or forced

from their shelters, especially if the shelters are shallow or temporary, by hitting the water with the broad side of a canoe paddle held at a low angle. There is generally a 4-6 minute delay in the appearance of the beaver. If the shelter is at water level the entrance into the water is graceful, if higher, considerable splashing is produced. On longer land approaches to the water, the tail is used to bounce the mammal down the incline. 2 pairs wooducks left water from a point 4 feet from the entrance of the beaver shelter but the beaver did not leave until the canoe paddle was employed to alarm the beaver. 3:56 60 robins generally distributed in a forested area along side of river. 6 chickadees. A large outstanding elm tree is high on bank to right. 4:00 Straight Creek. Water flowing about ~~the~~ ^{the} 1/8 size of Delaware. 2 song sparrows. 4:05 Old bridge site. 2 fox squirrels, 10 robins, 2 cardinals, 8 juncos, redtail, 2 crows, 3 chickadees. 4:08 2 turkey vulture surveying riparian growth along side of river. Bobwhite calling, 10 robins, 2 cardinals. Now on straight section of river leading into Arrington. There is a noticeable number of trees on lower slopes of the river bank and the channel narrows. This is the usual relationship of straight stretches, narrow channel and trees growing (mostly damaged by flood water debris) to edge of river proper. 2 fox squirrels, 2 red bellied-woodpeckers. 4:18 2 cardinals, 3 chickadees, 60 red-wings ³⁸ in one flock. 4:25 mourning dove, crow, 3 cardinals, 2 black-capped chickadees. Muskrat swam across river, then returned and made splash in water like beaver. A redtail hawk was attracted to this muskrat and flew as close as 20 feet then returned to its tree perch 150' beyond. 4:30 Titmouse, junco singing. 2 trees (1' in diameter) cut by beaver. 4:36 2 cardinals. 4:37 Arrington bridge ^(approx 7 1/2 miles from muskrat). 8 robin and 2 cardinals at bridge. 4:39 6 robins, titmouse, 6 bluejay. The river S of Arrington for at least 2 miles is an interesting area and good for photographing. 4:45 redtail and 18 turkey vultures. The vultures were circling above trees and moving to S. 2 cardinals, 3 robins, great horned owl. 4:48 turkey vultures still in same group. Carolina wren singing, 3 crows, 2 cardinals. 4:50 drainage to right. 20' wide and 2-3' deep. 4:55 fox squirrel, 2 redbellied woodpeckers, 2 cardinals. 4:56 2 redbellied woodpeckers. 4:58 2 redbellied woodpeckers, 2 blue jays, fox squirrel. 5:00 old bridge and

drainage to right. 2 fox squirrels on mud and concerned with the tips of stems protruding from mud. They were unusually Confiding. 2 bluebirds, 2 Cardinals 5:15 bridge. Old bridge just below. Mourning dove, 2 Cardinals. 5:20 great horned owl and 7 crows harassing it. The owl flew down river and was followed for $\frac{2}{10}$ mile. It then returned via an open field and riparian growth. 2 bluejays participated in the harassing at one point. When owls are being harassed they can be following by ~~their~~ ^{the} call of crows. Temp. 64°F. flicker. Wind from S and making navigation difficult. Sky hazy and clouds wind blown. 5:35 first *Rana pipiens* along bank (3 inches) Cricket frogs common in ponds beyond, but are not along banks of river although usually they are present. Titmouse, cardinal, 2 song sparrows. Injured male mallard swam down river and when approached flew but just able to clear water by a few inches because of an injured wing. 5:40 3 greenwing teal around nest bend from mallard. Titmouse, Cardinal, Cooper hawk. Surface of river showing a meander effect in middle of river as a smooth surface bordered by rough or windblown water; some waves as high as 10". This condition extended down river for approx. 200'. 5:45 drainage left. 3 chickadees, titmouse calling. 5:46 caught up with mallard duck. It swam down stream for $\frac{1}{10}$ mile, then climbed up bank for 4 feet and then flew down stream. Gaining elevation assisted the mallard in takeoff but the injured wing kept bird from leaving river channel proper. Wing tips hit water on each wing beat. 5:50 great horned owl left from bank of river ($\frac{3}{4}$ up) and flew down river into middle section of a large tree. 5:53 marsh hawk, 2 Cardinals. 6:00 bobwhite, 2 Cardinals, titmouse, carolina wren, 6:00 drainage left. Redheaded woodpecker, 2 redbellied woodpeckers. 6:03 Crossing county line. 6:05 drainage right (legal per sec.) 6:08 fox squirrel on mud just above water level and feeding on tops of stems (dead?) protruding approx 3 inches out of the mud. It may be that salt is accumulating at the top of these stems from ^{fluid} movement to the tip and evaporation thus leaving salts at tip. As was the case with the last 2 squirrels, this one was confiding and allowed



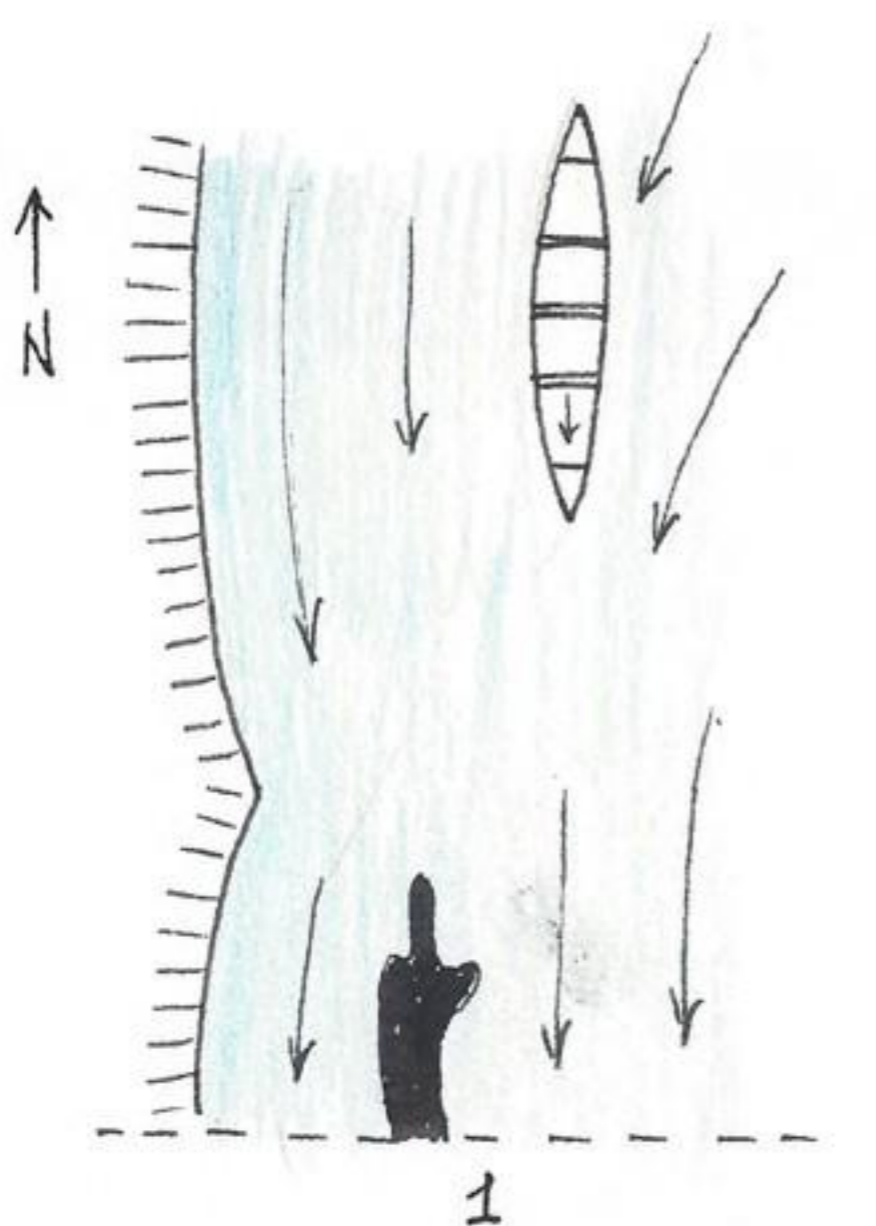
me to pass within 10'. 2 cardinals, Carolina wren calling. Phoebe. Injured mallard left water for down stream. It will swim ahead until approached within approx 100'. 2 redbellied woodpeckers, 6 crows. 6:10 great horned owl left, followed by the 6 crows above. Redbellied woodpecker, cardinal, 2 robins. 6:18 drainage left (1 gal per 2 seconds). Song sparrow, 2 cardinals, 2 redbellied woodpeckers, muskrat, 2 beavers left from debris on edge of water (both large adults), 16 slate colored juncos, 32 redwing blackbirds, 2 blue jays. 6:25 injured mallard left water for down stream. A great horned owl foraging. 2 redbellied woodpeckers. 6:30 Arrived Half Mound bridge (approx. 4 1/2 miles from Arrington.) 6 robins, Eng. sparrows (5), 4 chickadees, flicker, 3 cardinals, 3 crows, Redtail. 6:40 great horned owl, 6:42 18 ♂ redwing blackbirds. 3 crows. 6:45 Cardinal. 6:48 3 bluejay, 2 cardinals. 6:52⁽²⁾ redbellied woodpeckers, 8 slate colored juncos. 6:56 2 cardinals. 7:00 Arrived Camp at approx. 1 1/10 mi ^{directly} S of Half mound. at a point 890 ft S of the NW corner of sec 2, T8S, R17E. Pulled canoe up to top of bank and organized for the night. Used half sphere rings on canoe for support of plastic. This arrangement is perfect for camping - stable, easily installed, rain proof, good visibility thru plastic for both observation and in letting in light. Wood stove on outside of canoe provided heat for canoe tent. In late evening before rain noted a great horned owl foraging on S side of river.

Delaware River, 1 1/10 mi. S Half mound, Jefferson Co., Kansas

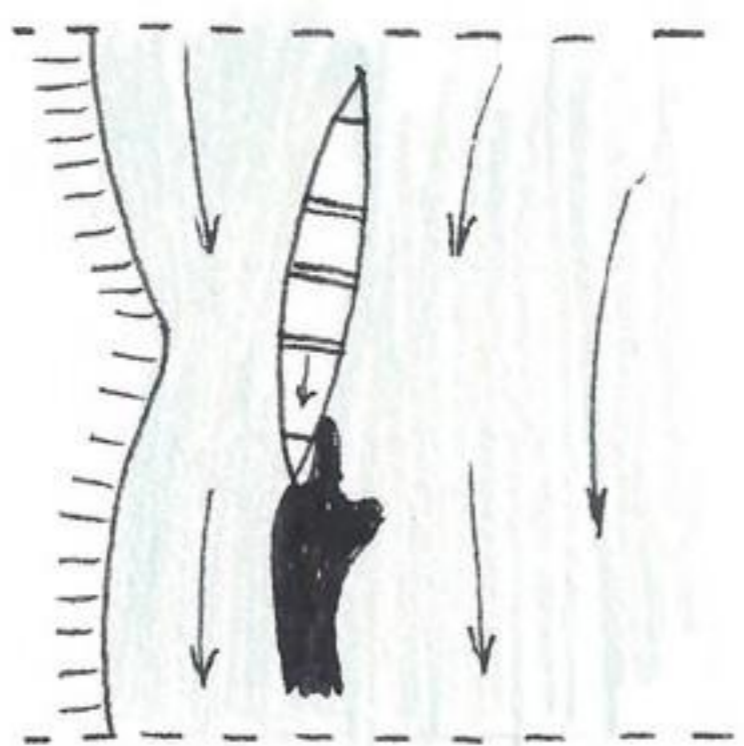
April 24, 1969

Rained sporadically all night with dark clouds and cloud fronts passing thru area. Camp shelter accommodation as near perfect as any tent used. At 3:00 A.M. a flock of geese (probably blue & snows) flew N and called. At 6:00 A.M. a flock of 320 flew N. They were in long V formations and flying fast. I would estimate the composition was 60% blue and 40% snow. Photos 690404-1 and 690404-2 of canoe and shelter. Left camp at 8:00 A.M. Cardinal first to call this A.M. Other birds at camp were, chickadees 6, redtail 1, great horned owl 1, 2 redbellied woodpeckers and 1 titmouse. Was surprised that with all of the rain last night, the river rose only about 1 inch. 8:08 bend with shale outcropping. There is a zone of rocks directly above this shale and silt and sands above this layer. Some rather interesting nodules of hard shale are in clay below the shale. Water from

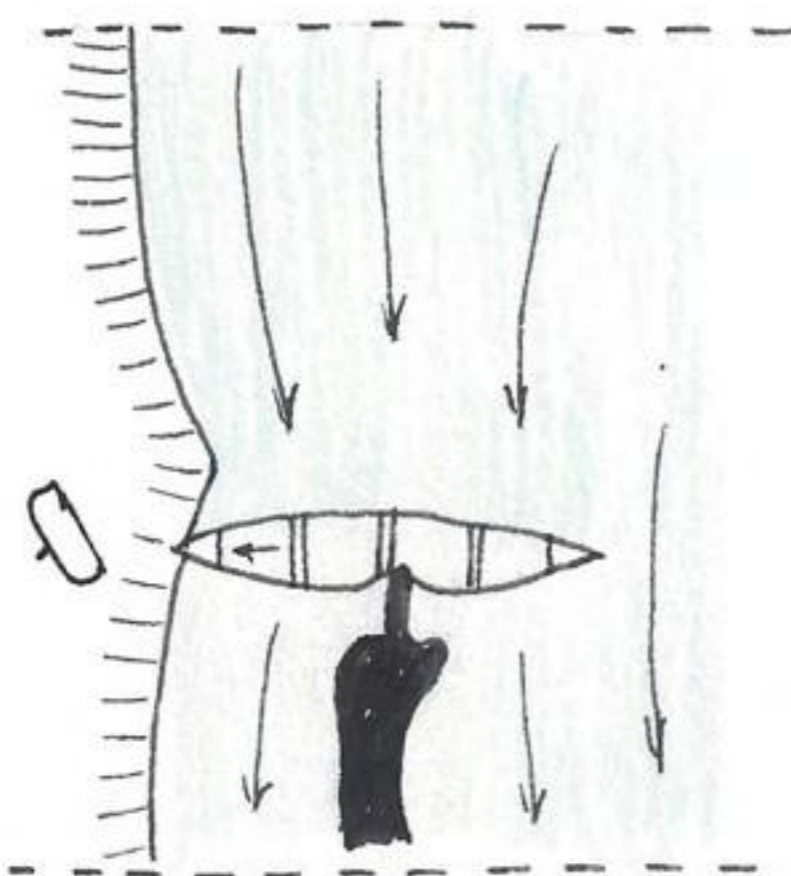
shale and directly above, mainly from rains of last night. This same level supported ice and icicles earlier this season. Cardinal and 3 crows here. 8:10 noted a small snake 10 inches in length at 4 inches above the water level. It was torpid and barely able to move up slope because of temperature. air 58, water 51°F. This snake was not *Thamnophis* but probably *Natrix*. 8:28 drainage left about 8' wide and water 2' deep and flowing. Chickadee 3, 2 crows, cardinal. 8:37 great horned owl, 3 cardinals, 4 crows chasing the owl. 8:40 drainage right. 1 titmouse, 4 chickadees, 1 cardinal. 8:45 opis of bend (just off lower edge of map). 4 cardinals, 2 vultures, 3 crows. 8:53 6 cardinals. The wounded mallard of yesterday, left water down-stream. robin, mourning dove. Flock 80 redwing blackbirds mainly ♂♂. 8:56 old bridge (raised). redtail, great horned owl, 5 cardinals, 3 chickadees. 9:00 bedrock and good rapids. 9:03 2 large adult beavers left debris 2 feet above level of water. 4 bluejays, 5 cardinals. 9:06 at bend just above no 12 of USGS map. ^{injured} mallard left water. Flock 9 grackles and 4 redwing blackbirds, 4 cardinals, 3 chickadees, 2 redbellied woodpeckers. 9:12 4 redbellied woodpeckers, 3 cardinals, Carolina wren, 2 song sparrows. Clouds obscuring sun and becoming very dark. 9:20 3 cardinals, 2 bluejays, 1 turkey vulture. 9:20 good rapids and good area for unionids (best so far) at section line intersection with river. 2 song sparrows. 9:22 Cardinal, 2 mourning doves, song sparrow. 9:50 Cedar Creek, ^{injured mallard} On last ^(9 miles from first contact) straight stretch counted 4 song sparrows (2 groups 2 each), 4 pairs redbellied woodpeckers, 9 chickadees (3-6), 15 single cardinals, 2 redtails together, 1 great horned owl. For last 15 minutes it has been raining but now temporarily stopped. 10:05 Valley Falls bridge, having covered approx 5 miles from Camp and 7 1/2 miles from Half Mounds ^{old + new} or 20 1/2 miles from Muscatash. Continues down stream under ^{+ faster} railroad bridge. Water in river thru this area seemed higher than usual and not much of a choice of slower water. I could see that the left hand side of river was running too fast with turbulence and fast water against the bank, so chose to run the right or west side. Here the water was fast but there were no particular turbulent ^{waters} or major barriers. 10:10 After committing myself to a particular course starting down the 2/10 mile long rapids. The following diagrams indicate the details of swamping the course on this run, a swamping that occurred within 5 seconds.



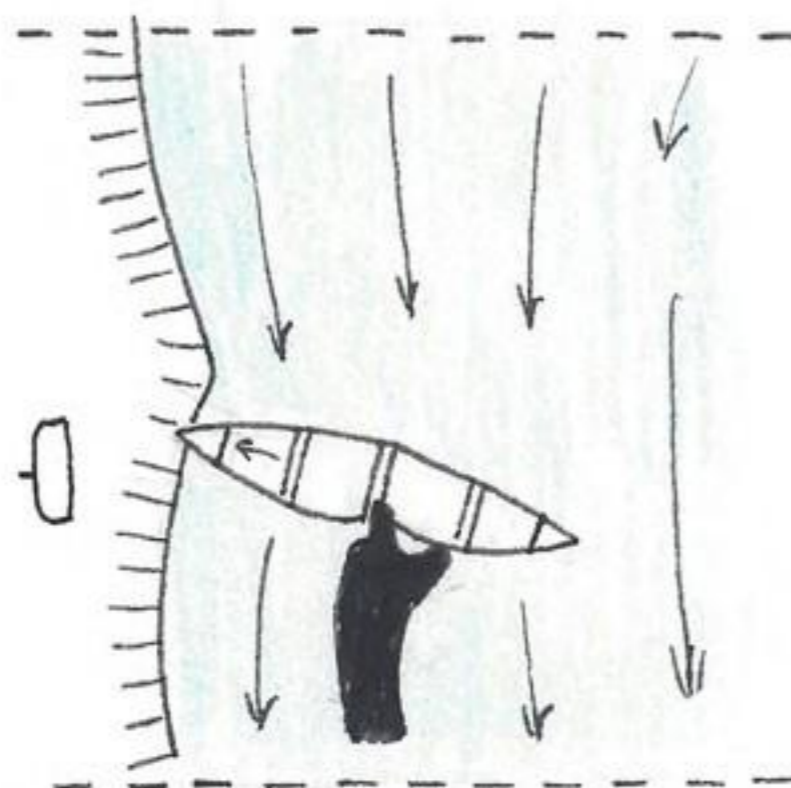
1



2.



3.



4.

1. Committed to course east of elapsed log (black) to avoid another obstacle beyond. Current from east forced canoe to drift toward log.

2. Unable to counteract flow of water from east, and ^{the} bow of canoe struck west side of log. Canoe pivoted abruptly and sharply to west.

3. As soon as canoe turned 90° to flow of current and became anchored to the log and bank, the fast moving water immediately piled up over ^{side} and inundated the canoe.

4. Cutting the log barrier twice, ^{with a pe} only lowered the canoe to a horizontal position, pinning it even more securely to the log. At this point it was impossible to move the canoe because of hundreds of pounds of water pressure! The river (in the following 4 hours) raised 5 feet and covered the canoe and the tree barrier by approx. the same amount. With continued water action against the submerged canoe and barrier, the log was finally displaced and the canoe came to the surface and was taken from the water, first, and unsuccessfully by removal of water with a bucket while canoe was in water and finally, with help, by pulling canoe up steep bank and removing water from lower end of canoe at water level.

Observations associated with inundation.

1. Fast moving water has a tremendous power and pressure on immovable objects. When the velocity of a gentle flowing stream increases ~~to~~ is doubled it increases the carrying capacity 4 times. The power of flowing water is deceptive and has more force back of it than one

realizes. Water will back up and overflow into canoe if the canoe is obstructed, especially if 90° to current. A canoeist should not commit himself to a run unless the entire course is unobstructed, water free moving and without turbulence.

2. With rising water watch out for large floating trees and bank slippage.

3. Plastic tarps and tents should be stored in bags, otherwise the current pushing into the canoe will balloon the tarp either inside the canoe or over the top or beneath the canoe and create reservoirs for water which will create many-fold the amount of pressure on the canoe. Under conditions of fast moving water into canoe, it is almost impossible to salvage the tarp or tent. Tarps covering equipment also will form pockets of water and thus making removal of equipment almost impossible.

4. Secure all equipment and in a manner that the release point is at contact with equipment rather than on canoe, at which point ^(contact with canoe) could be under several feet of fast flowing water. The securing mechanism should be of the clip or snap-on type - not a knot tied to the canoe. Untying a knot under muddy water is by touch sensation only.

5. Critical equipment should be most accessible, especially items of survival value (knife, axe, etc) and, of course, a camera or expensive item.

6. Carry a long rope (30') to guide, retrieve or anchor canoe to bank when canoe is some distance from bank.

7. Tie extra paddle to canoe but, ^{canoe} easily removable. Equip. escaping canoe in rough water (rising river) is impractical to reclaim.

8. Strap cushions to seat - these go first in a capsizing or swamping.

9. Books are the most difficult to dry of all equipment and to that extent should be water-proofed with plastic bag.

10. Carry a hydraulic wrench to dislodge canoe.

From 10:10 to 3:30 P.M. portaged equipment to Valley Falls and at 3:45 canoe reappeared on surface and with the help of Annette and the Constable of Valley Falls reclaimed the canoe and portaged it to the bridge at Valley Falls. During this period of time the water in the Delaware rose approx 5 feet. Just shortly after the inundation of the canoe, large trees started to float

Following photos of inundated canoe:

690404-3 Canoe swamped and in original position with limb (root) of tree holding canoe against current and deflecting canoe toward current of water. It was necessary to remove some equipment before I could get at camera, which was the only item properly waterproofed. Working against the force of the current handicapped removal of equip.

690404-4 root cut with axe which allowed the canoe to settle and become even more securely anchored to barner. Note water spilling over canoe.

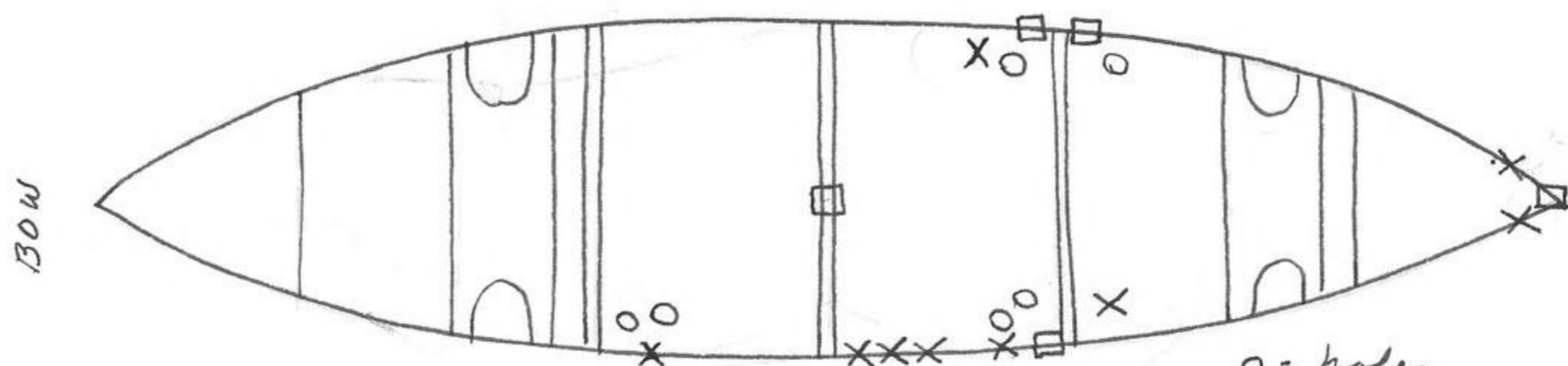
690404-5 same as above. It was impossible to move canoe even a fraction of an inch. Shortly after the flooding river covered canoe and 5 hours later was 5 feet above canoe at which time the log became dislodged and released the canoe. Gear drying on bank.

690404-6 near canoe and river to E

690404-7 " " " " " " showing some turbulence at about same time as period of inundation of canoe.

690404-8 East bank river.

down the river. These large trees were followed by smaller trees, logs and miscellaneous debris. At about noon, the water was too high and rough for navigation by canoe and with logs in river it would have been inadvisable to run the Delaware, particularly in the stretch of river between the N side of Valley Falls to the bridge on the east side of the city. There would have been other similar stretches of river between Valley Falls and the Perry dam that would also be unsafe to navigate. For travelling of rivers that flood, it is always advisable to plan the schedule so that one could stop for 1 to 3 days if necessary to permit flood river to subside to the conditions that is safe for travel.



Summation of canoe casualties to date

It is interesting to note that most of the serious abuse to canoe is toward the stern end of canoe, the bow area being relatively free of major damage. The above marks are the major damages, with a bend, for instance, representing a foot or more displacement from the usual alignment.

○ = hole
X = bend
□ = break

Lawrence, Douglas Co., Kansas

April 5, 1969

made census of birds from 1620 Tenn. to football practice field W on 17th street.

grackles 1-1-1-1-1-1-2-1=9

blue jays 2

Eng. sparrow 1-1-1-1-1-2-1-1-1-1-1-1-1-1-2-1-1-1=21

starling 1-3-1-1-3-1-2-1-1-1-1=16

black capped chickadee 1-1-1=3

titmouse 1.

robin 2-1-2-1-1-1-1-1-1-1=12

Perry Reservoir, Jefferson Co., Kansas

April 6, 1969

From dam, W side, noted 79 Franklin gulls flying over water. Photo 690406-1 of Perry Res. from gates at dam. Compare with 690322-1

Wakarusa River, Clinton to Highway 59, Douglas Co., Kansas.

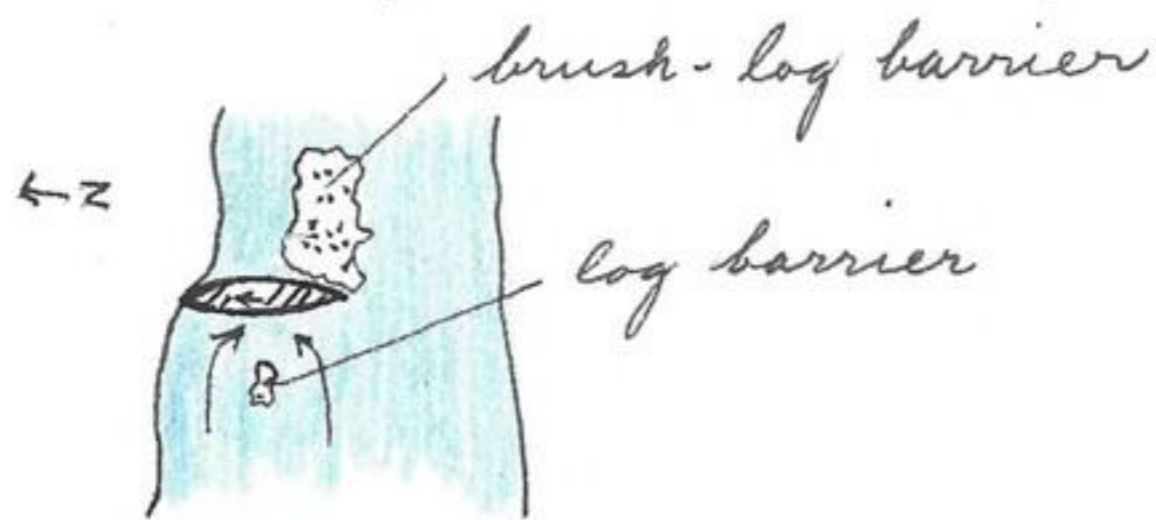
April 11, 1969

As river consultant for mariner Troop 660, camped with troop at N side of raised bridge bordering the river. Annette C in charge for the overnight camp and float down the Wakarusa the following day. Two groups of barred owls active during nite, one on island at camp and 1 near Rattlesnake Point to the N across valley.

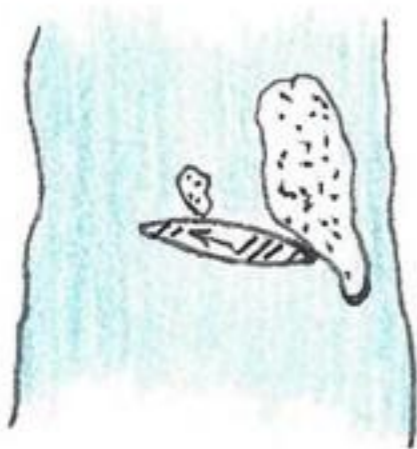
April 12, 1969

Departed camp at 9:15 A.M. Six canoes and 16 mariners made trip from camp to highway 59. Stopped 12:00 for 1 hour for lunch. Arrived highway 59 at 2:00 P.M. Total mileage 12 miles +. Distances between bridges $4\frac{1}{2}$ - $2\frac{1}{2}$ - $2\frac{1}{2}$ - $2\frac{1}{2}$. From camp, the river drops 10 feet in one mile. Water about $2\frac{1}{2}$ feet higher than usual summer level, sufficiently high to erase most rapids and irregularities of the river. Observed 2 beaver and other evidence of beaver habitation. Also 1 pair wooducks. With six canoes had opportunity to observe several instances of irregular canoeing technique thus:

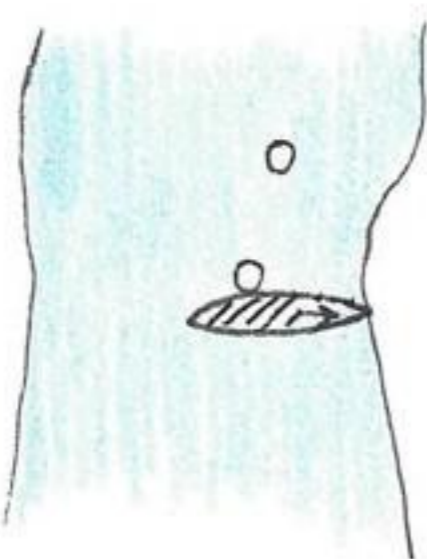
Analysis of near capsizes of canoes of Wakarusa trip.



In avoiding the small log barrier the canoe lodged between bank and brush-log barrier beyond. This required controlled maneuvering to get into small channel to N of brush-log barrier and the inexperienced were unable to control the canoe. Judgment was required before commitment to course.



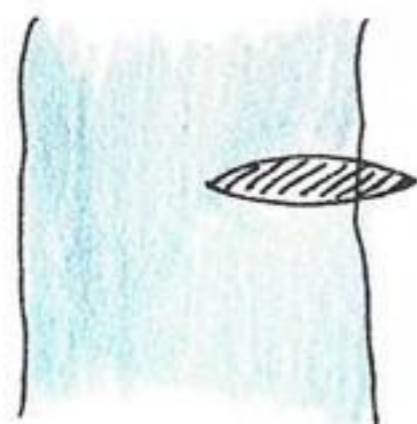
Similar to above where lack of control to pass thru channel cause canoe to lodge against the two barriers. Water builds back of canoe and causes a near swamping.



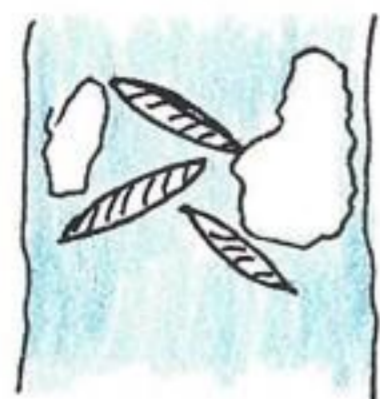
Another case of lodging canoe sideways. If the canoe had been released at bow it would have lodged against the second barrier which had faster moving water and could have conceivably have swamped the canoe.



Water builds up on current side of canoe when canoe is crosswise against a barrier. Fast current is disastrous

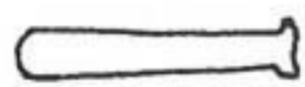


with keel, ^{partly} out of water and bow of canoe on land, several individuals entered and departed from canoe. This is a sure way of capsizing a canoe. Canoes with ill-balance equipment will also turn completely over if attempt to beach on high bank.



Canoe following too closely thru narrow channel will pile up and if water is fast, will inundate or capsize canoes as well as inflict personal damage at moments of collision.

At highway 59, Dr. & Mrs. Remple provided transportation of the 6 canoes and party back to Lawrence.

In arranging for permission to camp on Mr. Robert Peterson's property, Mr. Peterson informed me that he had collected an iron pin used to couple two railroad car.  This pin was used on the Union Pacific Railroad that passed thru this area in the early days of Lawrence's history. He told me that just N of our camp there was a grove of walnut trees where a Lawrence religious group met for social affairs. A concession stand & a band stand were permanent structures in the grove. The ^{Army} Corp of Engineer tested the basal limestone across the Wakarusa valley at site of proposed dam. At a point N of the S end of dam there is an old river channel approx. 12 feet deep and 100 feet wide in solid limestone.

Lawrence, Douglas Co., Kansas

April 14, 1969

Observed a single chimney swift at 1620 Tenn. at 5:30 P.M.

April 16, 1969

Observed 3 chimney swifts in formation and calling. noted 5 robins constructing nests, one in a tree without buds or leaves. Chipping sparrows singing as well as brown thrasher. noted 2 male robins fighting at close contact with ♀ robin being trampled at the same time and offering no resistance.

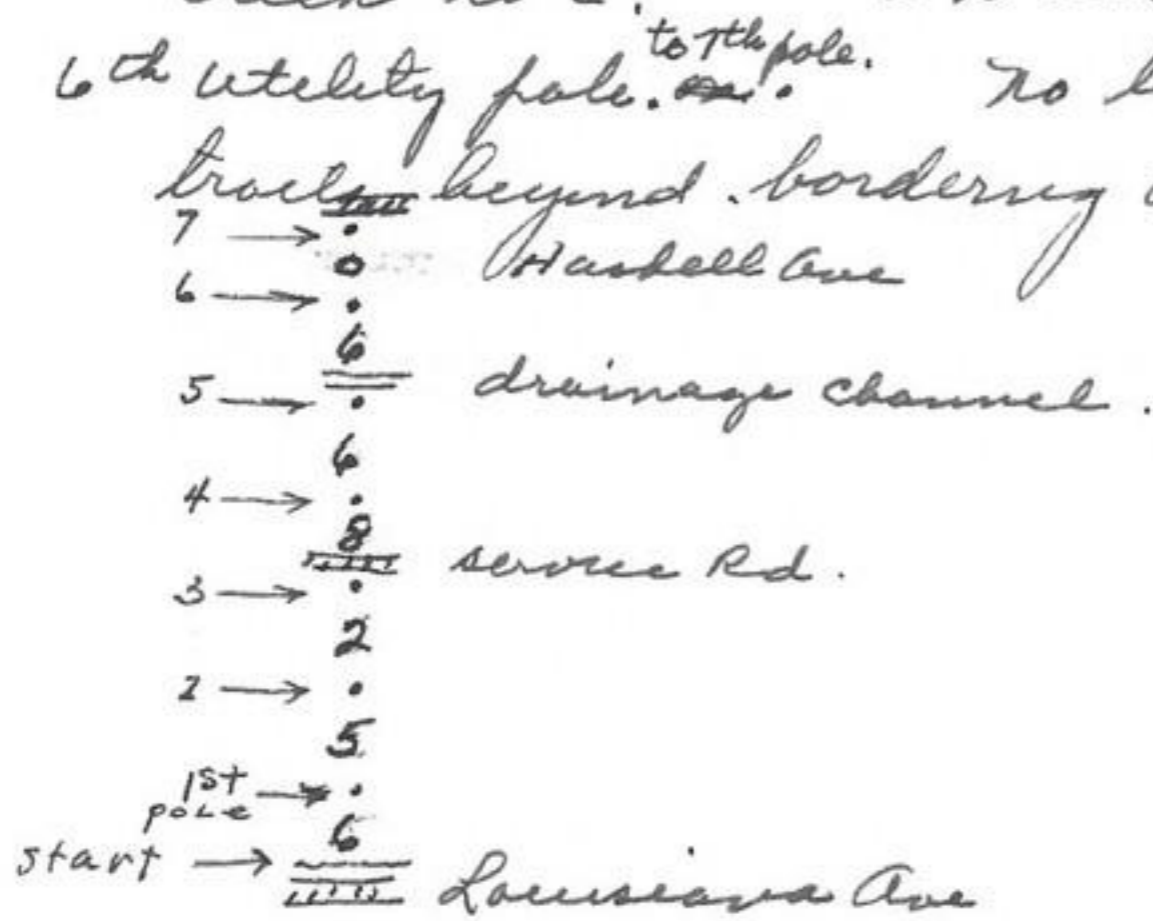
Haskell Bottoms, S Lawrence, Douglas Co., Kansas

April 19, 1969

Made small mammals census of Haskell Bottoms area between Louisiana Street to Haskell Avenue along utility lines. (see previous

census in this area). Beginning at water borrow pit on east side of dike along Louisiana to last utility pole on east end of Hasbell Bottoms.

- 1st utility pole - 6 trails. 70% of meadows in standing water
 2nd utility pole to E - 5 trails. 80% in standing water
 3rd utility pole - 1 trail and 1 with a *Microtus ochrogaster*.
 A small patch of cattails to left. Cricket frogs & *Rana pipiens* along route. 90% in standing water.
 4th utility pole 2 trails. 2 sparrow hawks, crayfish common, 1 redwing and 2 meadowlarks. 15% of surface in standing water.
 5th utility pole. 6 trails. Some junipers 5' high. 20% in standing water.
 6th utility pole. 6 trails. ^{Drainage} Creek just beyond pole. From here to Hasbell Ave. weeds instead of grasses and blown over a lying prone. Drainage channels run E-W from creek to E. 30% land in standing water.
 7th utility pole. ^{to 7th pole.} No trails and 50% in water. 2 trails ~~at~~ beyond bordering drainage ditch W of Hasbell Ave, at position between 5th & 6th pole at drainage a sparrow hawk captured a *Microtus ochrogaster* (juvenile in size) and carried it to top of willow tree bordering the drainage creek. It held it by the back and started pulling the fur and skin from around the mouth of the mouse, some of the fur was discarded. Other strips were eaten. The mouse was completely consumed from anterior end to posterior end, except stomach. Most of the fur was eaten. The most posterior end of pelt, 2 hind legs and tail were consumed as one unit. The final act and without interruption was to pick at the feet that held the mouse. It finally flew approx 100' and alighted in small tree in open field. The entire act lasted 10 minutes of continuous action. At the NE corner of bottom the water was entering main creek at 1 gal per 3 seconds. Will keep record of kinds of birds along dike to SW corner of Hasbell Bottoms at pond.



drainage channel.
 service Rd.
 Louisiana Ave

♂ redwing blackbirds 13 (all on territories) Only 3 in fields
 ♀ " " 2
 thrasher 1

mourning doves 3
 goldfinch 6
 sparrow sp?
 great horned owl 2, both on dike separated by 1/10 mile.
 house wren 1
 crow 2
 cardinal 5
 grackles 6
 coot 3
 blue-wing teal 6 ♂ 1 ♀
 sora rail 1
 muskrat 1 at edge of water
 purple martin 3
 Phainopepla 1
 blotched kingsnake 1
 Rana pipiens 28

bobwhite 1
 barn swallow 4
 brown thrasher (singing)

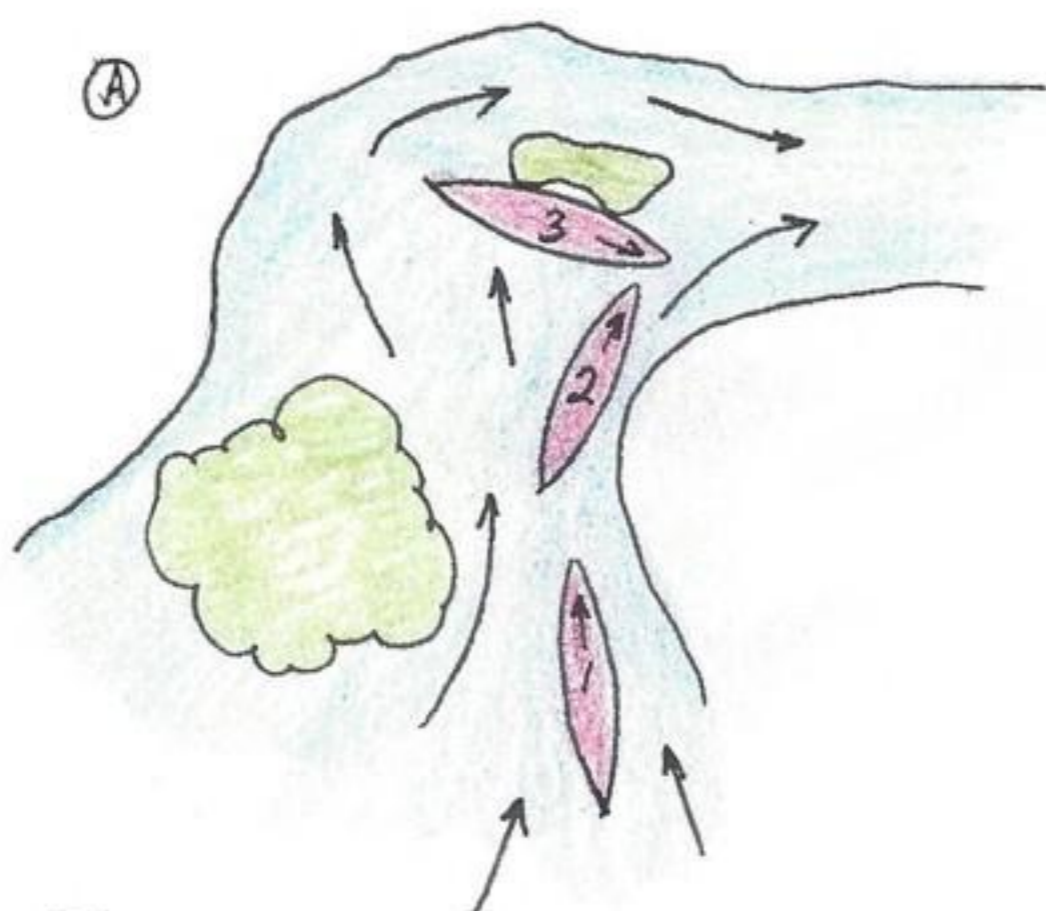
At gates on N side bottoms collected a blotched kingsnake 690419-1. It measured. 841 mm body, 120 tail, 308 gms weight. no water running thru gate. water just S of gate passing thru dike at about 1 gal per 3 sec. Chrysothamnus raw on S side of dike. At service road the water cement tank was full of water and populated with a 1/2 inch soft shell snail. Under boards on water were snake eggs, each of the hundreds of masses of eggs were ~~at~~ within 2-3 mm from each other. At this time of season the water channels & ponds support clear water and are lined with green sedges in contrast to light brown colored sedge of last year. From under metal roofing material collected 3 Blarina brevicauda (young) The nest was characterized by 2 inches of dry leaves under top of nest and a general diffusion of leaves around the nest. They measured:

690419-2	Blarina brevicauda	Total length 90, wt. 8 gms ♂
690419-3	" "	" " 89 " 8 " ♂
690419-4	" "	" " 92 " 8.5 gms ♀

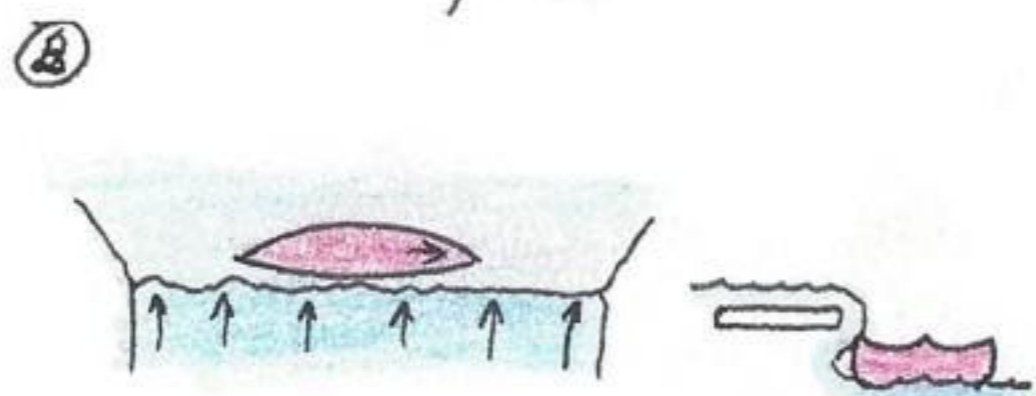
A nest of Peromyscus maniculatus ♂ + ♀ supported 3 suckling young, hairless and eyes not as yet open. A second nest consisted of a male & female Peromyscus maniculatus. There was no evidence of microtines under these metal sheets. Crayfish were in evidence in nearly all cases where boards or metal sheets were removed.

Pine siskin in high tree along bank of drainage channel

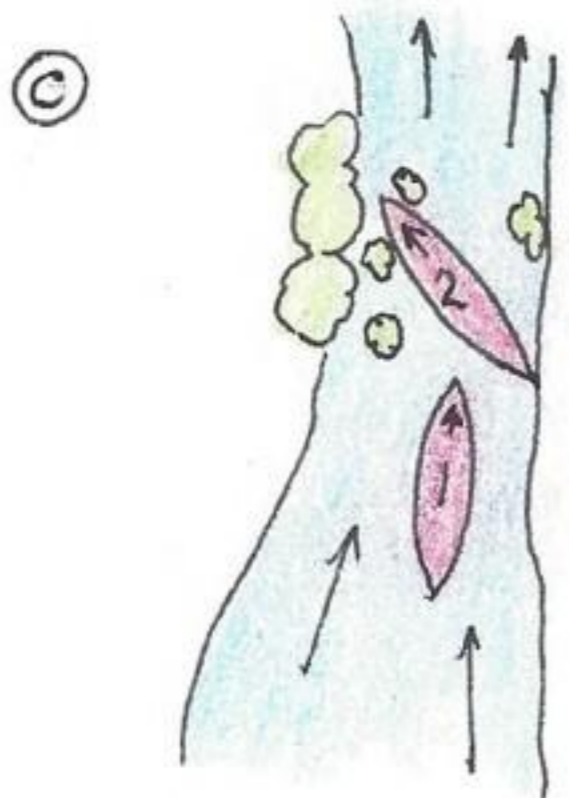
Mary and Annette C report several capsizes and swamping on Ozark Wilderness Waterways Society canoe trip on above rivers. There were approx. 20 canoes, or swamping in 28 miles. Of this number there was 9 capsizes. The Swan River is considered the most interesting river in Missouri.



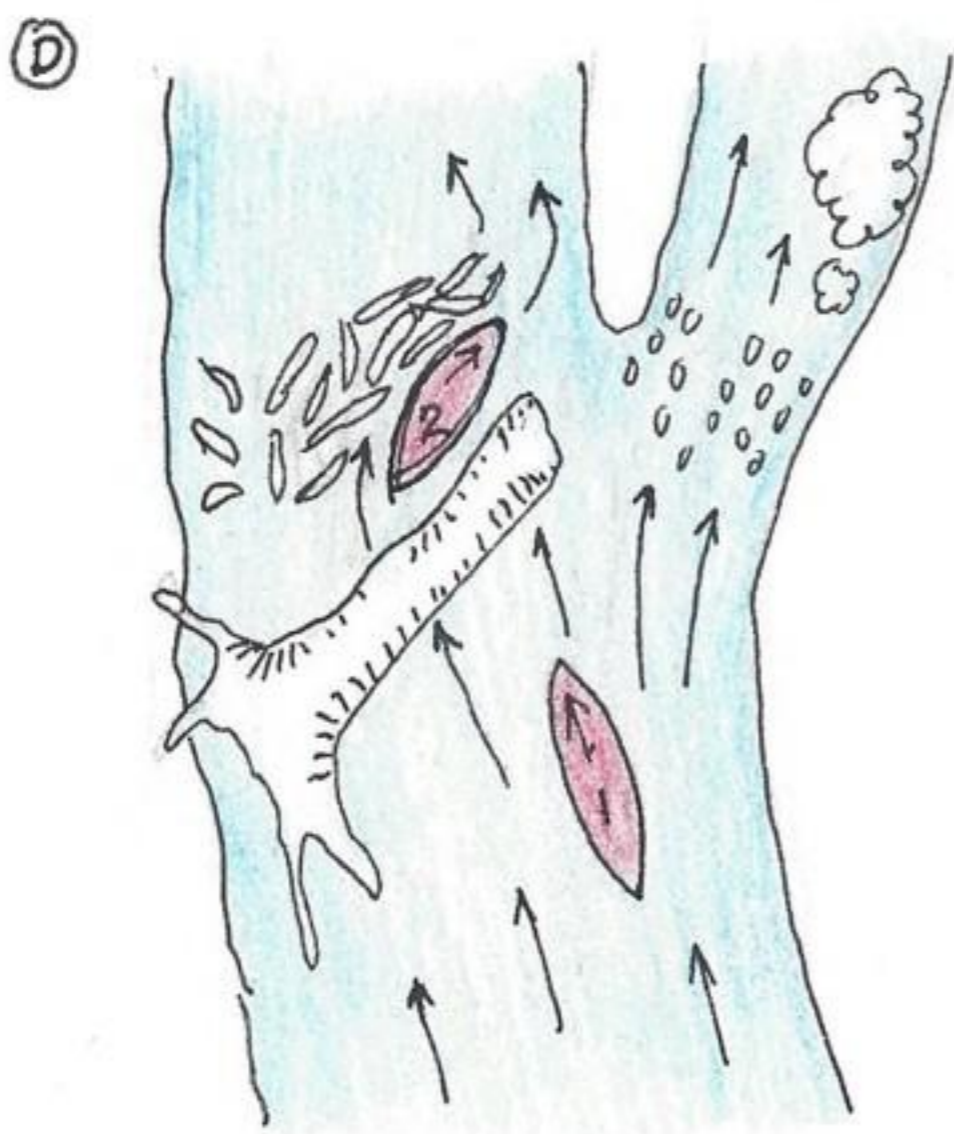
1. canoe at turn and with current.
2. attempt to pass rock to right.
3. main current forced stern to left against rock. Force of water on right side canoe piled up over gunwale and swamped canoe.



Shallow water fall fills canoe when attempts were made to enter canoe from top of falls. Most successful attempts were those canoe kept 90° to falls.



Constructing Channel with small tree-bush barrier. Canoe caught on one tree on left side and current forced stern against bank. Eighty per cent of capsizes or swamping were results of individual attempting to leave canoe when canoe was forced against an obstacle.



1. Canoe committed to narrow channel on left side of island because of shallow, rock dotted riffle to right of island. The canoe (2) passed under elevated log and lodged against log jam. The water against the log jam was turbulent and canoe become almost immediately lodged and swamped. The canoe continued down stream but recovered.

103A

Ozawkie, Jefferson Co., Kansas
 April 20, 1969

made census of birds in new formed lakes S of the bridge at Ozawkie. Enroute from Lawrence (Midland) to Ozawkie recorded kinds of birds and numbers associated with mileage. Left Lawrence 9:00 A.M. at mileage 15.3. Temp. 61°F. Beginning at Midland started census of birds: 21.2 meadowlark, 2 meadowlarks, 3 grackles. 22.4 2 meadowlarks. 23.1 ♂ redwing blackbird, meadowlark. 24.6 6 grackles, opossum road kill, redwing. 27.0 redwing, cardinal, meadowlark. 28.5 top hill on uplands. Meadowlark 29.2 2 ♂ redwings. 29.6 meadowlark. 30.2 ♂ & 2 ♀ shauellers sleeping on pond water. meadowlark, redwing. 30.5 3 single meadowlarks; 2 eastern bluebirds. 3:08 meadowlark, redwing. 31.2 four single meadowlarks. 31.6 2 crows, meadowlark, redwing. 32.3 3 single meadowlarks, cardinal, 2 single ♂ redwings. 32.7 meadowlark, opossum. 33.7 2 single meadowlarks. 33.8 Rd to Tonganoxie right but continuing straight ahead. 2 single meadowlarks. 4 redwing blackbirds, 4 cowbirds. 34.1 2 single meadowlarks. 34.9 2 meadowlarks, robin. 35.2 Two single meadowlarks. 35.8 meadowlark. 37.5 59 junction, now to N. 37.9 3 single meadowlarks. 38.0 6 grackles, 2 robins. 38.6 To W on 92 at . 38.9 3 single meadowlarks. 41.8 meadowlark, 2 grackles. 42.3 meadowlark, 42.9 crow, meadowlark. 43.8 mourning dove. 44.2 new road. 45.6 stripped skunk road kill, meadowlark. 46.6 fox squirrel crossed road. 47.8 middle bridge at Ozawkie. From

this position and from the site of the old bridge (now razed) an old highway below new bridge, made the following observations. In the valley S of the bridge the water formed lakes separated by higher ridges of old river banks and cultivated fields. To the north, except for the lakes immediately N of bridge, the lake is confined to river channel. To the south of bridge there were approximately 8,000 ducks. The identification was difficult but would estimate the percentages of the following:

blue-wing teal 60%

godwall 15%

shaueller 10%

pointail 5%

mallard 10%

coot 10%

redhead, canvas back, ^{lesser} scaup, green-wing teal less than 5%

Other birds included

- 5 snow geese
 1 blue goose
 1 snow goose hybrid (black in scapular area of back)
 12 Franklin gulls
 4 cormorants
 15 Herring gulls? sp.
 2 great blue heron
 35 pied-bill grebes
 6 heelder
 18 lesser yellow-leg
 2 greater yellow-legs
 1 stilt sandpiper
 30 Baird sandpiper
 18 Pectoral sandpiper
 8 Least sandpipers?
 2 black crown night heron
 1 pheasant
 5 eared grebe.
- Kingfisher 2
 Sawitcher 8-18-14
 Goldpate 6
 Redwing ♂ 16
 Phoebe (at razed bridge)
 on old highway
 Wilson snipe 1

Watched at close range a black crowned heron capture a *Rana pipiens* (about 3" body length). The heron readjusted the frog in bill first with the frog in a position with legs spread and the posterior part of body being mangled. The frog was then rotated and the anterior part of body was softened with the bills. There was no shaking of the frog but just a constant operation of the bill of the bird to either keel the frog or soften it. The skin was not punctured. After 10 minutes the frog was eaten head first with back legs and feet the last to disappear.

At one point 8 ♂ bluewing teal alighted and immediately formed a close order group with head higher than usual. Occasionally one would chase the others in the group. There was considerable movement of the head. No female was present in this group.

The phoebe was at the old razed bridge where it was obviously concerned but there was no possible position for a nest.

Left this area about 1:00 p.m. and continued east to new road (not completed) that turns S to dam area. Made complete bird census along this route. 54.5 start, 55.0 turkey vulture. 55.4 bridge. 57.4 2 bluegill. 58.4 2 crows 59.0 6 turkey vultures. 59.9 meadowlark. 61.7 bridge from this bridge could see approx 300 ^{lesser} scaup, 80 coati

5 pied-billed grebes

8 Herring gulls?

2 Bufflehead.

8 ruddy ducks

The above were associated with deeper water than the ducks at Ozawie.

62.4 2 turkey vulture, 1 redtail.
64.2 SE area of reservoir road. Checked dam at gates. Ducks uncommon in main lake, mainly because of wind and whitecaps. Continued E to SE corner and then continued E to bridge on Little Wild Horse Creek, made several photos of creek below bridge for 1/2 mile in middle sec 11 + 11S, R 18 E, (2 1/10 mi. N + 8/10 mi E Perry).

690420-1 Little wild horse creek and point bar. Erosion of pasture.

690420-2 Erosion of field

690420-3 L. wild horse creek and silhouette of tree + erosion cut beyond

690420-4

690420-5 } not recorded.

690420-6

Univ. Kansas, Lawrence, Douglas Co., Kansas

April 21, 1969

Noted a 13-lined ground squirrel just W of gymnasium.

Hashell Bottoms, S Lawrence, Douglas Co., Kansas

April 21, 1969

Checked NE corner and noted 2 Kingfishers, Wilson's snipe, bobwhite. From one identical perch 4 different ♂ redwing blackbirds, at different times, sang & displayed. In a small tree a redwing, meadowlark & grackle all sang at the same time and ^{each} only separated by a feet apart. There is no evidence of nest building by the redwings. Did not see or hear dickcissels. At bridge were a male & female phoebe.

Hashell Bottoms, S Lawrence, Douglas Co., Kansas

April 25, 1969

Checked Hashell bottoms between 4:30 P.M. and 6:00 P.M. Recorded the following: at point where drainage water from the SE part of bottoms empties into creek that passes under the bridge, the water was entering at 1 gal per 60 sec ^{measured} to 1 gal per 3 sec as of April 19, 1969. Between bridge and NE corner, along dike observed 6 redwings ♂, on territory and 1 female. The female flew toward me but no evidence of nesting as yet.

mushrat sign along shallow ponds inside of dike. From NE corner to gates to S noticed 4 redwings (3♂ & 1♀), Rona 1 per 30', 1 meadowlark, 2 mourning doves, few microtine trails. At gates noted 4 nests of *Peromyscus maniculatus*, one of which had 6 naked screeching young (eyes not open). In the other nests there was a male & female adult present in each case. These roofing sheets have been removed on 3 occasions and the mammal composition has remained the same. (no microtines). Between gate and road to S noted. 1 goldfinch ♂ (singing), 2 meadowlarks, 2 mourning doves, crayfish diggings approx 1 year from each other in ponds now dry. The drainage of this stretch into regular drainage channel is O, cardinal, redwing 3, dead mole 2 feet from tunnel, robin, 2 blue wings, phoebe (not nesting at bridge as yet). The weeds show the wind from SE (damaging weeds of winter)

Ozawkie, Jefferson Co., Kansas
~~June 1, 1969~~
 April 26, 1969

Checked birds S of bridge at Ozawkie. Enroute from Lawrence noted: meadowlarks, starling, grackles, redwings, bluebirds, Eng. sparrows, blue jay, phoebe, mourning dove, brown thrasher, cardinal, sawbird, mockingbird, shrike, crow and sparrow hawk.

In the newly formed lakes S of the bridge at Ozawkie from a position on old road at now razed bridge, noted the following (9:45 AM to 11:15 AM):

mallard: only 4 single males

shoveller duck: approx. 200

coot: generally distributed and now dominant bird. Approx 1000.

bluewing: generally distributed and most frequently observed flying in the area, generally in pairs or small groups. Several groups of ♂♂ in close formation (6 to 20) and frequently chasing each other. Approx. 800.

pentail ~~snake~~ Only 7 males observed.

ringed necked duck. One pair only.

red-billed grebe. 18 in small groups.

pheasant. called frequently from what appeared to be inundated vegetation (willow).

redwing approx 30 in willows.

great blue heron. One bird only

godwit (sp.?) one bird only.

godwall. Common and in groups of 6 to 20, and constituting a substantial percentage of the duck population. Approx. 600.

baldpate: noted 3 pairs only.

Herring gull. The species may be the ringed-bill. 9 birds and most frequently observed on old paved road partly inundated.

Forster tern: One group of 24 arrived from the S, circled the water area S of bridge and then returned S. Another group of 8 fished the area.

white-faced ibis. 2 birds fed at edge of field bordering the water.

barn swallows: moved progressively N., especially after rain.

black-crowned night heron. 2 separate birds flew by.

goldfinch. small group flew by.

willet heard one bird.

mourning doves pairs flew by occasionally.

greater yellowlegs. 2 birds

lesser yellowlegs 12 birds

killdeer 1 bird flew by

lesser scaup 80 in deeper waters beyond.

redtail on land about 2.0 miles from water

In the body of water bordering the old road noted:

34 coots

40 godwalls

6 bluewings

1 pintail

10 shovellers

4 baldpates

1 mallard.

Some general observations:

Two male shovellers and 1 pintail ♂ in a close group and performing nuptial gyrations with each other.

A gadwall was just about to land on water when a boat surfaced, causing the gadwall to lift up and make a second landing. One gadwall had only a single leg but managed the landing without difficulty. In a group of 8 gadwalls all males except one female, was one male in close attention to female. It was characterized by erected feathers on head and defended the female by chasing other males away from the female. This group left the water and circled over water and then returned on 9 different occasions with the female taking the initiative. In flight the female holds her head higher than males.

A comparison between a group of ducks in one isolated lake and the general distribution and percentage of ducks at large in the general area is as follows:

	percentage in isolated lake	general area.
Coot	35%	37%
gadwall	40%	22%
bluewingteal	7%	30%
pintail	1%	less 1%
shoveller	10%	8%
boldpate	4%	less 1%
mallard.	1%	less 1%

Hashell Bottoms, 5 Lawrence, Douglas Co., Kansas

April 27, 1969

Checked Wakarusa River, at flood stage, between Hashell Avenue bridge and the bridge at Lawrence Avenue, following on n side of river. This route was made passible by the dike there. On the south side, the fields were flooded beyond the river. This river, as well as the Kaw, during this flood period, is characterized by the speed or velocity of the current. I am not at all sure as this is the case but at least the illusion is there. The fact that the rain came suddenly (up to 3 1/2-4 inches) and water in the upper drainage could have caused a faster flowing stream. The objective was to see if animals were being compressed into smaller

Measurement of *Peromyscus*:

690427-10	<i>Peromyscus leucopus</i>	♀	180-78-21.5-17-26gms.
690427-11	"	♂	75-23-12-6-3.5gms.
690427-12	"	♂	74-23-12-6-3.5gms
690427-13	"	♀	75-23-12-6-3.5gms
690427-14	"	♀	75-24-12-6-4.0gms
690427-15	"	♀	76-23-12-6-4.0gms

Ears of young impericulate. These 5 young held on to adult ♀ and were carried from dry leaf nest attached. At one moment the female gave abrupt jump and dislodged 2 of the young but carried the other 3 young beyond nest area. On return 1/2 hr later the ♀ had collected all her young and was in nest.

33
72
areas by the flooding water, made the following observations
along the route: 690427-133

Phoebe nest of 3 fresh eggs under Haskell bridge.
Purple martin: 2 birds
Song sparrow. 8 individuals in fresh pile.
Titmouse: female vibrating wings in presence of male.
Myrtle warbler: ♂ + ♀.
Warbling vireo: one individual and associated with the
titmouse. Heard several others singing.
Redbellied woodpecker. 4 called.

Cardinal: 5 birds
Blue wing teal: in flooded fields on S side river. One group
of 8 females only.

Striped skunk and cat (feral) at old refuge pile of Haskell.
The skunk slowly and systematically search area among
rocks, metal containers and general refuse.

Thomomys: along water line and except of Rana pipiens
was the only animal effected by rising waters. It immedi-
ately turn toward the water.

Peromyscus. ♀ and 5 young. (see opposite page for measurement)
Made the following photographs of river;

- 690427-1 from Haskell bridge to NE.
- 690427-2 showing flooded field to S.
- 690427-3 skunk at Haskell Institute Refuge area. Wakarusa (rejected) beyond.
- 690427-4 upright elm and vine (320 mm circum vine)
- 690427-5 tree silhouette with Wakarusa in background
- 690427-6 " " " " " "
- 690427-7 convergence or divergence two channels of Wakarusa.
- 690427-8

Water raised 3 inches in 1 1/2 hr. water in
Drainage Channel (gates)
in Haskell bottoms about 4 1/2 lower than Wakarusa.
Flooding of Haskell Bottoms mainly from surface
waters. Water on road at E end of county road.

Kaw River, Lawrence, Douglas Co., Kansas

April 27, 1969

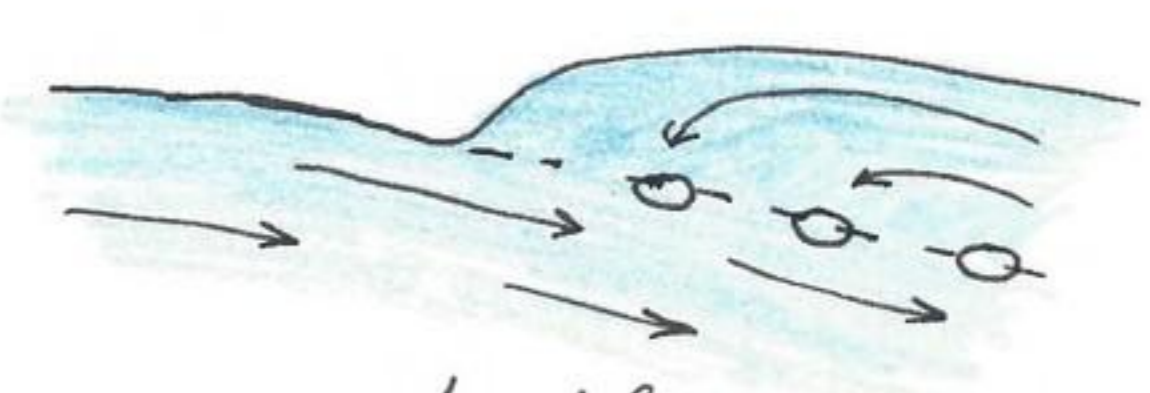
Photo 690427-20 photo at bridge. Island inundated ex-
cept top of small willow. The higher the river, the less
turbulence below the dam. Logs generally reappear
20'-30' beyond first turbulence and would then move
toward (counterflow current) to dam and again disappear.

690427-134
 down river from dam at the mouth of Mud Creek - ob-
 served action of the river. This is at a point
 where river makes an abrupt turn to the E.



Again the river was characterized
 by exceptionally fast current and
 turbulence beyond rock jetty. Upwelling in some
 instances measured 30' wide and 3 feet high, most
 generally with smooth surface but at other times eruptive
 and irregular.

The contact with peripheral
 water was turbulent especially when coming in contact
 with water travelling in counter flow as the oncoming
 river current or counterflow of eddy water. When the
 main stream came in contact with the counterflow of
 the eddy, there were whirlpools
 formed, some 3 feet deep. Logs
 and debris did not seem to be
 engulfed by these whirlpools.



I would estimate the main current to flow at 10-12
 miles per hour, faster than I could walk. Again, the
 water seemed to flow much faster than I have experience
 before.

1 2/10 mi. W and 1 1/2 mi. E Lawrence, Sand Pits, ^{Lakes,} Douglas
 Co., Kansas
 April 27, 1969

Made several photographs of sand pit lakes using an unusual
 sky (clear blue sky and dark bodied clouds).

- 690427-31 Willow silhouette and lake to E.
- 690427-32 " " " " " "
- 690427-33 Lake and cattails in foreground
- 690427-34 " " " " " "
- 690427-35 Sky & farm just E of lake.
- 690427-36

Hashell Bridge on Wakarusa to Bonner Springs, Douglas and
 Leavenworth Cos; Kansas
 April 27, 1969

James Robert Bee and Ned Green made canoe trip from Hashell
 Ave Bridge to Bonner Springs. Left 2:30 P.M. and arrived Bonner
 Springs at 9:00 P.M. a distance of 34 miles in 6 1/2 hrs. averaging
 5.2 miles per hour. Wakarusa flooding overbanks and unusually
 interesting.

Wakarusa River, Douglas Co., Kansas

April 28, 1969

Checked river at Hasbelle Bottoms at 6:00 P.M. Water gorging over lawn of lost house on E side Hasbelle Avenue. Drainage channel (N-S) in Hasbelle Bottoms full but yesterday only $\frac{1}{2}$ full. S of Hasbelle Bottoms water on roads but passible (Louisiana Street). At 9:00 A.M. yesterday the river topped flood stage at 27 feet. This A.M. it was 28.32 feet. The Kaw at 7:00 P.M. was down from yesterday and 3 feet of island is showing. The Kaw peaked at 17.5 this A.M. and down to (9:30) 14.0. Flood stage 18.0. No flooding on Kaw. Locally the rainfall Sat (April 26) was 2.81 inches but W. of Topeka was as high as 6 inches. It is interesting that the Kaw River should be going down while the Wakarusa is rising. Photo 690428-4 of native andropogon in Hasbelle Bottoms

Douglas Co. Lake, Douglas Co., Kansas

April 28, 1969

Heard and observed two Baltimore Orioles. These were the first noted this year.

Vinland, Douglas Co., Kansas

May 1, 1969

Observed the dickcissel for first time this year. They are few in number and localized.

Coal Creek Valley, Lawrence to Vinland, Douglas Co., Kan.

May 4, 1969

Made roadside census (on foot) from road crossing old railroad tracks $\frac{1}{10}$ mi. SE railroad bridge over the Wakarusa, thence E to first road to S., thence E at first road to E., thence to Coal Creek, thence up hill to first road to S, thence S to end of straight road, thence E to top of hill. Recorded birds observed in certain designated linear sections of road so that a similar survey can be made at other periods of the year. Left 10:00 A.M. Day clear and temp approx. 70° with S wind. At farm house to NW observed 4 grackles, 4 redwings, 1 mockingbird.

10:00 railroad crossing:

meadowlark 1-1

redwing 1-1-1-1-1

goldfinch 3

cowbird 1

raccoon & turtle tracks in ditch

10:10 now to east:

redwing 2-2-1-1-1-2-2-2-2-2-2

duckcussel 1-1-1

meadowlark 1-1

grackle 1

field sparrow 1

Rana pipiens along ledges
and create unusual dry sedge
noise on entering water.

10:20 bridge

meadowlark 1-1-1-1-1-1

redwings 2-2-2-2-3

field sparrow 1

killeddeer 1

[This area supported a population
of 62 bluewing teal, 33 lesser
yellowlegs, 2 greater yellowlegs, 12
pectoral sandpipers and 3 killeddeer
two days previously on April 29 after
the water was flowing.]

10:30 House to left at point where old railroad grade crosses road.

grackles 5

redwings 2-2-2-2-2-1-2

meadowlarks 1-1

(these in marsh area to left near crossroads.)

10:35 now to E (most birds observed the first 200' beyond crossroads.)

duckcussel 1-1-1-1-1-1

redwing 1-2-2-1

killeddeer 1

meadowlark 1

solitary sandpiper 1-1

semipalmated sandpiper 18

10:52 bridge over Coal Creek (riparian area at bridge only)

redbellied woodpecker 1

redheaded woodpecker 1

Cardinal 2

blue jay 1

10:59 left bridge and continued up road.

Eng. sparrow 6-8

meadowlark 1

phoebe 1

black-capped chickadee 1-1

crow 1

yellow-crowned night heron 1

grackle 3.

11:10 top hill

meadowlark 1-1-1-1-1-1-1-1

bluejay 2

barn swallow 1

redheaded woodpecker 1

duckcussel 1-1-1-1

11:20 now to E.

Cowbird 1

bobwhite 1-1

duckcussel 1-1

meadowlark 1-1

redheaded woodpecker 1

mourning dove 1-1

barn swallow 2

11:25 bridge at drainage and

Harris sparrows 13

white-crowned sparrows 12

field sparrows 2

Cardinal 1-2-1

birds of this area only.

redheaded woodpecker 1

redbellied woodpecker 1

mourning dove 2

black-capped chickadee 1-1

crow 2

phoebe 1.

Left bridge 11:30 (census started just beyond riparian community.)

Cardinal 2-1-1-1-1

crow 2

lark sparrow 1-1-1

redtail 1

mockingbird 1

b.c. chickadee 2

house wren 1-1

bluebird, eastern 2-1

Cowbird 1

11:50 Old school house (1872)^{A.D.}

meadowlark 1-1-1-1-1-1-1-1-1-1

Cardinal 1-1-1

phoebe 2

redhead woodpecker 2

barn swallow 3

Dickcissel (10 singing in one field of native andropogon & small trees)

12:05 main cross-roads.

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

Cowbird 1-1-1-1

lark sparrow 1-1

starling 1-1

flicker 1

Cardinal 2-1-1-2-1-1

labwhite 1

Eng sparrow 10

12:32 now at end of straight road & to E up hill.

meadowlark 1-1-3-1-1

Dickcissel 1-1

redheaded woodpecker 2

Annette picked me up at this point. The area beyond thru Vinland would be worth surveying at a later time.

Eng sparrow 2

great crested flycatcher 2

meadowlark 1-1-1-1

Eng sparrow 3

B. orole 1

Chipping sparrow 1

field sparrow 2

phoebe (feeding ^{on} road)

mourning dove 2-2-2

white-crowned sparrow 2

Swainson thrush 1-

mockingbird 1

redwing 2-2-2

robin 1

Baltimore orole 1-1

Eng sparrow 8

grackles 6

mockingbird 1-2-1

Baltimore orole 1-1

mourning doves 2-2-2

Dickcissel 1-1-1-1-1-1

Chipping sparrow 1

redwing 1-2-1-1-1

Swainson thrush 1-

mockingbird 1

redwing 1-1-1

robin 2-1 (one nest 40' above ground with 4 young 90 mm l. length, another nest 30" above ground in juniper 42" high with 3 fresh eggs. Two nests 150' apart, one last year nest.)

Summary:

redwing blackbird 74
 meadowlark 62
 Eng sparrow 37
 dickcissel 34
 cardinal 23
 grackle 16
 mourning dove 16
 white Cr. Sparrow 14
 Harris sparrow 13
 mockingbird 8
 Cowbird 7#
 redheaded woodpecker 6
 black-capped chickadee 6
 barn swallow 6
 Baltimore oriole 5

Lark sparrow 5
 crow 5
 phoebe 5
 field sparrow 4
 robin 4
 bobwhite 3
 blue jay 3
 killdeer 3
 goldfinch 3
 redbellied woodpecker 3
 eastern bluebird 3
 house wren 2
 Swainson thrush 2
 starling 2
 chipping sparrow 2
 great crested flycatcher 2
 redtail 1
 flicker (R.S) 1
 yellow Cr. N. heron 1
 Total = 381 birds

Lawrence, Douglas Co., Kansas
~~Lawrence, Douglas Co., Kansas~~
 May 7, 1969

Received notice of change of address of Arturo Jiménez Guzmán to
 Facultad de Ciencias Biológicas. U.N.L.
 Ciudad Universitaria
 Apartado Postal 2790
 Monterrey, Nuevo Leon., Mexico

Haskell Bottoms, S of Lawrence, Douglas Co., Kansas
~~Haskell Bottoms, S of Lawrence, Douglas Co., Kansas~~
 May 10, 1969

Checked birds on one segment of Haskell Bottoms, marked by hatched marks ^(red area only) and consisting of small trees bordering the dike, canal and bordering area (20') beyond. Kinds of birds are:



indigo bunting ♂ + ♀
 painted bunting ♂
 rose-breasted grosbeak ♂
 goldfinch, males + females 8
 yellowthroat 1
 song sparrow 2
 catbird 1

The above constituted a group. Others in area were: redwing blackbirds 8 ♀ 10 ♂; grackle 3; mourning dove 3; cardinal 3; robin 2; bobwhite; green heron 1. Nest of mourning dove contained 2 fresh eggs in nest 5' high in squawbush on dike. ♂ + ♀ bluewing teal in pond just S of dike. Noticed that the rose-breasted grosbeak had difficulty flying in wind,

and considerable more so than any of the other kinds of birds.

From area marked # collected 2 blotched king snakes, (the 2nd and 3rd from the same area (see April 19, 1969)).

690510-1 *Lampropeltis calligaster* 850 mm body length, 120 mm tail
150 gms cheelid. This snake had a large scar on side.

690510-2 *Lampropeltis calligaster* 880 body, 135 tail, 170 gms.

Both these snakes were under sheets of metal roofing on the ground. One was near an empty nest of *Peromyscus maniculatus* also under the metal. I have noticed that there has been a reduction in number of *Peromyscus* since first observed April 19. No 690510-2 attempted to escape into hole of a crayfish. These holes are common in the area, especially under boards etc.

Rock Creek, SE Clinton, Douglas Co., Kansas

May 11, 1969

Made survey of birds on deciduous slopes S of Rock Creek. From S end of proposed Clinton Reservoir dam kept complete

roadside census of birds:

at dam mileage 30.6 (9:40 A.M.)

day clear, cool and slight wind. meadowland at dam site.

30.6 barn swallow, redwing. 30.7

dickeussel, 3 male redwings. 30.9 4 grackles, 12 Eng. sparrow.

31.0 redwing. 31.2 2 redwing, 2 grackles.

31.3 dickeussel, mourning dove, 4 grackles, 2 meadowlarks, eastern kingbird.

31.6 Rock Creek bridge on main highway. Baltimore oriole. 31.8

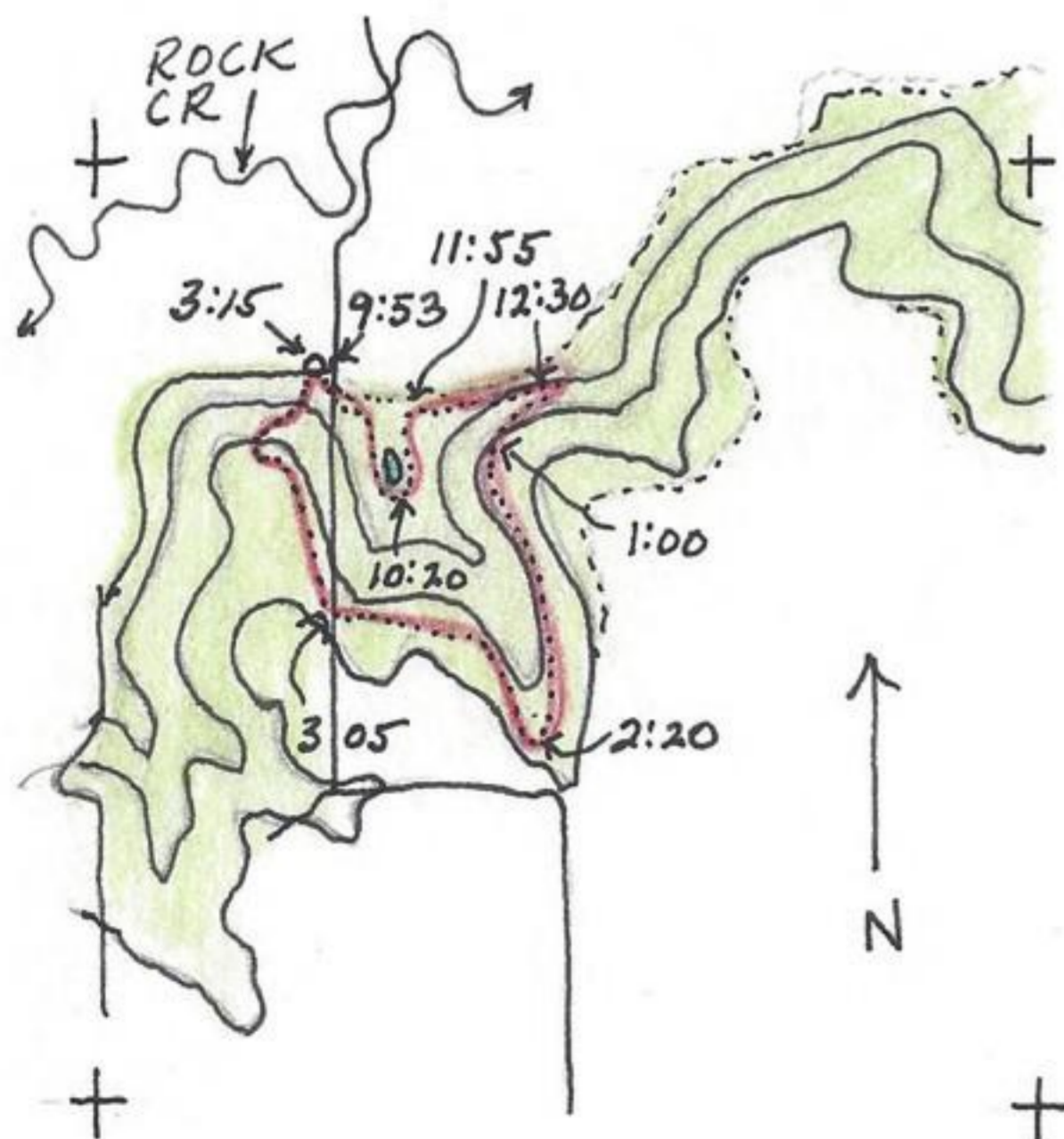
starling. 32.0 now to S, dickeussel.

32.3 now to W 2 grackles, 3 redwings, barn swallow. 32.6

2 dickeussel. 32.7 2 mourning doves, 2 dickeussel, 2 redwings.

33.0 now to S. 33.1 mourning dove. 33.3 4 grackles, 2 redwing, 2 mourning doves, mockingbird. 33.6 blue jay. 33.8 passing over Rock Creek. 34.0 blue jay. 34.2 base hill and stop.

Left car at 9:53 to survey area to E on sidehill. Will follow usual route but plan to stop at various points to get listing



of birds in association. Along drainage to E noted a Louisiana waterthrush at edge of water. It continued up drainage although considerably covered with brush. 2 bluejays and indigo bunting on forest edge. A fox squirrel moved thru trees and followed by 5 young approx. 1/2 (body) size of adult. Swainson thrush and 2 cardinals below tree. Between mouth of creek to pond recorded the following: Nashville warbler (all listings will be in sequence of observation). This warbler has a call like a wren. ^{Parried lake and from the E side recorded:} Cowbird, a solitary bird. Its actions and flight behaviorism does not seem to be like those of other Icteridae and reminds one more of a passerine. Baltimore Oriole producing the most noticeable call in the area. Titmouse called. Swainson thrush giving its single glottal call (soft). Wilson's warbler. Titmouse bathed in water at lake. It flew with a noticeable heavy and labored effort and the noise of flight can be heard. While vigorously adjusting its feathers, it kept an eye trained on any movement overhead as if expecting predation. After the initial preening of its feathers and vigorously shaking its tail and wings, it left and started to feed in trees. Here again the movements were forced and activity accelerated as if overcompensating for limitation of movement from wet feathers. Kentucky warbler has call like Carolina wren. These sharp notes are repeated frequently, especially if the bird catches a large worm. It spends considerable time on the ground. Black-capped chickadee calling. Pewee along creek above lake. There is not much activity on lake proper or vegetation associated with the edge. Left E side lake 11:45 and continued down drainage. Kentucky warbler, 3 Swainson thrush, 2 blue jay, meadowlark. 11:55 mouth canyon. In this area observed 2 blue jay, 2 great crested flycatchers, these birds can be heard from most any part of canyon and are second to the Baltimore Oriole in loudness. Redtail circling above. crow in feed to N. Swainson thrush (most all of these thrush are on limbs 4-5 feet above ground when first observed, or on the ground). house wren. Indigo bunting (mainly edge bird), now to E along base of hill. Chickadee, 3 cardinals. Tenn. warbler, 2 Kentucky warblers, Swainson thrush. 12:05 fence line running E and slightly up hill. In area observed 2 redheaded woodpecker, Swainson thrush, titmouse, Tenn warbler great crested flycatcher, Acadian flycatcher, bluejay. Left

12:20. Titmouse. Swainson thrush. Tenn. warbler. Point where fence runs uphill to the S. At this point observed 2 Swainson thrushes, red-eyed vireo, 2 titmouse with nest in oak (1 egg) nest in hole 30' high. Myrtle warbler. Left Point at 12:45.

Two redtails chase 2 vultures, forcing a grunting call from the vultures. The redtails did not call. Redheaded woodpecker, yellow warbler, 3 Swainson thrush. 1:00 point of benchland with longon row trending S. From here noted (mainly area of short scrublike oak in contrast to tall deciduous forest before) 2 myrtle warblers hunted in a small clearing 30x40' and worked the top branches as well as bottom branches. They frequently chased insects up beyond trees to a height of 15' above tops of trees. 2 Swainson thrushes, redhead woodpecker, 2 blue jay pass thru, yellow warbler, 2 myrtle warblers passed thru, black and white warbler, 3 goldfinch. Left 1:20

Swainson thrush, redheaded woodpecker, 2 Swainson thrush, great horned owl called to NE., great crested flycatcher, Acadian flycatcher, bluejay, 3 Swainson thrush, pewee, Tenn. warbler, g. crested flycatcher, Swainson thrush, fox squirrel, black and white warbler, black capped chickadee, white-breasted nuthatch, Swainson thrush, Myrtle warbler, cardinal. Most of the above birds were noted near head of longon.

Top at 2:20 T. vulture, Chipping sparrow and cottontail at edge of open field. From a position on W side of drainage at point where deciduous forests end at 11/20 mi. W and 4/10 mi N of SE corner sec 25, T 135, R 18E.

Douglas Co., Collected the following herps:

690511-1	<i>Carphophis amoenus</i>	250mm body, 38mm tail, 9gms wt.
690511-2	" "	223 " " 50 " " 6.5 " "
690511-3	<i>Diadophis punctatus</i>	236mm body, 42mm tail, 5.5gms
690511-4	" "	265 " " 49 " " 8 " "
690511-5	" "	130 " " 55 " " 4 " "
690511-6	" "	130 " " 23 " " 1.5 " "

The snakes were under rocks among deciduous forest (edge) and associated with above *Carphophis*. All *Diadophis* from under same rock.

Left top at 2:30 and followed trail down drainage, thence bench to road. Birds along this route among good deciduous forests were: 2 Kentucky warblers, 2 titmouse and nest in hickory tree in natural

Cavity, Cardinal. Orange crowned warbler, Swainson thrush, redtail hawk nest (2 birds in area). deer tracks. 3 Swainson thrush. 2 titmouse, 2 black capped chickadees. 2 blue jays, 3 Swainson thrushes, ruby throated hummingbird. Road at 3:05 continued along forested benchland to point above ear. and noted 2 cardinals. 4 Swainson thrush (singles), cardinal, Indigo bunting, Chipping sparrow, 2 turkey vultures. Arrived ear 3:15 P.M. Dead snake area associated with razed building from tornado of few years previous. many pieces of lumber and flat slabs of rock and concrete. On return home noted many instances of groups of 3-5, mainly 4 of grackles. these are not family groups but may be a social order of nesting birds of one particular area.

Summary of birds ^{and mammals} observed in deciduous forests of side hill along Buck Creek (exclusive of census of roadside birds from dam to deciduous forest area):

Louisiana water thrush 1-

blue jay 2-2-2-1-2-1-2=12

indigo bunting 1-1-1=3

fox squirrel 6 (family)-1=7

Swainson thrush $\frac{1-1-3-1-1-1-1-2-3-2-1-2-3-1-1-1-3-3-4}{3-1-1-1-3-3-4}=35$

Cardinal 2-3-1-1-2-1=10

Nashville warbler 1-

Cowbird 1-

Baltimore Oriole 1-

Titmouse 1-1-1-1-2-2-2=10

Wilson's warbler 1-

Kentucky warbler 1-1-2-2=6

black-capped chickadee 1-1-1-2=4

peewee 1-1=2

meadowlark 1-1=2

great crested flycatcher 2-1-1-1=5

redtail 1-2=3

house wren 1-

Tennessee warbler 1-1-1-1=4

red-headed woodpecker 2-1-1-1=5

Acadian flycatcher 1-1=2

red-eyed vireo 1-

myrtle warbler 1-2-2-1=6

turkey vulture 2-1-2=5

yellow warbler 1-1=2

black and white warbler 1-1=2

goldfinch 3

great horned owl 1

white-breasted nuthatch 1-

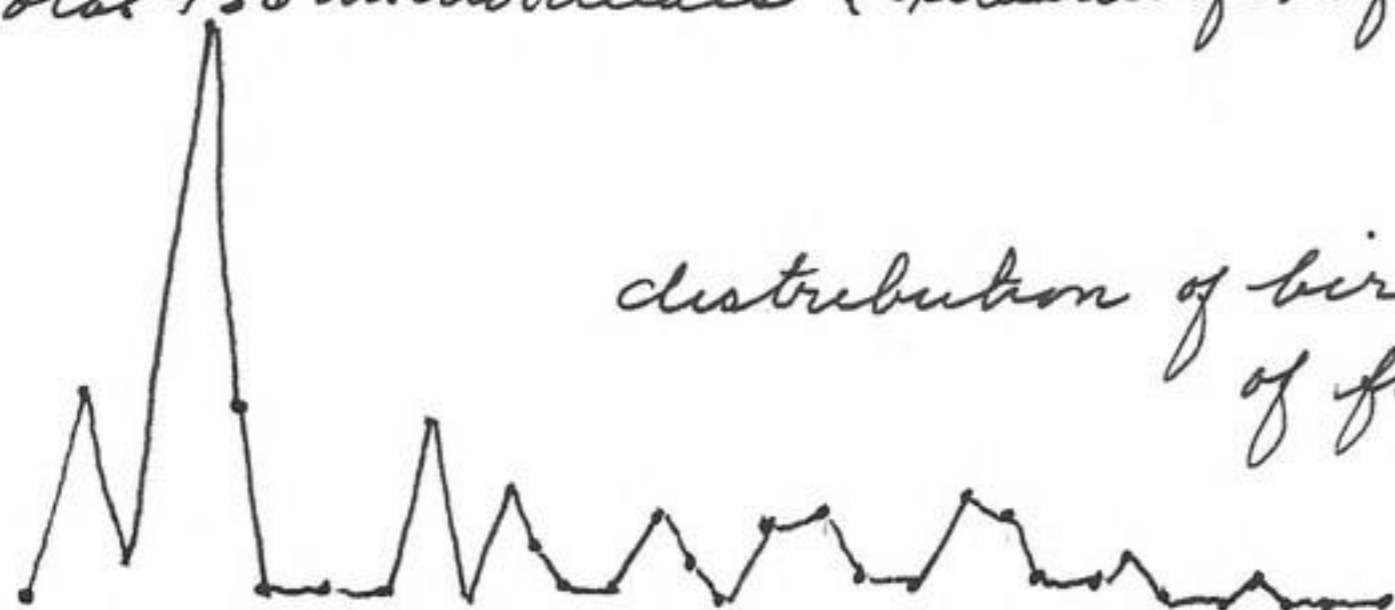
chipping sparrow 1-1=2

cattail 1-

orange crowned warbler 1-

ruby-throated hummingbird 1-

Total 136 individuals (exclusive fox squirrels)



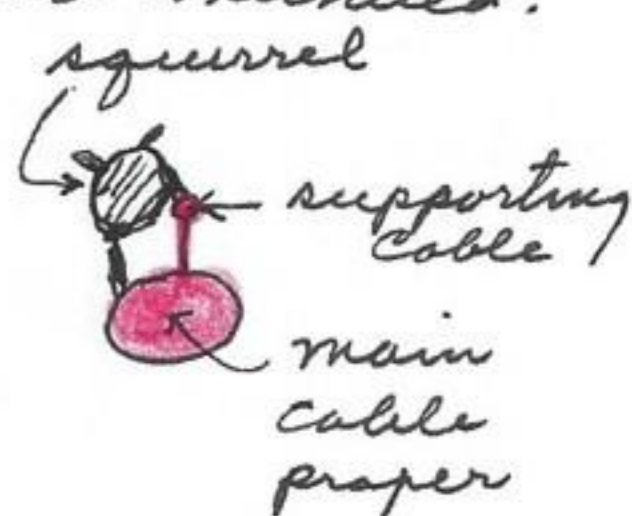
distribution of birds according to sequence of first observed numbers. Indicates, on the average, that birds first observed are the more common ones.

Lawrence, Douglas Co., Kansas

May 11, 1969

At 1620 Teun. noted 5 blue jays near top of high locust tree (in full inflorescence) in an unusual behaviorism. They all called, and at the same time vigorously moved their bodies up and down. The movement involved the entire body in a rigid form with feet, at times, almost leaving the limbs they were perched upon. This up & down gyration reminded me of the behaviorism of chimpanzees. This movement was performed with concern of each other and on occasion one would come in physical contact with another and a vigorous antagonistic reaction would occur. These 5 birds continued this kind of behaviorism for approx. 4 minutes before they all left.

Below these jays, a ♀ fox squirrel was moving across a telephone cable and when it approached one of its young (1/2 size of adult) the adult jumped over the young and continued. The adults move by using supporting cable and cable proper while the young are too small for such contacts and they are forced, or at least, ^{it seemed to} move on cable proper only which is precariously ^{thin supporting} performed.



May 12, 1969

Noted a blue jay to fly down to ground and knock down a ♂ robin which had just gilled a night crawler from the ground. The robin retaliated with physical contact but the blue jay had superiority. After 3 contacts the blue jay returned to the worm and consumed it.

Approx 1/2 mi. E Lone Star (2/10 mi S and 4/10 mi. E of NW corner see 6, T148 and R 19E), Douglas Co., Kansas

May 14, 1969

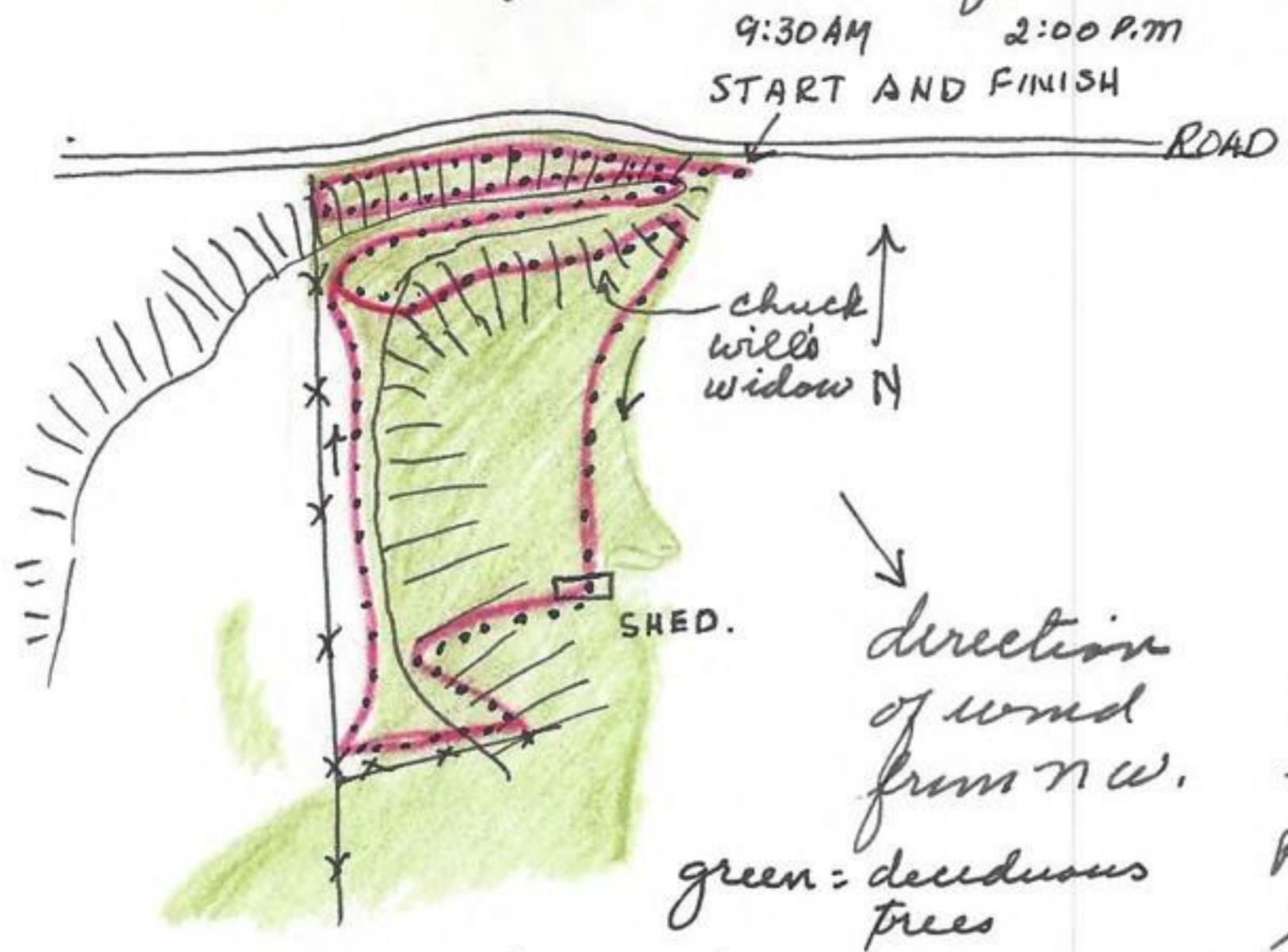
Mary Pauline Bee collected a copper head snake from the a camp at the above locality. It measured: (measurements only).
690514-1 Agkistrodon Centortrix 645 mm body, 103 tail, 185 gms.

South end proposed Clinton Reservoir Dam, Douglas Co., Kansas

May 18, 1969

made census of birds on several exposures of the terminal ridge of the south end of the proposed Clinton Reservoir Dam. Wind from NW, temp 58 F, low clouds in parallel

formation and uniformly distributed throughout the area. Reminded me of the cloud formation of the arctic, no sun,



well but birds and mammals as observed and within specified limits. Left base of hill at east end at 9:30 A.M. From here to fence line to west at base of hill above road observed the following: 1 goldfinch, 2 bluejays, 6 mourning doves in one group (most doves are paired), house wren, Swainson thrush, redtail left from top.

of perching tree (experiment below). This bird flew ^{straight} N for 2/10 miles to center of Wakerusa valley, then returned by circling pattern, and calling when in area of hill. This bird can be identified by outer missing primaries of left wing. From fence returned to E at level 30' below top of ridge and observed: Cardinal, starling and nest, Peromyscus leucopus under log. From east end ridge at top to fence line to W observed: yellow warbler, 3 gnatcatchers, Acadian flycatcher, 1 turkey vulture, cowbird, Carolina wren, mourning dove (nest of few stems with bird on nest but no eggs. ♂ left at nest at 10'. nest 8' high. At fence line can hear ^{and see} to west in grassland; 2 meadowlarks, 2 field sparrows, 2 barn swallows, To north at base of field beyond road can hear 3 redwings and 4 dickcissels. Continued E at 1/2 way level and observed: 3 ♀♀ redstarts, 2 red-eyed vireos, Swainson thrush, 2 fox squirrels (when squirrels call for first time, the tail is the most conspicuous identification) Titmouse, brown thrasher, ♂ ♀ summer tanager, black-capped chickadee, pewee, great crested flycatcher, Swainson thrush, Chuck-willow widow flew from among dry leaves and fallen logs to up over top of ridge and down N side, Baltimore Oriole, cardinal, cottontail (among jumpers) mourning dove (nesting?). From east end can hear birds from field beyond: 3 redwings, 5 meadowlarks, mockingbird, now 5 along base of hill and just in from edge: 2 great crested flycatcher, titmouse, Acadian flycatcher, Swainson

fox squirrel, wood rat nests, goldfinch, Swainson thrush singing, cardinal, bobwhite, 2 Eastern Kingbirds, black poll warbler, pewee, redbellied woodpecker, Swainson thrush, Baltimore oriole, black-billed cuckoo, pewee. At shed turned W and followed up gulch to top and observed: myrtle warbler, fox squirrel, black-capped chickadee, Swainson thrush, Swainson thrush singing, 2 Swainson thrush fighting, red-eyed vireo, Summer tanager, a Swainson thrush displaced a pewee which was on a dead branch 4 feet above ground, cardinal, black-poll warbler, redtail left dead tree perch at top of gulch and called vigorously (same as one observed at beginning of trip). From top of fence continued south in forest on upper bench: 2 Swainson thrush, red-eyed vireo, Swainson thrush. From fence junction with N-5 fence at rock fence (leading down slope) to N end of ridge: 2 bluebirds (eastern) 3 bluejays, cowbird, Carolina wren, black-capped chickadee, chimney swift, Acadian flycatcher, pewee, 2 field sparrows, ² woodrat nests. From N end of ridge at fence to E end did not record birds as this area had previously been surveyed. No Indian artifact on east vantage point.

It is obviously that wind was a factor in the distribution of birds today.

Summary: Birds along trail only (not including birds observed or heard beyond limits as so indicated in notes)

goldfinch 1-1=2

bluejays 2-3=5

mourning doves 6-2-1=9

house wren 1

Swainson thrush 1-1-1-1-1-1-1-1-2-1-2-¹⁼¹⁴

redtail 1 (observed several times)

Cardinal 1-1-1-1=4

starling 1-

yellow warbler 1-

gnatcatcher 3-

Acadian flycatcher 1-1-1=3

turkey vulture 1-

Cowbird 1-1=2

Carolina wren 1-1=2

redstart (am) 3-

red-eyed vireo 2-1-1=4

fox squirrel 2-1-1=4

titmouse 1-1=2

brown thrasher 1-

Summer tanager 2-1=3

black-capped chickadee 1-1-1=3

pewee 1-1-1=3

great crested flycatcher 1-2=3

chuck-wills widow 1

Baltimore oriole 1-1=2

Cottontail 1-

bobwhite 1-

eastern kingbird 2

black poll warbler 1-1=2

red-bellied woodpecker 1-

black-billed cuckoo 1-

myrtle warbler

2 bluebird 2

chimney swift 1

field sparrow 2

mockingbird 2

123
Kaw River, De Soto to Kansas City, Kansas 690518-146

May 18, 1969

Mary and Annette made canoe trip (22 canoes) with Ozark Wilderness Waterway Club. They report that banks actively eroding because of high water. Water very muddy.

Lawrence, Douglas Co., Kansas

May 18, 1969

Noted two starlings, one had the leg of another and was actually moving the bird (4 inches) which was on back and growing resistance both physically and vocally.

Haswell Bottoms, S Lawrence, Douglas Co., Kansas

May 18, 1969

Checked birds in NE section of Haswell Bottoms. 5:00 P.M. drainage

Orchard Oriole: 2 ♂ 1 ♀ mainly in larger trees N of dike.

Robin: nest and young

Redwing: generally distributed along dike in trees and in fields to S and N. From the bridge of service road counted 9 males and 1 female. To SW from bridge counted 42 in trees but mainly in field (marsh).

Goldfinch: 2 in trees N of dike. They are good indicators of groups of small warblers as they are frequently associated with them and call.

Bell's vireo. 2 pairs and singing.

Cardinal 5 individuals

Phoebe. one at bridge

Arcadean flycatcher 3 in trees and 2 in meadows to S.

Dickcissel. 12 all tall.

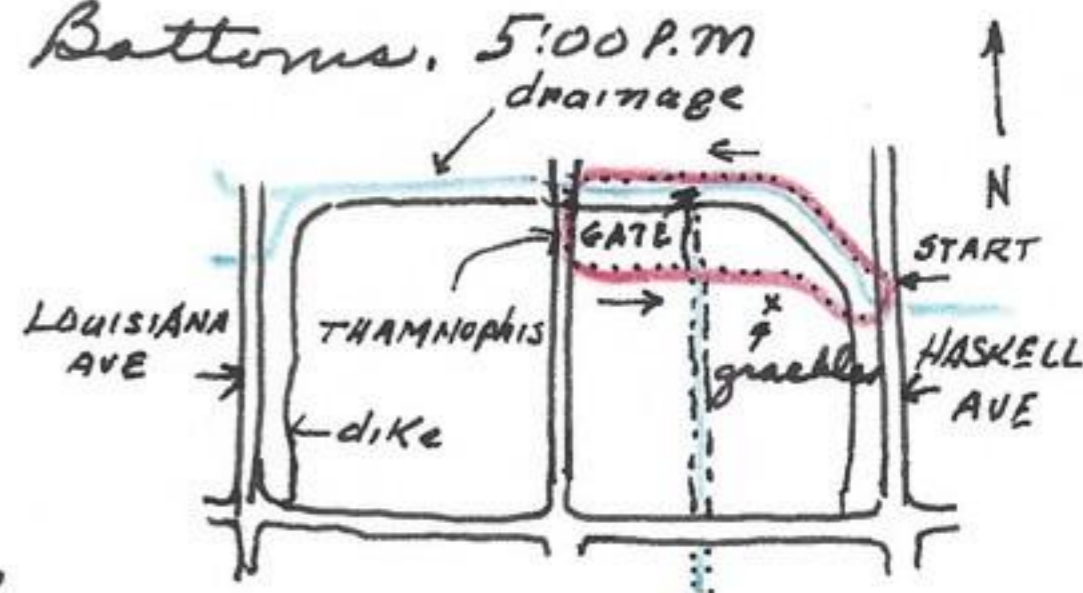
Yellow warbler 3 individuals and calling

Mourning dove. 5 individuals. One nest in juniper (7' high) and nest 30" from ground. Bird remained on nest to 2 feet. ♂ 30' away. Eggs with emb. just starting to develop.

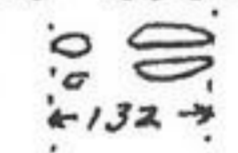
Great horned owl. One bird left area of gates & flew S down drainage ditch for 200 feet.

Baltimore Oriole 2 ♂, 2 ♀♀ in high trees.

Grackles: One group 32 alighted in marshy area. Another group 6 in trees and 2 group 3 each.



Catbird: One pair.
eastern kingbird: 8 pairs of which 5 were in meadows
 to N of dike and 3 pairs in marsh to S of dike.
Wilson warbler: one bird
brown thrasher: one bird
meadowlark: 3 birds
Swainson thrush: 2 birds only
house wren 2
shrike 1 (loggerhead)
yellowthroat 1
barn swallow 8 individuals
bobwhite 1 calling

white-tail deer: fresh tracks among trees at gate. The
 largest measured 100 mm. One with and including
 dew claws measured 132 mm . These deer
 also moved thru low drainage area immediately
 S of dike and rather than move around sedges (Carex 1 1/2'
 high, now on damp soils) the deer walked straight thru the
 carexes. The damp soils (just a week ago in water) supported
 killed deer tracks and opossum tracks. One opossum track
 measured, front 63 mm. rear 96 mm. The deer had
 bedded down on south slope of dike in shade of tree at
 a point 1/2 way between gates (water gates) and Haskell Ave.

The area SW of service bridge is considerably wetter
 than E of service bridge road and as a result there
 are more birds. E of road in meadow noted redwings,
 yellowthroat, grackles, mourning dove, meadowlark and
 dickcissels. There is apparently a drainage tile
 trending E-W across field between service road and
 N-S drainage ditch. It is approx 6' deep and water
 drains into it at each minor N-S drainage tract. Two
 of them show bones of either cows or buffalo, mainly lower
 jaws. One spinal process 6" high. These subterranean
 drainages may support salamanders as one practically dry
 spot support 3 (50 mm long) salamanders.

From a point 2/10 mi. E and 4 mi S Lawrence (P.O.), Haskell
 Bottoms, Douglas Co., Kansas, collect a Thamnopsis under a board.
 690518-1 Thamnopsis 475 mm body, 114 tail, 53 gms wt.
 A nest of a Peromyscus was within 4 feet of this snake.

775
 Lawrence, Douglas Co., Kansas

May 22, 1969

noted 3 young starling following adult female (on ground).

June 4, 1969

Observed a fox squirrel feeding on elm leaves by hanging down from back feet only. The body was out (directly down) to full extend. Limb approx 1 inch thick.

Lone Star Lake, Douglas Co., Kansas

June 4, 1969

Collected a Agkistrodon contortrix from under a rock. It measured:

690604-1 Agkistrodon contortrix 415 mm body, 66 mm tail, 68 gms wt
 This copperhead was preserved as a specimen

10 mi. W Leavenworth, Leavenworth Co., Kansas

June 8, 1969

Senator Edward F. Keilly Jr. of Leavenworth, presented me with a natrix from a small, ^{artificially} lake 10 miles W of Leavenworth. Last year there was a noticeable increase in these snakes and this year a further increase, especially in the area of the rock down. This specimen measured:

690608-1 natrix 660 mm body, 190 mm tail, 170 gms wt.

Lawrence, Douglas Co., Kansas

June 8, 1969

near 1620 Tenn. St. noted a young (2/3 size adult) blue jay flutter to ground from a small red bud tree. Five adult blue jays called loudly and continuously (more so than usual group calling) and immediately flew to the bird and surrounded it, keeping about a foot away. Two of the adults fought. These jays called and reacted as above for approx. 2 minutes, during which time the young bird fluttered uncontrollably and finally, ^{turning} on back, expired. Blood issued from the skull of the bird and was probably inflicted by the trust of an adult blue jay. No other kind of bird was associated with the jays. This behavior suggests genicid. in this jay species. On the ground, however, there was no instance of contact of the adults with the young.

June 12, 1969

noted a female robin precariously perched on telephone wire. The bird was attempting to gain balance with tail held high and wings extended. In this position a male approached the ♀ and attempted to copulate with the ♀.

The ♂ apparently was attracted by the copulating pose created by the off balance of the ♀.

June 13, 1969

Noted a blue jay replace a starling which was perched on a wire.

Lawrence, Douglas Co., Kansas

June 13, 1969

Purchased trailer from Lawrence Badle (1218 Tenn, Lawrence)
Specifications: Prall Star (Starcraft) deluxe.

Price \$2000.00 plus \$35.00 regulator for electric brakes, plus tax.
length 17'2" weight 2220 lbs

width 7'11"

hitch weight 285 lbs

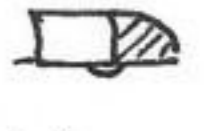
height 8'4"

tire 7.75 x 15"

serial number 68-TLD-113 license tag DL 464

Appraisal of trailer after first use at Lone Star (overnight)

1. refrig does not work on gas system.
2. water connections (2) at toilet leaking. Overflow leaks into shower stall.
3. hole in front screen
4. seats not comfortable; backs low and front of cushion drops with weight of body.
5. Cannot use binoculars because of kind of glass & screens.
6. thread on water tank intake damaged, lacks safety pressure release valve.
7. gages to pressure tank not accurate.
8. step rattles and abrades metal floor
9. rear turn signal not strong enough in daytime.
10. gas lumps should be nearer table and bed.
11. curtain should pull to edge of window, not cover edges
12. top of sink too close to edge and corner.
13. Sink too small.
14. outlet from sink should be separate from toilet outlet. It is inconvenient to open the large toilet cap to just let a small amount of water ^{out of} sink. The outlet is inconvenient and hard to get at, especially if the ground is wet from sink effluents
15. Toilet outlet too low and unprotected. Most plastic joints leak.
16. Water tank should be tailored to fit area and should have gauge as to amount in tank.
17. If one carries water to tank, it is necessary to put 5-6 gals in tank to fill hot water heater tank before water is available for sink use. A valve should be placed between tank and water heater to make minimum amount of water available to sink.

18. Curtains too near flames of stove.
19. Gas lamp should be mobile
20. fire extinguisher should be available
21. back bumper should be solid
22. screws not in straight
23. door lock loose
24. windows difficult to make airtight
25. drawers need better runner control to meet catches
26. drawers need stops
27. gas pipes unprotected under trailer and subject to damage by low shrubs.
28. table and working area at sink need spill barriers at edge.
29. floor should be sealed so water cannot run under cabinets.
30. projected stems on outside should be recessed.
31. Contact of siding to bottom inadequate. Should have more staples and sealed.
32. bed not wide enough for 2 and edges weak. mattress too hard.
33. Closet inadequate for long dresses & coats.
34. need more drawers.
35. vinyl trim peeling off outside trailer.
36. no door screen, and windows in door too small.
37. sealing strips unprotected on top and subject to damage by low limbs. Corking inadequate
38. pipes interfere with storage areas.
39. stove hood with too much filter for free flow of air. Aperture closure should be controlled from inside - not outside
40. door interferes with windows to right.
41. gas lamp too noisy.
42. hitch, tanks, bumpers should be painted same color, and should match trailer color scheme.
43. no place for spare tire.
44. trunk space ill-proportioned.
45. storage position of table unsightly.
46. trailer rides hard when under tight hitch control.
47. [essentials for a trailer = back end entirely in glass , fireplace, wood burning stove for cooking & heating, large pan for sink, small trunklike icebox, chair-bed combination, 3 1/2 gal cans for water, tub in floor (covered) for shower, metal 3 gal portable tank for heating water by sun or stove for elevated shower.]
48. electric brakes prob.
49. check tire pressure requirement.

- 51
- 690608-151
50. ventilators for freezer lets in strong winds, dust and snow.
 51. freezer should have single line from single tank if it to be used all the time.
 52. There should be a water valve at exit of tank to shut turn off water in case of emergency.
 53. curtains blow in wind, some over fire area.
 54. back cushion on front seat too much & better without.
 55. sharp edge of windows could put out eye.
 56. subboard unfinished underneath.
 57. shower door needs better lock for travelling
 58. gas light flickers when wind blows through trailer
 59. back window is in fact a side window and water collects at base to overflow inward
 60. refrig. heats table top, sink and temp of trailer in general.
 61. axle bent toward body of trailer.
 62. spring hangers insecurely welded to body frame.
 63. refrig. light goes out when travelling or wind thru door.
 - 64.

9/10 mi E and 2 1/10 mi. N Clinton, Douglas Co., Kansas
June 27, 1969

At a point at old Civil War home on top of ridge, captured a *Pituophis Catenifer*. It was crossing the road. It measured:
690627-1 *Pituophis Catenifer*, body length 6'1" (1853mm) tail 6" (152mm).
This snake is just short of the maximum size for this species.

3 mi. W Clinton, Douglas Co., Kansas
June 27, 1969

noted a scissortail flycatcher at this point.

Lone Star Lake, Douglas Co., Kansas
June 28, 1969

Camped overnight with Starcraft trailer. Caretaker reports lake level raised 4 feet above overflow level and cause boats to lodge on grass above landing platform. This water raised in about 3 hours of heavy rain. Took the following photos:

690628-1 from camp with Lone Star Lake beyond.

690628-2 Many Pauline at tree with light reflected from water.

690628-3 (~~lights too dark~~) East arm of lake

In evening tried fly fishing without much success and in area where previously I caught many fish. The high and turbulent waters may have accounted for the difference.

June 29

Catfish common at heads of bays in relatively shallow water in A.M. noted ♂ & ♀ Cowbird populate at approx. 7:00 A.M. in top of dead tree extending over water of lake. Also noted a black billed cuckoo search for food over water much on the same basis as a flycatcher. 3 great blue herons. They come from the SE in the evening.

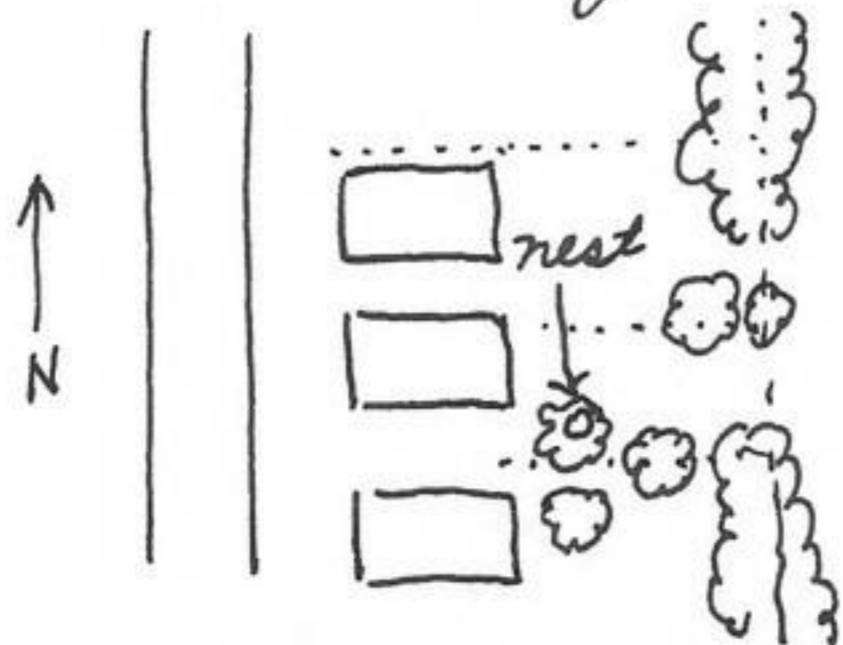
Lawrence, Douglas Co., Kansas
June 30, 1969

Observed a ♀ robin construct at nest at 1620 Tenn. The ♂ was on territory.

Kept record from ~~11:46~~ 1:46 PM to 2:38 P.M.

Complete record of ♀ and occasional note of ♂ as directly associated with the ♀. Day cloudy, temp 83, slight breeze from SW. Just enough sun to make slight shadow.

At the beginning of observation the outside of nest was completed and approx.



4/5 of inner cup (or more) completed. It appeared that the ♀ was putting the finishing touches on the cup with applications of mud and plant stems combined. Observations started at ^{hour-min, sec:} 1:46,50" as ♂ + ♀ both arrived at nest from the nne. The ♂ alighted 15' away on a close-line pole and the ♀ alighted on the nne edge of the nest. ♀ deposited debris and then with body low in nest and wings spread (crossed at back) kicked the mud & debris onto the inner side of cup. The ♂ fed on the ground below. 1:48,15" ♀ left to nw, ♂ remained. 1:49,00" flew to close-line perch. 1:49,2 ♀ arrived at nest from ne and ♂ still remained on perch. 1:50,10" both ♂ & ♀ flew to w. 1:51,30" ♀ to nest and formed cup with mud & debris. This behaviourism repeated each time ♀ arrived at nest. ♂ never visited nest proper. 1:52,50" ♀ left to ne. 1:54,20" ♂ and ♀ from ne, ♂ to adjacent tree. 1:55,30" ♂ + ♀ to s. 1:58,10" ♀ from w with 2 foot long piece of straw (dried plant stem) along with mud & debris and although she brought it to the edge of the nest she did not incorporate it into the nest. After adjusting the mud & debris, she remained motionless in nest for approx. 2 minutes. The ♂ chased another ♂ from area. 2:01,15" ♀ left to ne. 2:03,00" both ♂ + ♀ from ne. 2:04,15" ♀ to w, ♂ chased a starling. At 100' away another male fed a young robin approx 4/5 size of adult. 2:05,05" ♀ from s and as in all cases goes directly to the nest. 2:07,30" ♀ flew to w. 2:09,00" ♀ from the w. A ♀ English sparrow alighted 2' from nest and remained while the ♀ robin formed the cup of the nest. ♀ robin left 2:11,50 but sparrow remained at nest and after the robin left moved to nest and picked out 2 feathers from the outer rim of the nest. At 2:13,00 the ♂ & ♀ robin arrived from the s and the ♀ robin displaced the sparrow at the nest but the sparrow remained 1 foot away and then returned to nest with the ♀ robin still in the cup of the nest. There was no attempt by the ♂ robin to chase the sparrow from the nesting area. 2:15,00 ♀ to ne. 2:15,15 ♀ from s. 2:16,40" ♀ to w. 2:17,45" ♀ from w. 2:18,50" ♀ to w followed by ♂. Complete record of ♂ not registered but ♂ more irregular in behaviourism, sometimes remaining at nesting area (generally 15-20' away) while ♀ made trips for nesting material, while at other times would accompany the ♀. 2:19,50 ♀ from w. 2:21,30 ♀ to se. In this case the ♂ remained

in nesting area and fed at base of the tree. 2:24,40 ♀
 from NE. 2:22,50 ♂ to W. 2:23,50 ♀ to W. A family
 of Eng. sparrows in area and frequently concerned with ♀ and
 her nest building activities. 2:30,00 ♂ + ♀ from N.
 2:30,30 ♀ to SW. 2:33,15 ♀ from E and had stem 3' long
 2:37,00 ♀ to W. 2:37,55 ♀ from W. at this time concluded
 observations but nesting activity continued. I would
 judge that today will complete nest building. will make
 further observations for next few days until eggs are laid.
 (see top of next page for plotting of nest visitations) →

Lone Star Lake, Douglas Co., Kansas

July 1, 1969

Noted a great blue heron arrive at lake in evening from
 the N. A black bullhead^(10") was caught and thrown
 back into lake. As it hit the water its dorsal spine
 penetrated a floating limb (2" diam)^{and} was immediately
 secured to the limb in an upside down position. It
 finally turned the limb over but was still secured to
 its attachment and, as far as I know was unable to
 extricate itself. Species ~~Ictalurus~~ Ictalurus melas,
 a shad, 690701-1 preserved as a specimen. black bullhead
 a Crappie no 690701-2

Lawrence, Douglas Co., Kansas

July 1, 1969

There was no activity of the robins at nesting area.

July 2, 1969

no activity of robins at nest or in territory. Day hot and
 humid.

July 3, 1969

♀ occasionally at nest (post-building)

July 4, 1969

♀ at nest. ♂ singing on territory in afternoon.

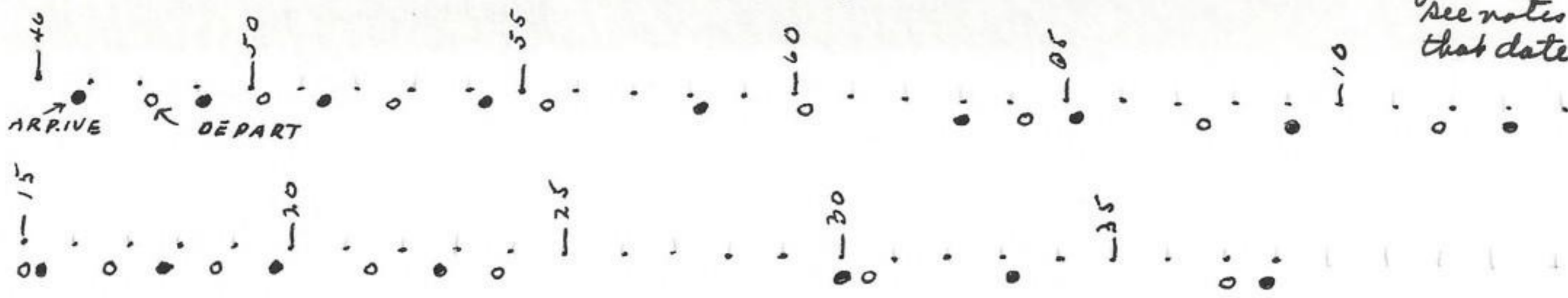
July 5, 1969

♀ at nest and ♂ singing in morning and afternoon.
 Singing took place on shore 10' from nest and in trees as
 far as 100' away.

July 6, 1969

at 7:00 P.M. ♀ not on nest but nest held 2 worm eggs. On July 7,
 the nest was deserted.

arrival + departure time of ♀ in minutes + seconds: (June 30, 1969 see notes of that date)



when ♀ interrupts the periodicity the interruption is a factor of twice or more the normal period. There is as much irregularity of time spent away from the nest as time spent at the nest.

Lone Star Lake, Douglas Co., Kansas

July 6, 1969

Fly fished length of dawn from W to E between 10:00 A.M and 12:00. Day cloudy changing to clear sky. Wind from S + temp about 88°F. Hook a 12 size fly. Most catches at approx 1 1/2 feet from shore but some as far as 10' from bank. Measurements as follows:

Lepomis cyanellus (green sunfish) 34 total: Standard length + weight;

79-17	100-37	89-24
84-19	104-36	94-27
112-39	98-29	100-32
100-36	112-42	88-20
99-29	103-47	81-19
97-25	102-39	78-15
104-32	111-45	
101-30	103-34	
92-23	96-27	
109-42	93-26	
127-59	93-25	
-143-86	96-28	
114-43	91-23	

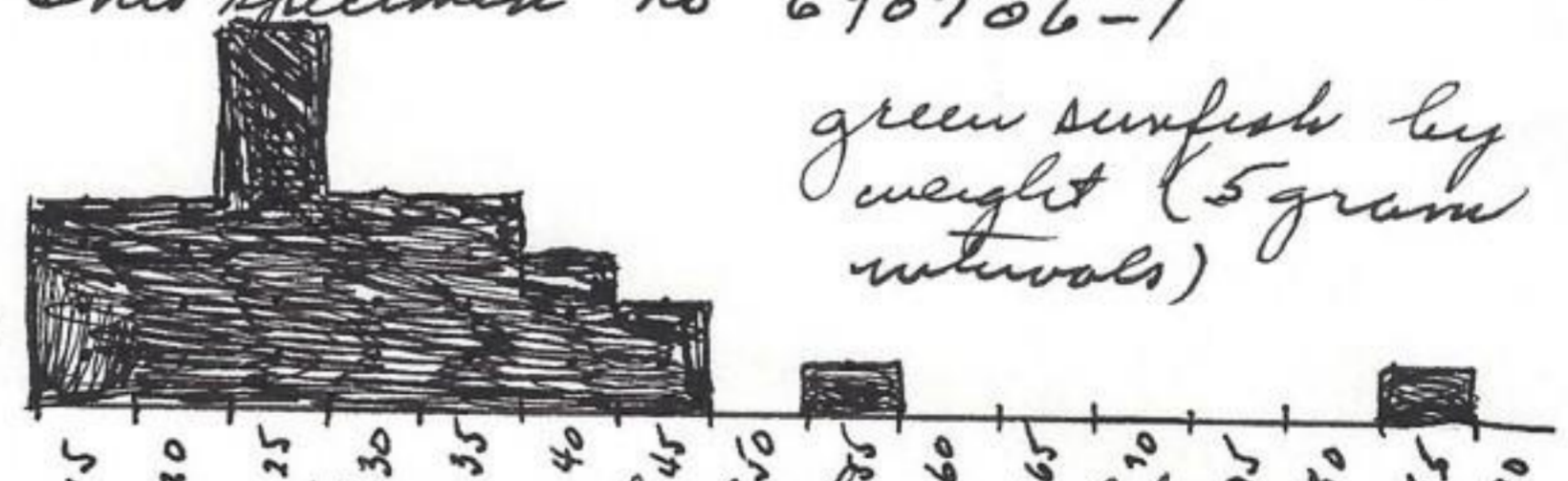
Lepomis macrochirus (bluegill) ③

121-58	120-56	122-59
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Notemigonus crysoleucas (golden shiner) ③

140-55	155-64	123-45
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This specimen no 690706-1

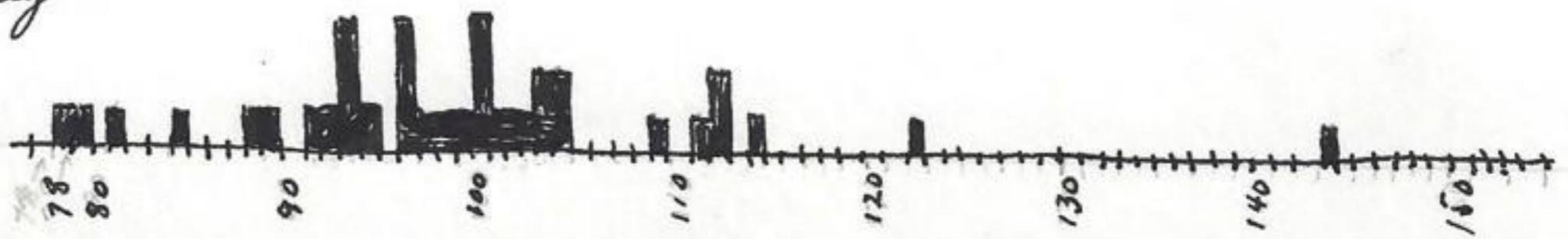
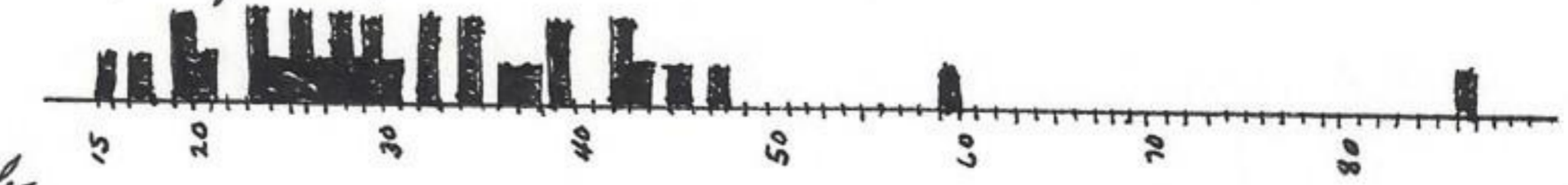


green sunfish by weight (5 gram intervals)

abrupt size scale may be factor of capture

maybe bimodal (♂ versus ♀)

green sunfish by total length (standard)



In the past, the percentage of bluegills to green ⁶⁹⁰⁷⁰⁶⁻¹⁵⁶ sunfish has been reversed, however the fishing time was evening. Crappie are also taken in evening but uncommonly so in other parts of the day.

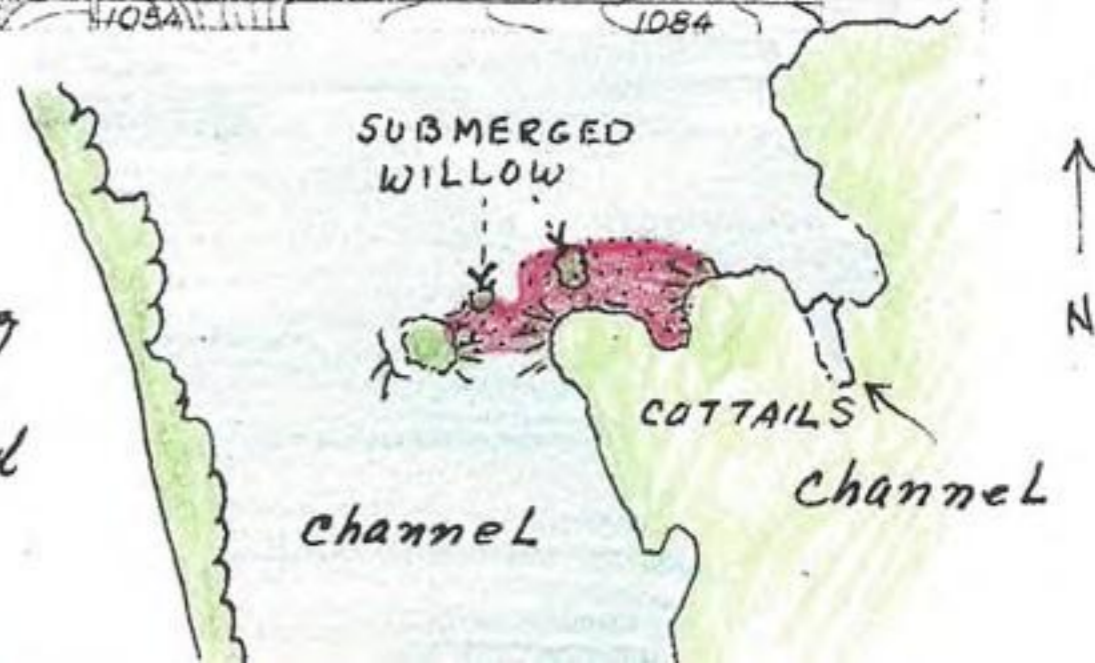
Lone Star Lake, Douglas Co. Kansas

July Aug. 14, 1969

at a point indicated on map below, checked the breeding grounds of the blue gill (*Lepomis macrochirus*). Time 8:00 P.M. to 8:30 P.M. now mid, sky clear, water temp 84°F. Sample of population by gray buckley no 14 hook.



Spawning area 18 x 10 ft, water 20" deep. Cattails to S, 2 submerged willows to n. Bluegills Confined to red area and none beyond limits. nest in soft lake-bed beneath willows, floating leaves of cattails and at edge of upright cat-tails. Other favorable adjacent areas did not support bluegills.



134

measurements of *Lepomis macrochirus* (bluegill). Standard length and weight. (all males and in breeding color) 55 individuals

122-62 gms	125-75	125-81	128-80	125-82
123-70	130-76	138-106	136-89	129-77
118-64	130-77	128-89	138-85	123-79
128-70	120-70	125-83	131-84	135-89
122-70	130-86	118-69	132-78	* 130-69
122-67	130-90	127-79	119-65	126-80
133-94	128-80	118-70	118-63	123-65
125-65	129-84	137-90	130-66	125-76
123-67	126-78	129-78	122-63	119-66
128-79	126-96	123-80	134-83	123-63
124-76	125-80	125-67	122-73	133-81

Testis of above average 38mm in length. There were no other kind of fish in area except 5 warmouth, nor were there small or female bluegills. * specimen no 690⁷14-2

measurement of the 5 warmouth (*Chaenobryttus gulosus*)

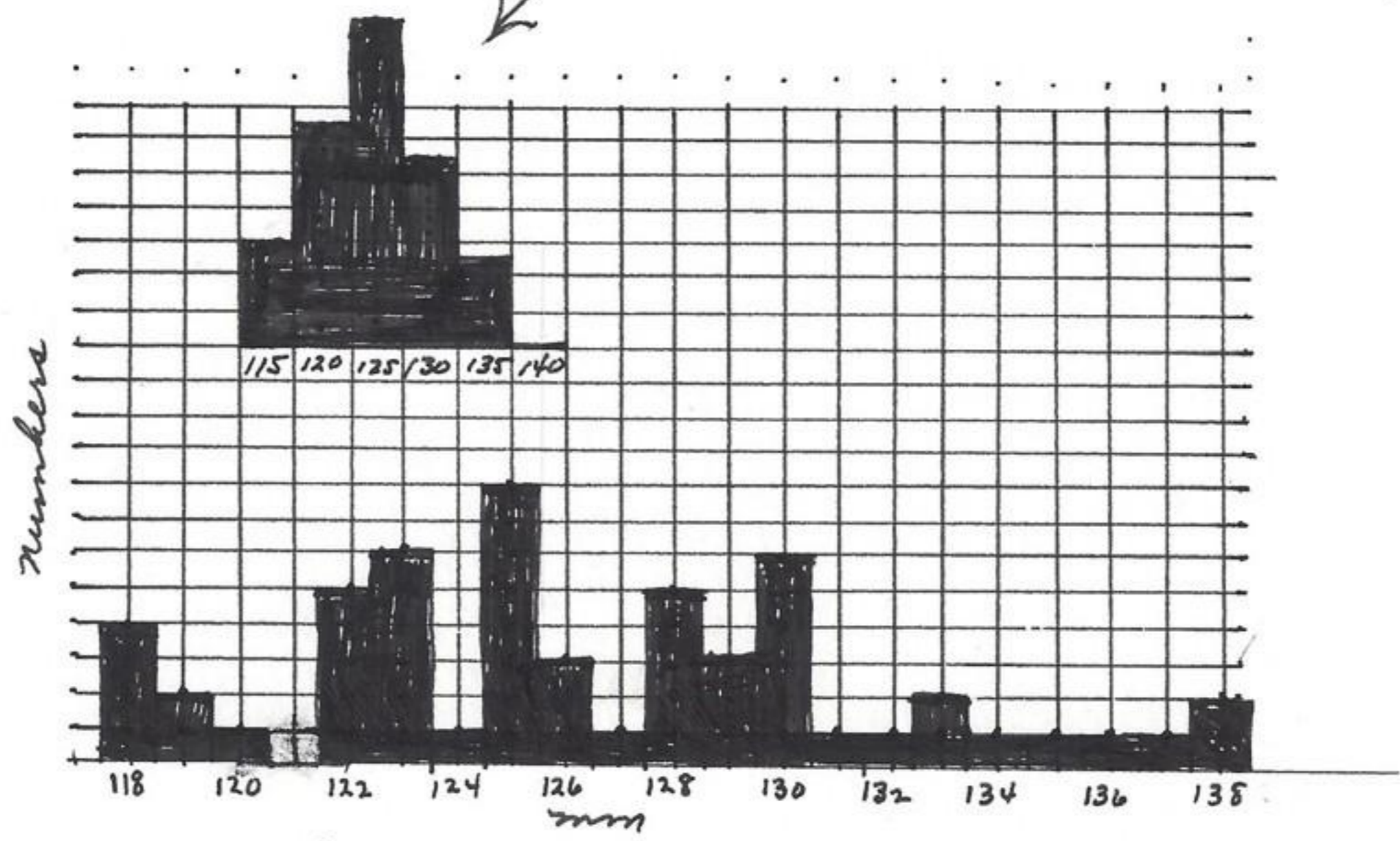
- 135-91 gms
- 127-79
- 118-42
- 133-88

This specimen is no 690⁷14-1

a muskrat swam thru breeding area but fish did not react. a family of wooducks, a green heron and 4 kingfishers in area. at late twilight a chuck-wills-widow flew up arm of lake, at least the call of the birds in the area were those of the Chuck-wills-widow.

A turtle from general area is no. 690⁷14-3

size frequency at 5mm intervals (standard length)



size distribution of bluegills

Love Star Lake, Douglas Co., Kansas

July Aug. 15, 1969

Revisited breeding grounds of the bluegills (see Aug 14). There were no adult males in area but several small bluegills (all female) had moved in. They measured: 86-20; 87-22; 86-20; 78-16; 92-26. Also two *Notemigonus crysoleucas* (golden shiner) were caught in same area as above, (in breeding grounds) measuring: 136-43 gms; 138-46. The first specimen was preserved as no. 690815-1

Lawrence, Douglas Co., Kansas

July Aug 26, 1969

Ron. S. Nolan left address where he will be residing in Calif. 146 9th St., Del Mar, Calif. Will be at Scripps Institution of Oceanography, Univ of Calif, San Diego, La Jolla, Calif. 92037. He claims that the sandpits have been a continuous lobe and supports many bass over 5 lbs. Photos 69070²⁶ to 690726-607 of Marij dog Karl.

Wakarusa valley, Clinton area, Douglas Co., Kansas

July Aug 27, 1969

Census of Clinton area starting at Segel School. 11:00 A.M. sky 99% clear. mileage 27799.7. 82°F. Wind from ^{NE} SW. 00.1 dickcissel, Indigo bunting. 0.4 2 mockingbirds. 0.5 wakarusa bridge, water 4' higher than usual summer, muddy. dickcissel & redbellied woodpecker at bridge. 0.8 crow calling. 1.3 dickcissel. 2.2 6 cowbird, 5 dickcissel. 2.7 shrike. 2.9 2 dickcissels. 3.0 to 8 3.1 mourning dove 3.2 bobwhite, 3.4 mourning dove, bobwhite. 3.5 bobwhite. 3.6 shrike & barn swallow. 3.8 Rock Creek bridge & cardinal; water muddy & above normal level. goldfinch. 4.1 base of hill & stop. mileage 10:00 Will fallow w along old road, now growing into weeds. 11:20 11:25 Indigo bunting, blackbilled cuckoo. Liana picipens in dry road. 11:27 mouth canyon. cardinal. 11:33 now into forested area. 11:37 red-bellied woodpecker. 11:41 2 blue jays, mourning dove. pewee. 11:45 top of hill; ^{sparrow hawk} To house and then returned. Will list only those birds not observed on initial trip. Turkey vulture summer tanager singing. ^{chickadee} Returned to car 12:24. 4.5 Rock Creek bridge. 4.7 2 mourning doves. 4.9 meadowlark. 5.2 now to E. dickcissel. 3 mourning doves. 5.4 meadowlark. 2 bobwhites, 2 dickcissels. 5.9 4 dickcissels 6.1 to N. 6.2 bobwhite, cowbird, 2 redwings. 6.3 main road, now to E. 6.9 dickcissel. 7.4 2 dickcissels 7.6 mourning dove. 7.8 mourning dove. dickcissel. dickcissel. 8.0 south end proposed dam at 12:35. Used recorder (Reo-tone) and found that there is a delay in real movement and first words are faint or lost.

Lawrence, Douglas Co., Kansas

Aug 2, 1969

Prepared for vacation to Utah.

- | | | |
|-----------------------|------------------|------------------------|
| 2 aluminum chairs | traps | corn meal |
| emergency light | stakes | oat meal |
| hatchet | watch | rapidograph + ink |
| hand saw | cotton | pencils + book |
| shovel | wire | colored pencils |
| bucket | pins | scissors, sepal |
| 5 gal water can | labels | forceps |
| hydraulic jack | peaks | wire cutters |
| knee boots - shoes | pin boards | recorder + tape |
| Car registration | jars | fish equip |
| portable radio | gun - shells | mirror |
| binoculars | dry hot-top tray | ear syringe |
| ref books | insect bot | poly. base |
| button | mm ruler | flashlight + batteries |
| acetate film + marker | mm tape | valve for shower |
| journal + paper | thread | |
| camera. film | needles | |
| see box | | |
| Close cellar windows | paper | tooth brush + paste |
| key to house | milk | |
| mail. | clock | |

Left Lawrence. 4:30 P.M. 27936. Followed Interstate 70 (40) to approx. 5 miles W Junction City. Usual birds including dickcissels, mourning doves, meadowlarks as dominant birds. A redtail and only hawk observed was at mileage 27993. In the Flint Hills area were several groups of night hawks in aggregates of 3 to 8. Country as green as I have ever seen.

5 mi. W Junction City, Kansas

Aug. 4, 1969

Up at 6:00 A.M. Left 7:35 A.M. Mileage 28051 Badger road kill. Robin, Eng sp, barn swallow + mourning dove in area. Temp. 72°F. Sky 90% cloudy. Redtail (28057)

28060 Chapman
barn swallow 1-1-2-1-1-2-1-
crow 1-
cowbird 1-

690804-160
badger road hill (28065)

28066 Detroit spit.
barn swallow 1-1-1-2-1-1
w. kingbird 1-
grackle 2-

starling 6-
mourning dove 1-
sparrow hawk (28068)
starling 5

28072 Abilene (sky 100% and slight rain)
w. kingbird 1-1-1-1-
meadowlark 1-1-1-1-1-1-1-6-1
mourning dove 3-1-
scissortail flycatcher 1-2-
(ponds full)

barn swallow ³⁻ 1-1-2-6-1-1-2-
1-1-3-1-1-3-1-2-
starling 1-80+
badger rd hill (28085)
cowbird 1

28096 Salina. (8:20 AM)

barn swallow 2-1-2-4-2-1-1-1-
1-1-2-1-1-2-1-2-4-
1-1-4-1-4-1-1-1-1-1-1-
cowbird 2-
w. kingbird 1-1-1-1-1-1-3-2-2-1-1-
meadowlark 1-1-1-1-1-1-1-1-2-1-
1-1-1-1-1-1-1-1-
eastern kingbird 1-1-1-
redtail hawk (28117) 1-1- (28139) 1-
redwing 4-
night hawk on pole 1-
ducks (sp.?) 3.

starling 40-
brown thrasher 1
little green heron 1
mourning dove 1-1-1-1-1-1-
cowbird 2-1-4-3-4-2-6-1-4-
scissortail 1-4-
swainson hawk 1-
redwing 4-
badger rd hill (28146)

28155 Dorrance turn off. (9:35 AM)

barn swallow 1-2-1-2-1-1-5-
w. kingbird 1-1-2-6-2-
cowbird 1-2-
redwing 1-

mourning dove 1-2-
meadowlark 1-1-
eastern kingbird 1-1

28162 Benker Hill Rd

redwing 1-
meadowlark 1-1-
mourning dove 2-

barn swallow 2-
w. kingbird 5-1-2-1-1-2-

28171 Hoisington turn off (end complete census)
Duchessel + hunting at Russell.

Recorded the following selective observations.

27993 redtail hawk
28193 Swainson hawk
28256 striped skunk rd hill
28265 burrowing owl
28328 Swainson hawk
28329 feral jack rabbit

28332 Colby Turnoff.
28337 redtail
28348 badger road hill
28363 first crow (11)
28472 striped skunk rd hill
28474 Swainson hawk.

690804-161

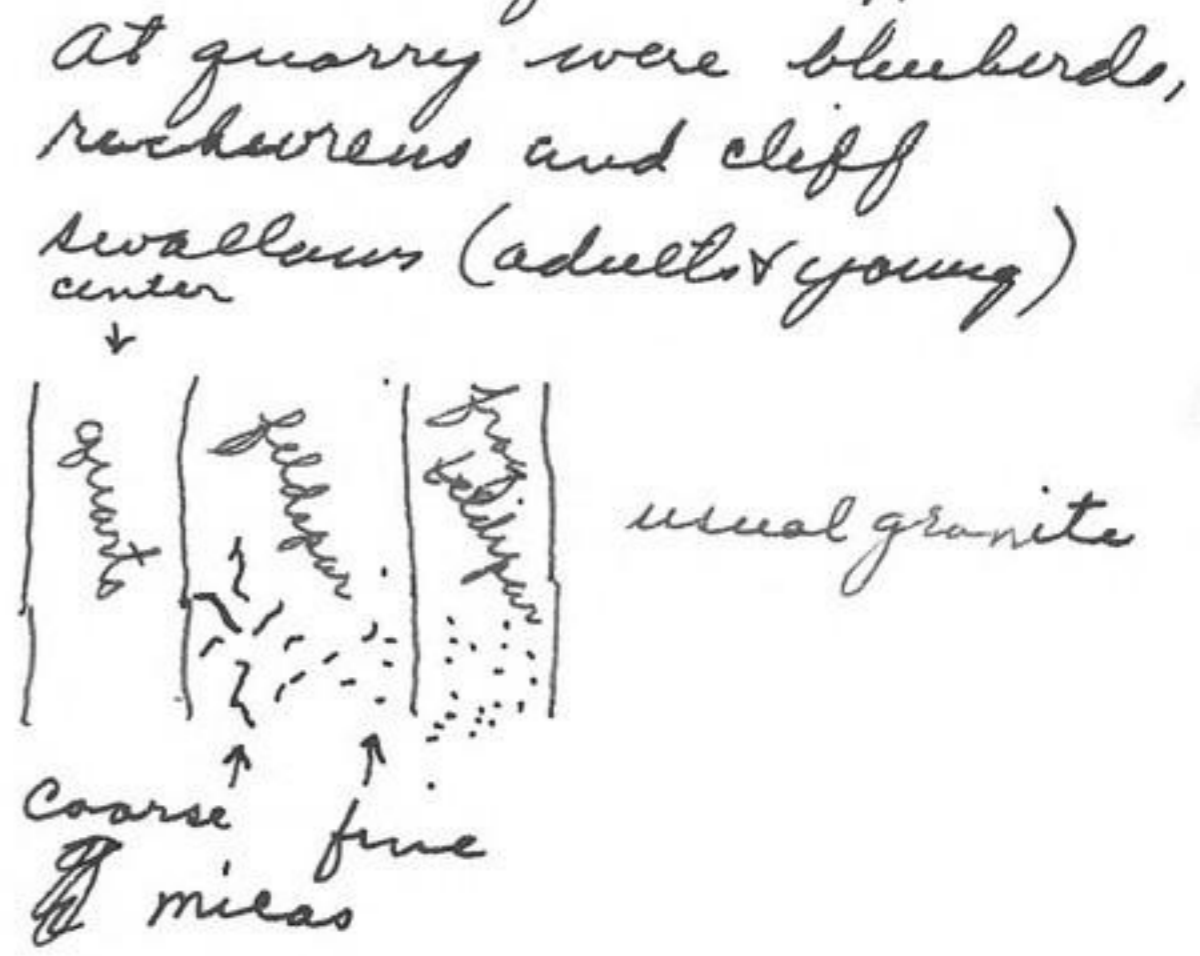
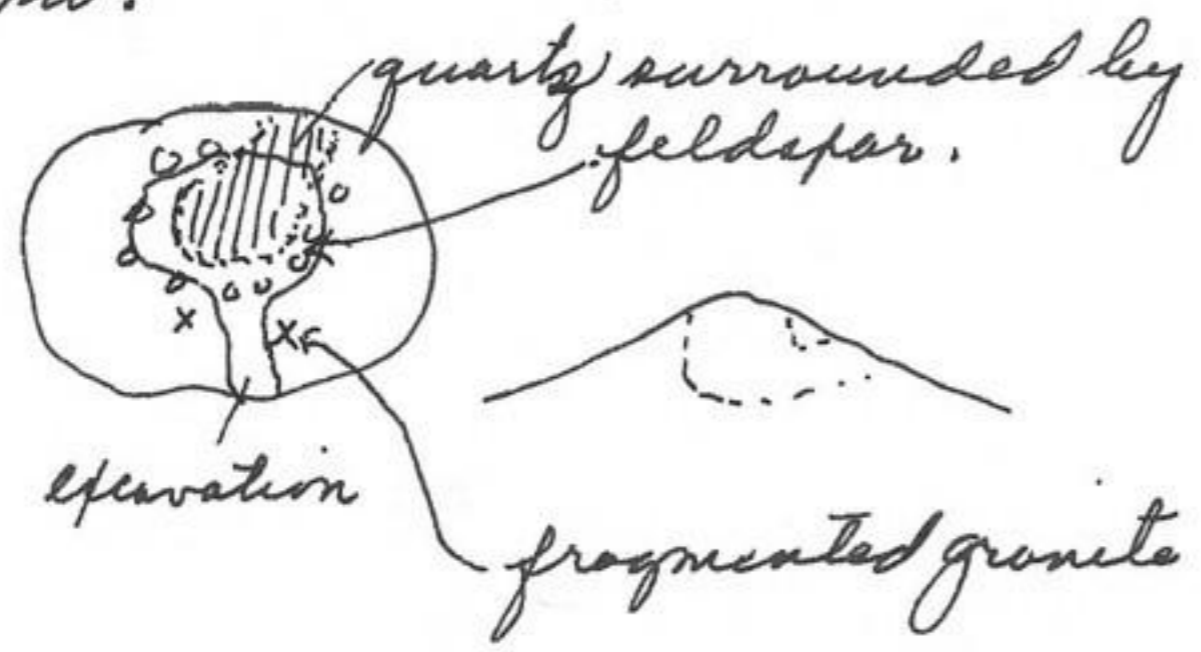
It was noted that in the long grass prairie there were few meadowlarks and many western flycatchers. In the transition between dry short grass and long grass there were more meadowlarks and fewer western flycatcher than to east and in the strictly short grasslands there were ^{only an occasional} fewer meadowlarks and practically no flycatcher but an increase in jackrabbits and short eared owls. Arrived Limon at 9:00 P.M. at mileage 28488. Rain to W & N & approaching area

Limon, Colorado

Aug. 4, 1969

Left Limon at 9:30 A.M. At our camp at east side Limon at airport, surveyed a 45° horizon to E with 7x binocular on two occasions but did not see a single bird or hawk. At camp noted 4 mourning doves, incidentally only one bird called this A.M. and it was a meadowlark, and 6 meadowlarks, these birds associated with the buildings. No building E of use. First antelope just N Limon. Grasslands now in shallow terraces 28500 temp 80°F sky clear, wind from S. The hunting & mourning dove are dominant but uncommon. Plowing of slope grasslands have been disastrous with rocks at bottom of field. About 10 m E Denver noted a redtail & marsh hawk. At several points N or Denver on highway 25 noted several small groups of Franklin gulls, ^{20 to 400 in groups} Temp at 2:00 approx. 90°F

Continued on highway 287 from Fort Collins and about 3 miles from divide, camped ^(mileage 28697) for the night. Pally, Annette and I collected rocks from an excavation to the east of road approx. 1/10 mi.



In the evening noted 2 mule deer and several antelope. They share feeding areas. The entire area from east to W is of the granite type of rock with outcrops on knolls and ridges. Pine trees are generally associated with outcrops.

3 mi S divide, highway 287, Larimer Co., Wyoming.

and 2 does Aug 5, 1969

3 large buck (mule deer) and 5 antelope in same area just below camp. The does preceded the bucks. To west were 40 antelope. Others fed on distant ridges. Magpie & bluebirds dominant birds in morning. Left camp, mileage 28697 to Larimer Temp 68° F at 8:25. Sky 50% clear. Divide 28700 Die Sidung 28703. 12 antelope to W. From 28714 to outskirts (Cement Co) S of Larimer counted 14 *Citellus* along road right-of-way. Larimer 28721 At 5 mi. W Larimer noted a redtail hawk. Continued to Libby Lake at mileage 28

Set 140 traps in Krumholz NE of camp. Both prostrate and upright spruce on slopes. Soils bare and dry under Krumholz.

4/10 mi. S and 6/10 mi E of 10,850 ft.

Libby Lake, NW sec 17, R 79W, T 16N, Albany Co., Wyoming.

Aug 6, 1969

Collected the following mammals from trap line of 140 traps.

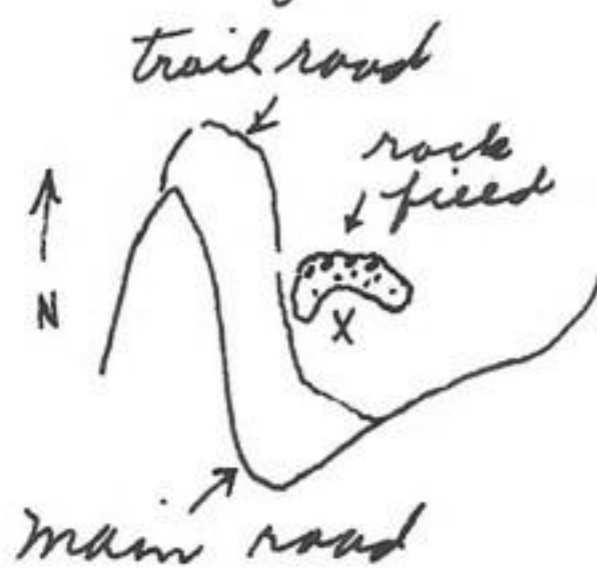
690806-1	<i>Clethrionomys</i>	124-39-18-11 ⁸ -15 gms testis 10 mm ♂
SK: 690806-2	<i>Peromyscus</i>	153-65- ²⁰ 18- ¹⁸ 20-16 gms ♂ testis 10 mm
690806-3	<i>Peromyscus</i>	113-28-18-12-14 gms. ♂ Testis 3 mm
690806-4	"	123-28-18-14-18 gms ♂ testis 3 mm

Birds in area: Canada jay, white Cr. sparrow, ^{gray headed} junco, pipit, mountain chickadee, Calif. gull, black tern, green tanager, water ouzel, pine siskin, water ouzel, black tern (?), robin.

Libby Flats, 10900 ft., Albany Co., Wyoming

Aug. 7, 1969

Last night set 140 traps (20' interval) among Krumholz on ridge just west of the quartzite rock field. This is the exact area trapped last year in August. Conditions are about the same as last year as concerns flora. This period of trapping is characterized by lack of moisture on plants in morning and windy days. The trapping area at Libby Lake has a different exposure and is not as well developed as the Libby Flat. There is more current shrubs at lee edge of Krumholz at Libby Flat than at Libby Lake. Of the two areas, the Libby Flats is the more typical Krumholz.



measurement of mammals and birds collected this A.M. (at sunrise).

- 690807-1 green tailed towhee. T.L. 185, 29 gms.
 690807-2 micratus 178-66-21-12-38 gms testis 12 mm ♂
 690807-3 Phenacomys 122-30-18-13-18 gms testis 8 mm ♂
 690807-4 Peromyscus 164-73-21-17-20 gms ♀ suckling.

There is an increase in numbers of marmots and porcupines. From observations of last year. Chipmunks and smaller mammals and birds seem to be fewer this year.

The season is drier and the ponds and some lakes are dry.

Recorded the following photos

690807-5 Quartzite outcrop (^{medicine peak} ~~Gaps~~ quartzite) and Chris showing broad fracture plane.

690807-6 Chris on ^{quartzite} medicine bow fractured boulder.

690807-7 glacial striae and dislodged fragments of rock to show either plant force or frost action.

690807-8 rock surrounded by excavation either by wind or marmot. This area blown to residual rocks of small size and probably due to wind action

The pressure of the wind from lee side of wind Krumholz is exceptionally strong, more so than straight winds.

690807-9 Old tree, probably Engelmann spruce.

690807-10 lichens, crustose on Gaps granite.

690807-11a " " " " " "

690807-12 " " " " " "

There is a large dead trunk of a tree on top of the granite outcrop and shows the type of large tree of a previous more equable period

690807-13 Family and range with yellow flowers in foreground.

690807-14 ibid.

690807-15 yellow flowers at granite outcrop

690807-16 Annette P at lake

690807-17 Annette P at base of snow

690807-18 Annette and background of range

690807-19 moss on creek from E of granite outcrop

690807-20 glacial striae and defoliation at camp. (in Nash formations.

This afternoon to Centennial for tire repair and return. no chipmunks and birds unusually uncommon. One porcupine road kill. ~~Two~~.

meadow below 10720 ft. 690809-164
Libby Lake, Medicine Bow Range, Albany Co., Wyoming.
Aug 9, 1969

Last night set 70 traps in meadow immediately below Libby Lake. Consisting of conifers, willow, sedges, spruces and river. This area would normally produce a high population of microtines. There was evidence of last years nests in drier field. Most runways associated with Dec '88 inch thick on protected ponds, especially with algal mosses. Collected the following:

690809-1 navigator shrew 159-78-21-3-10gms ♂ testis 2mm
690809-2 micratus montanus. 172-45-19-14-47gms ♀ testis 13mm inguinal

Photos in the area are:

- 690809-3 glacial striae in schist NE camp.
690809-4 " " " " " " " "
690809-5 " " " " " " " "
690809-6 conglomerate in Nash formation NE camp
690809-7 lichens of crustose. Annette
690809-8 " " " " type.
690809-9 perpendicular bedding of quartzite in Nash Formation
~~690809-10~~

- at Libby Flats in trapping area of previous day photos of:
690809-10 krummholz on ^{windward} lee of spruce.
690809-11 " " lee of rock
690809-12 " of general type
690809-13 road cut with perpendicular profile of rocks
690809-14 car & trail at S end of Mirror Lake.
690809-15 tectonic folded schist
690809-16 horizontal outcrops on range
690809-17 Silver Lake
690809-18 " "

at front conifer barrier collected rocks. Between here and N. Platte River counted 10 magpies, 1 sparrow hawk, antelope & mourning dove. N. Platte 28846. Flock 80 Brewer blackbird, 1 skunk rd hill. No prairie dog in colony W of bridge on sidehill. One jackrabbit rd hill between N. Platte River & Walcott Junction. Small population of jack & cottontails just E of Rawlins. Arrive Rawlins 28920

Rawlins, Wyoming
Aug 10, 1969
Left 8:30 at 28920 - Great blue, halden, snail, mallard at camp (Chevron station).

made complete census from Rowlands to Luck Springs
 mileage 28927. No birds to Hazel Rd. Shrike, Citellus,
 Knobs Rd. 28930. badger road kill. meadowlark, thrasher (sage?),
 thrasher, thrasher, associated mainly with greasewood. Daley Rd 28933.
 2 thrashers, 28935 Sweetwater Co. pins. Antelope associated with
 greasewood. Sage on sidehills. 3 antelope, 2 more, one more,
 antelope. 28938 Liner Rd. 8 antelope. 5 antelope, 2 antelope,
 8 antelope, 2 antelope, 10 antelope, 5 antelope, 14 antelope, 5 antelope,
 5 horned larks, 8 antelope, 10 antelope, 5 antelope, 28942 few
 juncos, otherwise none represented. 5 horned lark, horned
 lark, meadowlark, mourning dove, horned lark, antelope,
 28948 Baggs, horned lark, 28951 Continental divide. magpie
 not associated with habitation. 3 horned larks, antelope, magpie,
 28963 Wamsutter. mourning dove, temp 72° F, sky starting
 to cloud over. 28966 Rasmussen Rd. mourning dove,
 the presence or lack of antelope do not seem to be
 correlated with ^{rabbit} road kills. Definitely fewer on west side
 of divide. 28968 ~~near~~ Freeman Rd. horned lark. 28970
 Buster Booster Rd. 2 horned larks. 28971 Red Desert.
 mourning dove, 9 antelope at lake in town and 100' from
 house. (2 of the antelope were small) shrike, 28977 redtail.
 28979 Tipton Rd. Redtaillike hawk. Coming into area
 of increase artemisia and higher in life form. 28982
^{G.L.}~~H.~~ Rd. Quercus associated with artemisia. Roadkill
 antelope. 2 redtaillike hawk soaring together. 28984
 D.L.M. Rd. 28986 Bar X Rd. 28987 Table Rock Road, 28992
 Patrick Draw Road, 2 horned larks, Have noticed that
 there are no birds associated with rest area. 3 antelope.
 28997 Bitter Creek Road. magpie, 29000 Red Hill Rd. 3 antelope.
 horned lark, badger road kill, magpie, 29009 Point of Rocks.
 mourning dove. Area now more deeply eroded than previously
 and exposing more rock features. 29018 Superior. 29019
 excellent road cut exposure for stratigraphical studies to
 show pervasivity of deposits. 29021 prairie dog alive in
 road, another 1/10 mile beyond, a colony to right of road and
 can see approx. 10 on mounds. 29024 excellent lake bottom
 of emsociois of green weed surround by high artemisia and
 greasewood. 29030 Bafter. 29035 East end Rock Springs
 time 11:00 and end of complete census. Continued west to
 Evanston, thence S on 150 to camp approx 3 miles N of
 Bear River Service Station. Camp at edge artemisia-aspens
 association. Elevation of last year camp 7220 ft.

1 mi. W and 12 mi. S Hilliard, Summit Co., 7815 ft., Utah

Aug. 11, 1969

mammals from 70 traps (20' apart) in sagebrush - aspen association at contact of open Artemisia flats and aspen trees. (at rock crusher site for development area to E.)

measurements are:

<u>690811-1</u>	<i>Eutamias merriami</i>	190-90-30-13-34gms ♀ ut normal
<u>690811-2</u>	" "	192-86-30-13-36gms ♀ ut normal
<u>690811-3</u>	" "	186-85-29-13-34gms ♀ ut normal
<u>690811-4</u>	<i>Peromyscus maniculatus</i>	162-69-21-20-19gms ♀ ut normal
<u>690811-5</u>	" "	159-68-20-19-18gms ♀ ut normal.

This morning made trip to Evanston and made complete road side census from Bear River Service Station. Mileage 29182. 9:20 A.M. Chipmunk, 29184 sparrow hawk, 29185 sparrow hawk, 29186 2 swallows sp?, 29186.7 sparrow hawk, 29186.9 sparrow hawk, 29186.9 sparrow hawk, 29186.9 sparrow hawk, 29187.3 sparrow hawk, 29187.5 2 sparrow hawks, 29187.8 2 sparrow hawks, 29188.5 sparrow hawk, 29188.7 sparrow hawk, 29188.9 ~~7~~ 3 swallows at Wyoming-Utah State line, 29189.5 3 swallows, 29190.1 swallow, 29190.3 hummingbird, now in savanna of meadowgrass and aspen - spruce - willow. Previously of sagebrush - aspen savanna. 29191.7 3 sparrows sp?, 29192.4 6 crows, 29192.7 old school house and now trending E, 29193.2 magpie and river, 29193.4 3 magpies, 1 magpie, 29193.7 2 magpies, 29194.5 now to N, 29197.9 Mormon Church, 29198.3 Brewer blackbird, 29193.3 2 magpies, 1 Brewer blackbird, 29199.7 magpie, 29201. Brewer blackbird, 29201.1 18 Brewers blackbirds, 1 magpie, vesper sparrow?, 29201.7 8 Brewers blackbirds, 29202.8 Brewer blackbird & fielder, 29203.3 swallow, and crossing Sulphur Creek, 29203.8 swallow, 29304.1 3 swallows, 29304.4 5 magpies, 29304.8 Bear River, 4 magpies, 4 swallows, 29305.3 magpie, 29305.9 page hen road kill, 29307.1 13 magpies, 29307.9 2 magpie, 29308.4 4 magpies, 29310.1 Brewer blackbird, 29311.4 3 magpies, 29311.7 magpie, 29312.2 magpie, 29312.9 City limits of Evanston, ^(State Institution) and end of census. Returned to camp and thence to Butterfly Lake just beyond the divide. Rain most of afternoon. Camped NW area of camp at W end lake. Set 20 traps in conifers surrounding meadows associated with W end of lake in same places as previous year.

Butterfly Lake, 10,321 ft., Sucurme Co., Utah

Aug. 12, 1969

measurement of mammals collected this A.M. from 70 traps set last night among conifers bordering alpine meadows W of Butterfly Lake at 10327 ft.

690812-1	<i>Clethrionomys</i>	121-31-19-14-17 gms ♂ testes 7 mm
690812-2	"	143-44-19-14-25 gms ♂ testes 10 mm
690812-3	"	141-40-19-14-25 gms ♂ testes 11 mm
690812-4	"	128-34-19-14-19 gms ♂ testes 10 mm
m only 690812-5	"	109 32-18-13-12 gms ♀ ut normal
m only 690812-6	"	118-33-19-13-15 gms ut. enlarged.

The above *Clethrionomys* were localized and associated with bases of Engelmann spruce and down logs. Left traps in position (8:00 P.M.), cloudy, some rain, and at 12:00 noon, rechecked traps and collected one *Phenacomys*. 3 other traps were sprung. This microtine measured:

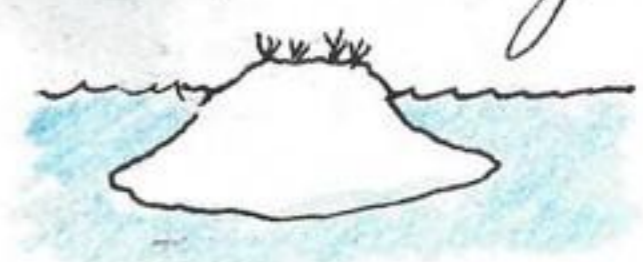
690812-7 *Phenacomys* 129-31-18-13-28 gms ♀ 1x3 emb 5 mm

The skin of this mouse is very delicate. Mammary glands well developed. Trapped from dense accumulation at base of spruce. Birds in area: Canada jay, gray-headed junco, hermit thrush and juvenile, mountain chickadee, tree swallow, spotted sandpiper at same lake as noted last year (directly N of W end Butterfly Lake, robin, pine siskin, Clark's crow, white-crowned sparrow, Cassin's finch, arctic three-toed woodpecker, red-breasted nuthatch, crossbill, hummingbird,

at 5:15 P.M. checked trap line of above and only two traps had been sprung. no mammals. Mary and I took several photographs in area west and NW of Butterfly Lake as follows:

- 690812-8 Annette C at camp.
- 690812-9 Mary at lake supporting floating island. Engelmann spruce in background, dwarf willow in foreground.
- 690812-10 blue flower associated with edge of lake in sedge and grass.
- 690812-11 Floating island lake and general view.
- 690812-12 Close up of floating island showing configuration of sub-surface profile.

This island moves from one part of lake to another according to wind but generally is at S end of lake.



690812-13 Lake directly N of W end Butterfly showing water-lily and spruce tree reflection.

- 690812-19 Spotted sandpiper lake to w with bald mt in back-ground and lily pads in foreground. This lake is named because of the annual nesting of the spotted sandpiper and successful raising of the young.
- 690812-20 Close up of young spotted sandpiper. 2 other young were observed. The adult feigned from rock to rock and frequently alighted in top of dead spruce (3' high)
- 690812-21 Hummock form of meadow and nearest condition of arctic life form of any meadow examined so far.
- 690812-22 Same as above but at a distance. This area differs in lack of lichens of the arctic. The lake associated with this area has a 15' encroachment of sedges which react to weight of individual.
- 690812-23 Lake E of spotted sandpiper showing encroachment of sphagnum moss from dry border to saturated condition in lake. The ^{greatest} encroachment is from the nw.
- 690812-24 general view of above lake.
- 690812-25 man's shadow on lake sphagnum
- 690812-26 extent of depression of body weight on encroaching sphagnum.
- 690812-27 Contrast (arranged) of light yellow sphagnum of dry lake border and saturated green sphagnum
- 690812-28 Contrast of root systems of sphagnum
- 690812-29 white flower and cliffs beyond.
- 690812-30 Sandpiper lake.
- 690812-31 " and hummocks.
- 690812-32 Indian point brush at lake
- 690812-33 second one.

It was noted that *Elephantella* is beyond blossom in contrast to Snowy Range where it is in full form.

noted a rock that had been displaced in meadow that showed no advancement of new growth in displace area but rock completely seated with new vegetation.

Returned to camp. Annette C and I set 70 traps w of camp among Engelmann spruce, fallen logs and rock deposits. ^{at 10,340 ft.} This area differs from 70 trap of meadow contact in that they are associated with overhead protection of extensive boulder fields. Continued to top ridge to N and found an isolated group of ^{deformed} aspen (to 4' high) among cliffs of S exposure. No other aspens at this elevation. Collected rocks showing large rock pebbles in sandy matrix.

Butterfly Lake, 10,321 ft., Duchesne Co., Utah

Aug. 13, 1969

Inspected trapline of 70 traps set at edge of meadows in conifers and the 70 new traps set among rocks and Engelmann spruce.

From meadow-conifer contact: (at 10,327 ft)

690813-1 *Clethrionomys* 128-34-18-14-17 gms ♂ testes 10 mm

From boulder-conifer association: (at 10340 ft)

690813-2 *Clethrionomys* 137-38-18-14-26 gms ♀ 3x4-emb 5mm

A robin and gray-headed junco from this trapline. no traps sprung other than those that held mammals or birds. Sun at trapline about 7:40 A.M. Temp at this time 40°F (46°F in trailer), sky clear and no wind. Frost and moisture on vegetation. Specimen 690813-1 was in same trap as held the *Peromyscus* of yesterday. Noted some lakes with outlets 2 inches wide and base of organic debris.

Took the following photos.

690813-4 Trapping lake with broken log and reflection.

690813-5 2 small conifers and ripple marks. All lakes show former evidence of muskrat activity.

690813-6 From N end of lake with morning light on boulders. An Engelmann spruce measured 10'9" in circumference on W side of this lake.

690813-7 Tree down onto meadow with Butterfly Lake and Agassiz in background.

Recorded the following elevations with altimeter with Mirror Lake as base (10,050 ft). Butterfly Lake, 10321; divide 10340. trapline at edge of meadows W & N of Butterfly overage 10327; trapline among Engelmann spruce & boulders 10340. (from E to W)

Family and I made trip to highest ridge peak N & W of camp (not highest peak further N). and recorded the following photographs and observations. Left 3:00 P.M.

690813-8 Aspen on ridge at 10560 ft and far above normal range. Several small patches, most of them showing initial growth and the death of trees with new growth from base. Largest tree 12 feet high and 312 mm at 2 feet above base. A dead conifer 75 inches in circumference about 160 ft S & NE of aspen. These aspens are definitely relicts.

690813-9 Unusual diked pond at 10480 ft. Rice-like paddy one side & saturated dike on other side. Outlet 4 inches wide and base of organic deposits.

690813-10 Close-up of dike

690813-11 Cross hatch of wave marks in quartzites.

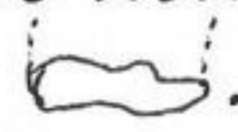
690813-12 Folding in quartzite.

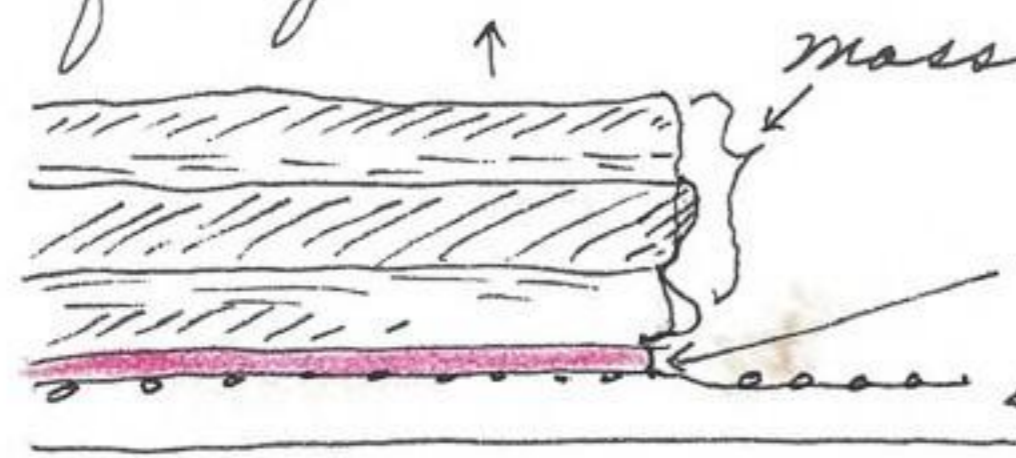
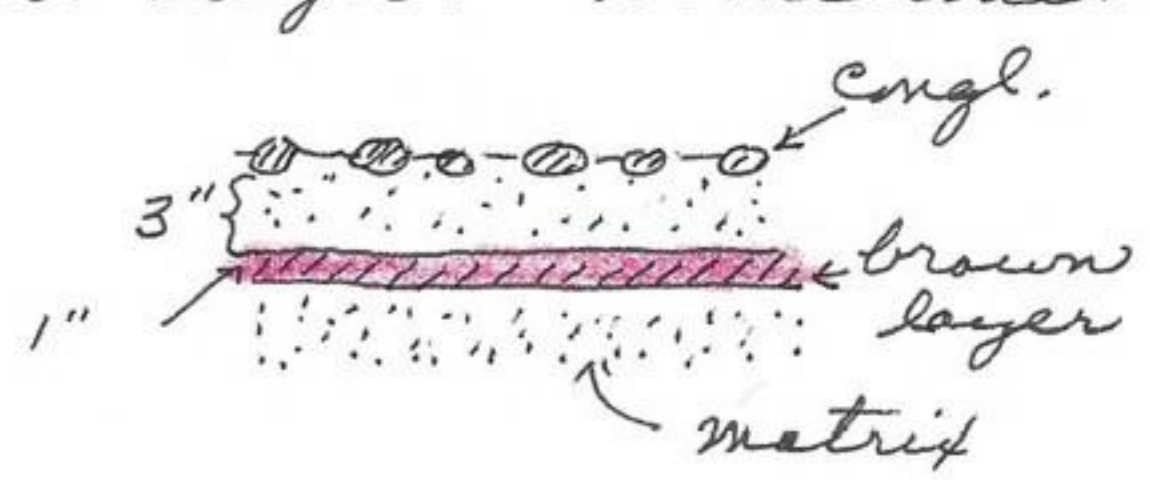
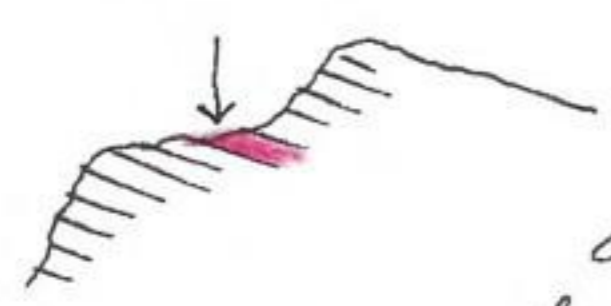
690813-13 Chrus on glacial eroded surface

690813-14 Spruce, Siberian juniper & Agassiz in distance

690813-15 Pond W of Butterfly from top of ridge directly N of pond. Channels in meadows

690813-16 Annette at edge ridge & Bald Mt in distance.

690813-17 Conglomerate in quartzite. These conglomerates are of various kinds of quartzite and phenocrysts, a representative series of which were collected. These conglomerates were more frequently in aggregates rather than generally distributed. Some were eroded by glaciers and were still at the same level as the matrix, showing very little evidence of differential erosion. Others, however, were protruding above matrix by 3/4 of their diameter but still securely attached to matrix. They appeared as if loose enough to pick but even a solid blow with the geology pick would not dislodge them, and if so, would fracture thru phenocryst rather than dislodge them in their entirety. Even though these conglomerates were in great profusion in place, there were none or only rarely an example, ^{loose} on the ground adjacent to the one in situ. I would judge the average size to be 35 mm in diameter, the largest measured ~~was~~ ^{was} 95 mm in greatest diameter and this one linear in shape . These conglomerates were in several layers of rock and were exposed on a bench showing less resistance to erosion than beds above or below. The strata dipped gently to N and to E. On several exposures there was a brown layer directly below the conglomerate which could be either a definite layer or a stain layer which penetrated to the stratigraphical layer. Sometimes this brown layer was perpendicular to bedding and frequently associated with a fracture system, indicating that this brown zone was produced by migration from surface or fracture, and compared to migration of proteins in electrophoresis. Observed one contact of conglomerate with massive quartzite above.



massive crossbedding (conformable with conglomerate) soft shale or shale and recessed to 3' or more ft. layer of conglomerate The shale, ~~was~~ friable and easily dislodged, creating a deep overhang of massive crossbedding above. Overlying beds frequently showed folding and some local faulting. Some exposures showed pitting only as if raindrops but indicated

concavities of dislodged conglomerates.

690813-19 Conglomerates of above area, showing glacial striae from N and degree of erosion since glaciation. Most conglomerates are light colored (quartzite) but some black and others of all colors. Chris will check these ^{approx 10725} for identification.

690813-19 From highest point of ridge, bordering Butterfly Lake - mirror Lake basin, showing Bald Mt to left, Reid Peak to right and Steiner Lake in foreground. Note contrasting profile of Bald Mt showing smooth N exposure and abrupt SE exposure; a 'roche montanaise' on a grand scale. The upper glacial platform can be seen at base of both ~~mt.~~ Bald Mt. and Reid Peak. Photo to SW.

690813-20 same as above with Annette C in foreground.

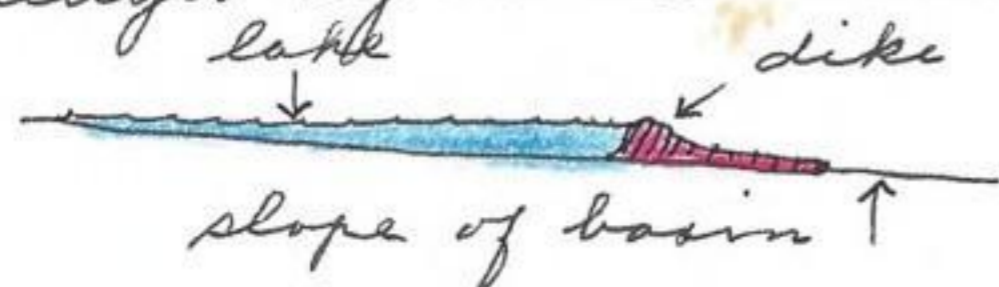
690813-21 ibid, with Annette C in foreground.

690813-22 ibid, but down ridge from highest point, with Annette M in foreground.

690813-23 From ridge N of Butterfly Lake Basin and near top of ridge (to west) showing Hayden Peak and divide area between drainage S into Utah & drainage N into Wyoming. The strata are dipping gently to N and are of the same series as those of Hayden Peak. The conglomerates are just above the perpendicular ledges in foreground. It is on the edge of this ridge that the relict population of aspen trees (dwarf) were located. Hayden Peak shows some local faulting. Accentuated erosion occurs at these areas of displacement. This photograph and the one that follows constitutes a panorama.

690813-23 same as above but to right showing continuation of Hayden Peak into Agassiz Peak. Butterfly Lake can be seen at left center. An interesting trip would be to follow east from base of Hayden Peak to base of west exposure of Agassiz Peak at timberline line.

690813-24 meadow and lakes in flat drainage (glacial eroded) on ridge N of Butterfly Lake Basin (same as photo 690813-9) showing extensive meadows of supersaturated grasses and sedges created by lakes which are formed by diking of lower edges by natural accumulation of organic material. The



lakes so formed are populated from open water, to paddylike sedges, to Sphagnum masses to completely formed meadow mat of higher forms of vegetation.

149
 It would be of great value to study these lakes to understand how lakes can be formed on a graded slope (probably a factor of available water at the overflow end of slope) and the succession of these lakes. ^{Are mammals a factor in their formation? ^{7 traps & tadpoles on these lakes.} Is regional uplift a factor?}
 690813-25. From ridge N of Butterfly Basin showing a cluster of dead spruce. Granddaddy Lake Basin in distance. There are some large dead spruce in this area that are conspicuously larger than present spruce indicating a more equitable climate in the past.

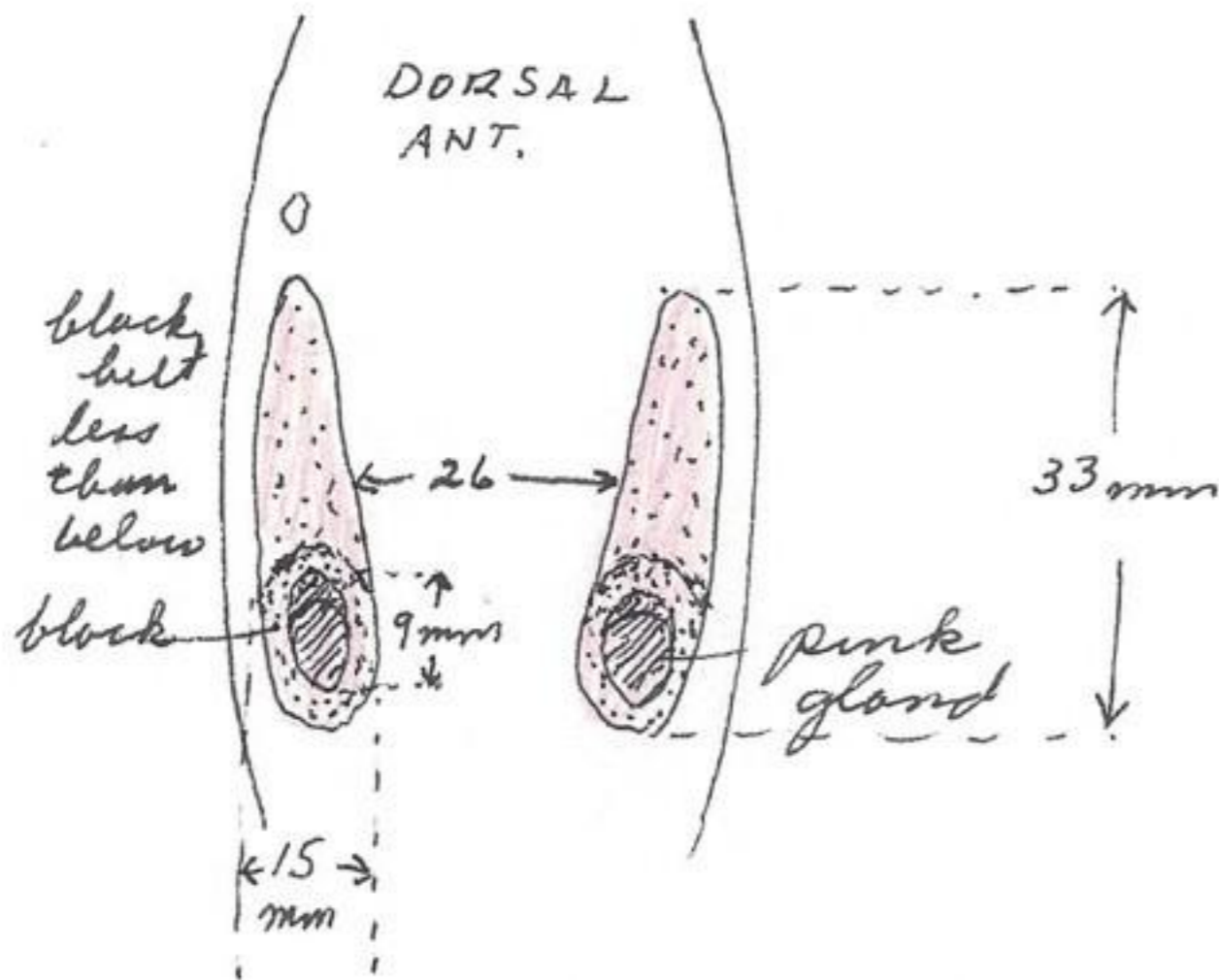
This ridge N of Butterfly Lake Basin is ideal for hiking as the benchland beyond first ridge is broad and dips to E. This allows for traverse of ridge at practically any degree of trail one chooses to make. On the bordering ridge of either the first or second ridge one can find many interesting foregrounds for photographing either Hayden, Agassiz or the Basin to W. There are vantage points where one can survey the rock slides below and the lakes associated with the base of the ridge. With a 20x binocular one could follow the movements of deer, marmot, pika or other mammals and birds in the area. These ridges also are favorably situated for examination of rock outcrops, especially broad surface of surface bedding and for effects of glacial action on these surfaces. In the uniformity of the basin, there is a relief on this ridge that produces variations that are unique, for example the relict community of aspen. If aspen can grow at this elevation, there are certainly other kinds of animals or plants, ^{which} that ordinarily grow or exist at lower elevations, that could find equitable environment on this south exposure. Another feature of this ridge is the variation in soils and ground cover. In some areas, especially on flat surface, the soils are barren of vegetation and appear as if the soils had been greatly disturbed by inwashing from slopes above, by disturbance of gophers or by wind, water or snow action. Stability of these soils should be checked. I am of the opinion that soils are removed as fast as they accumulate. Wind is an important factor and its influence on soils and especially the timberline conifers could be checked. There were a noticeable lack of birds in area and this must be correlated with the environment and plant community.

Butterfly Lake, 10300 ft., Duchesne Co., Utah

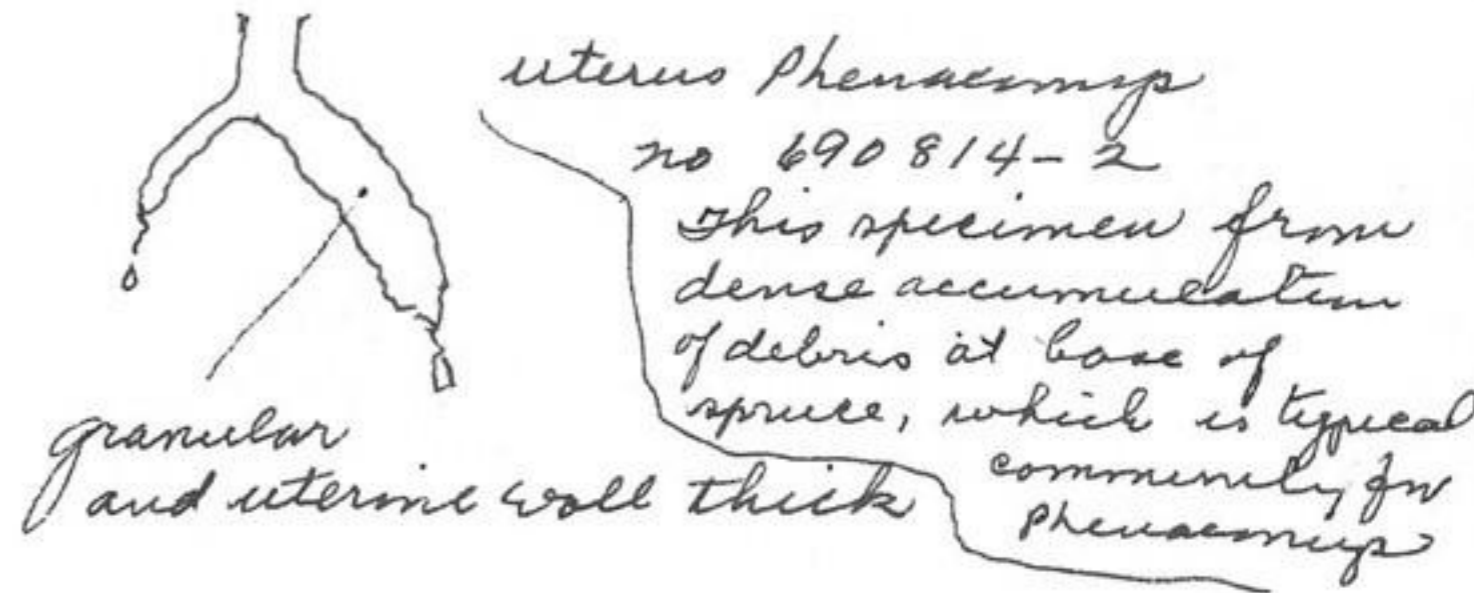
Aug. 14, 1969

From 70 traps set ^{last night} along edge of outlet creek of Butterfly Lake, collected the following mammals. This creek runs at a steep angle and is bordered by typical creeklike vegetation. Only occasionally, however, is there favorable places for microtines. The water is approx 1/4 the amount of this time last year. ^{Temp at 7:50 AM 50°F} Trapline ended at flatter section of drainage.

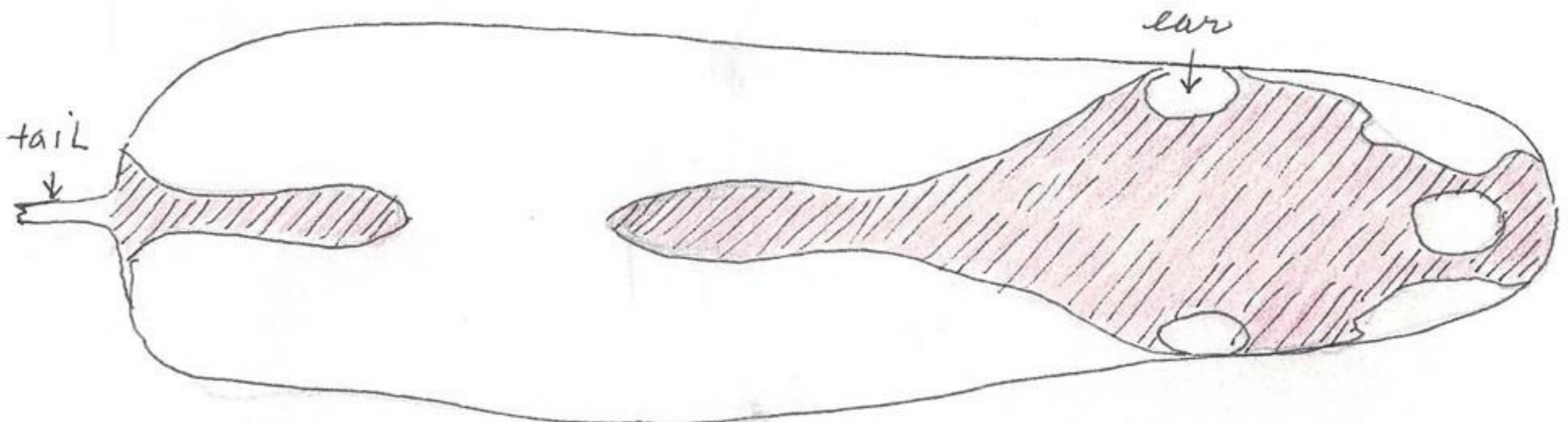
- 690814-1 *Sorex* 107-43-13-8-4.5 mm ♀ ut normal
- 690814-2 *Phenacomys* 149-36-18-15-39 gms ♀ suckling
- 690814-3 *Microtus* 195-58-26-15-66 gms ♂ testes 14 mm
- 690814-4 *Microtus* 180-56-25-14-47 gms ♀ 2x0 emb 8 mm (one 2 mm absorbed on right.)
- 690814-5 *Microtus* 180-60-26-14-44 gms ♀ vagina open
- 690814-6 *Clethrionomys* 139-37-18-14-29 gms ♀ 3x2 emb 18 mm
- 690814-3? *Neofiber*



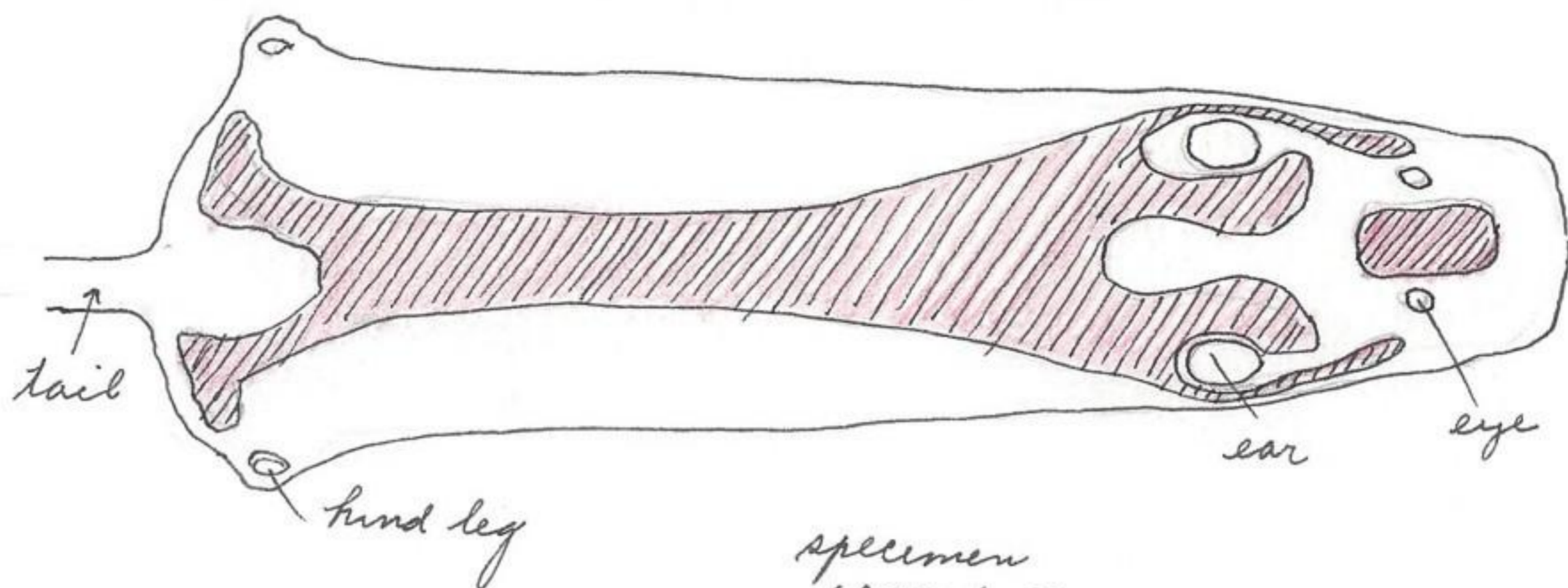
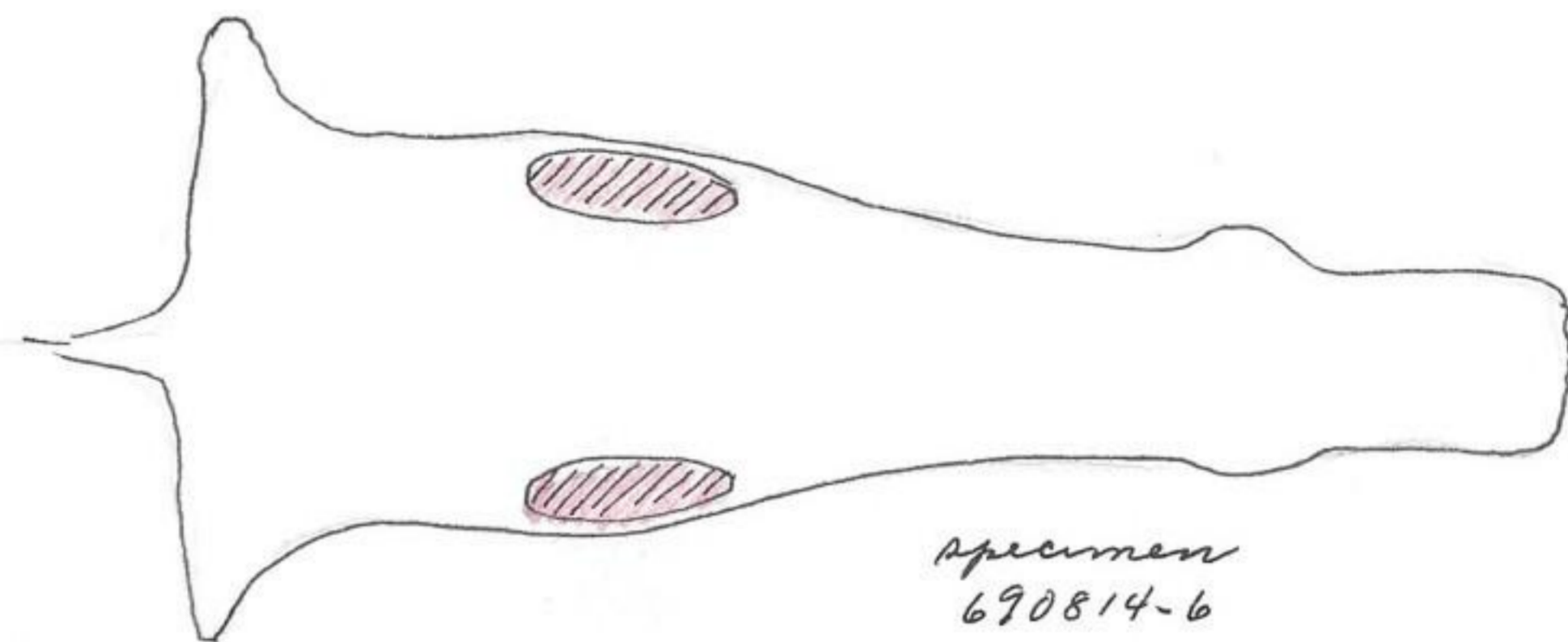
specimen number
690814-3
Microtus



no 690814-5
uteri kinked
left larger
no embryos
(nat. size)



specimen 690814-4 inside skin, black molt.

specimen
690814-5specimen
690814-6

The forest ranger for this area reports that this year has been the driest year in the last ten year. Except for a storm approx. 1 week ago there has been no moisture since June 17. There has been good snows this winter but the water table was low and the spring runoff was abrupt. The area is in fire warning no ~~2~~³ which is severe and unusual for this area. From my experience, the storms of Aug 10 and 11 produced a revival of plants that suggest a picture of excessive moisture for the area, but apparently this impression is not correct. The ranger also reported a depreciation in small mammals (chipmunks in particular) and a decided increase in the marmot population. My own impression is that there is also a depreciation in numbers of the marmots & pika as well as small mammals & birds. This is demonstrated by relative ^{few} numbers of mammals caught this year in comparison with those captures in the same places last year. The birdlife is especially low when compared to my memory of bird life in the 1930s. There is apparently a regional crash of mammals & birds as we found the same condition in the Medicine Bow Range and is probably controlled by climate or atmospheric contamination by man.

In early afternoon made two photographs:
 690814-7 Dominant grasses and sedges in meadows at Butterfly Lake.

690814-8 Dominant grasses & sedges in meadows surround a bog lake studied by Mary N. of Butterfly Lake, at base of ridge (empties into Spotted Sandpiper Lake). There is a track in mud of lakes that measures 40 mm in length Ψ ... and appears larger than the spotted sandpiper.

At 3:00 P.M. organized to leave Butterfly Lake and to set up camp at base of Bald Mt. (S. side) for investigating of animal communities in Krumholz on upper slopes of that mountain. Temp. at this time 69°F. Recorded elevation as: Butterfly Lake 10321; Pass into Provo River drainage S of Bald Mt. 10678; Camp base Bald Mt. 10717; Top Bald Mt. 11947 ft.

Bald Mt., Summit Co., Utah.
 Aug. 14, 1969

Set up camp at at 4:10 P.M., Mary, Annette C and I packed traps to upper shoulder of mt at upper limits of Krumholz. Before departing took photo 690814-10 of Annette at spruce trees at camp. Photo 690814-11 and 690814-12 of panorama of S side Bald Mt to show extent of Krumholz and of last years trapping which compare to area of upper trail traverse. The trapping this year will be in Krumholz on top of this mountain but below last peak of the mountain. Both photos show just a small fringe on upper crest of mt. There is an abrupt change between the large spruce at base of mt and the Krumholz on slope above, created & maintained by wind. Continued up trail from camp. Last switchback is at elevation 10970 ft. (the altimeter is not working properly and all measurement on mt may be slightly in error). At about this elevation took photo 690814-13 of the round topped mountain to the SE across divide. This mountain, although not high, is one of the most interesting mountains in the area because of its gentle profile. I have climbed this mountain and what appears to be a rock field of small rocks on top is, indeed, a field of very large boulders without soils. I have always interpreted these broad smooth surfaces as caused by wind and not by glaciation or original plains surfaces of original uplift.

Continued up trail. At the upper limits of before the benchland at base of peak, there is a noticeable terminal growth of krumholz across the S exposure of the mountain and a good place to set traps in the future, mainly because of its accessibility. In this area above the krumholz are rock exposures which show geometrical designs of yellow marks on the native rock. These marks are stains and show influence of border limits.

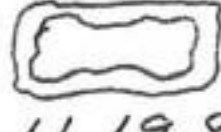
 Arrive at top of S exposure (at trail level) at altitude 11198. A hummingbird here (black tail & head, white rump on neck and gray body). From trail descended to W to edge of platform and beginning of krumholz. Photo 690814-14 of south edge showing influence of winds from the S-SW-W. (Controlling winds are from the NW). The lichens on rocks are characteristic of these upper rock fields. Photo 690814-15 of the lower edge of krumholz on W end of platform. Mt Reid in distance to N. These two above photographs at 11155 ft. The trapline of 140 traps started at this point at 11155 ft in foreground of 690814-15. Photo 690814-16 showing krumholz at the W end of platform where traps 1 to 70 were set (20' interval) in most favorable and sheltered parts of krumholz. This photo at 11242 ft elev. Tryon Lake Complex to W. Pampanagos Mt can be seen as faint outline above mesalike mountain in background.

Photo 690814-17 at 11300 ft at upper limits of the massive krumholz on W end of platform. Shooting to W. From this point the krumholz is interrupted and rock fields and sparse soils separate it from the next and last group of krumholz to the east at base of peak (SE end platform). Traps across this rock field were set at 50' intervals. In the last group (highest on platform) krumholz trap set trap no. 121 to 138. From base of peak upper end platform and krumholz 11435 ft photographed round mountain to SE as no 690814-18. It appears that the underlying strata contribute to its profile as other similar masses can be seen beyond, Granddaddy Lobe Basin beyond. Arrive at base of peak at end krumholz at 6:20 P.M. At next switchback on peak to N set 2 traps, 139 and 140, in the most upper limits of krumholz on the S + SE exposure of Bald Mt, at 11527 feet. From this elevation to base of peak and on platform just beyond base is good area to trap for mammals that need rock protection and also some soil & vegetation. At ^{at} out 11600 were the greatest congregation of black rosy finch.

There were approx. 60 individuals, mainly juveniles being fed by adults. Their favorite feeding area was at base of peak where rock slides contact platform. Most of them fed about 60' away, some approached us as if curious about our presence. A typical behaviour was to fly across platform of slope of peak and then in approaching edge of precipitous slope of east face of mt., drop abruptly and with increased speed to rock ledges & slopes beyond. Noted these birds from beginning of platform to a short distance up ^{the} peaks proper. From trail at about 11600 made photo 690814-19 of Reid's Peak to N. The mountain has an interesting variation between the flat SW exposure and the rough E exposure. Good stand of Krumholz on SW exposure. Weber country beyond. At about same elevation as above made photo 690814-20 to W showing sunlit lake in upper Provo River basin. This basin is broad and there is many examples where the drainage is S to upper Provo River drainage + N into Weber drainage. Some lakes ^(of different drainage) could conceivably be separated by only a few feet and would make ideal examples of differences of fauna of contrasting drainage systems. The sunlit lakes move from one lake to another as one changes position on Bald mt. This basin is well suited for cross country walking. Photo 690814-21 near top of peak with Mary & Annette on last final ascent to top. Hayden Peak, Butterfly Lake & ridge are discernible to right. A rock wren noted at this elevation just a few feet from top. Arrived top Bald mt at 6:52 P.M. at 11824 feet. (This reading is 123 lower than the actual elevation of 11947 feet. Other elevation taken along the route are also presumably less than the actual elevations and can be corrected accordingly. At camp the altimeter was synchronized with the known elevation of the pass below camp). The northern violet green swallow was common on east exposure of mt at near ridge and leading to top. Another rock wren on top. Took several photographs on top:

690814-22 to NE of Hayden, Butterfly Lake + good shot of ridge N of Butterfly Lake. New road obtrusively cuts across the basin.

690814-23 to right of above in panorama of basin + mt. Agassiz in distance. Polarized light from shadow of Bald mountain.

690814-24 Continuing to right of above in panorama of round mountain to SE.

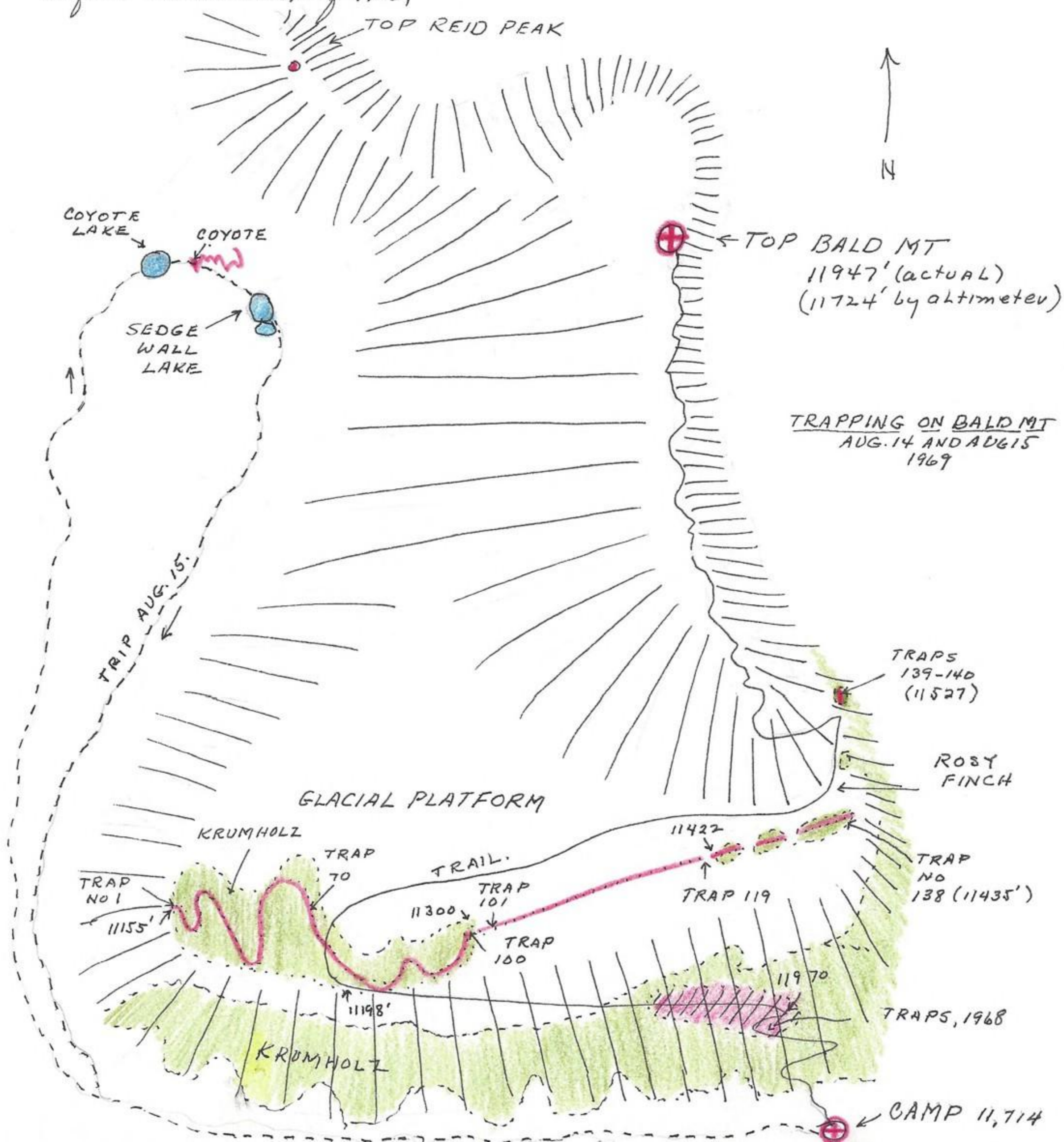
690814-25 Annette & Mary at top ^{Bald mt.} with Mirror Lake below and Hayden Peak in background.

690814-26 Annette & Mary at top Bald mt.

690814-27 Cairn on top Bald mt and mts to W.

690814-28 Mary & Annette at one of several Cairns on Top Bald mt. Reid Peak in background.

Left top Bald mt at 7:13 P.M. and descended to camp, arriving at 8:20 P.M. Photo 690814-29 of evening lights east of camp. Altimeter reading at camp 10740 but actually should be 10714 and as such is 20' higher than when set before the ascent of mt.



Bald Mt., Summit Co., Utah

Aug. 15, 1969

At camp 54°F at 7:00 A.M. Left 7:06 A.M. for trap line on glacial platform on S shoulder Bald Mt. Faalaued established trail. At base of trail at base of slope temp dropped to 48°F as result of down slope wind. At last switchback (11970 ft) temp 56°F. At top of sidehill trail onto platform temp 53°F (7:38 A.M.). At trap no 1 temp 51°F. These difference of temperature are result of exposure and change of wind channels. It would be interesting to check the effect of wind on animal populations on such a varied exposure situation as on Bald Mountain. Collected the following mammals from trap line:

Trap 2 *Eutamias* no 2Trap 137 *Peromyscus* no 6Trap 85 *Peromyscus* no 9Trap 138 *Ochotona* no 1

Trap 98 " no 8

Trap 140 *Peromyscus* no. 7

Trap 130 " no 3

3 other traps were sprung, all other with bait uneffected. One

Trap 131 " no 4

held the tail of a *Peromyscus* (no 187)

Trap 136 " no 5

All traps (except those among rocks between krumholz) under krumholz on bare soils. These areas of protected ground surfaces are generally very dry and soils barren of any kind of vegetation. In most situations the base of krumholz is open with intricate interlacing of limbs above. It is my estimation that there should be many *Clethrionomys* because of the overhead protection, but there were none. In the arctic, *Clethrionomys* uses rock slide and rock accumulation as equivalent overhead protection. In temperate regions overhead protection is supplied by spruce tree and low conifer growth. This area on platform may be too high for *Phenacomys* but I doubt it. Shrews should follow microtines but because of low population of microtines the shrew were apparently absent or rare.

From trap no 138 photographed Mirror Lake and area to east in photo 690815-10. From middle of glacial platform made 2 photographs (panoramic) of area to W and krumholz near upper limit of massive growth. These are nos. 690815-11 and 690815-12. Returned to camp. at lower level made 2 photos of snow tracks from off S exposure of Bald Mt. This spring slides extended beyond usual limits and erupted old stabilized trees, indicating heavy snow last winter. Arrived at camp at 10:00 A.M. and prepared the following mammals:

Bald mt., 11,435 ft., Summit Co., Utah
 690815-1 Ochotona (trap 138) Aug 15, 1969 191-6-30-21-133 gms.

Bald mt., 11,155 ft., Summit Co., Utah
 Aug 15, 1969
 690815-2 Eutamias minimus (trap 2) 180-82-29-16-24 gms testes 4 mm ♂

Bald mt., 11,435 ft., Summit Co., Utah
 Aug 15, 1969
 690815-3 Peromyscus (trap 130) 163-72-20-19-23 gms ♂ testis 10 mm
 690815-4 Peromyscus (trap 131) 175-76-19-18-25 gms ♀ ut normal
 690815-5 Peromyscus (trap 136) 152-68-21-18-13 gms ♂ testis 3 mm
 690815-6 Peromyscus (trap 137) 148-66-21-18-14 gms ♂ testis 3 mm

Bald mt., 11,527 ft., Summit Co., Utah
 Aug 15, 1969
 690815-7 Peromyscus (trap 140) 161-72-20-17-19 gms ♂ testis 11 mm

Bald mt., 11,300 ft., Summit Co., Utah
 Aug 15, 1969
 690815-8 Peromyscus (trap 98) 165-75-20-18-22 gms ♂ testis 11 mm

Bald mt., 11,242 ft., Summit Co., Utah
 Aug 15, 1969
 690815-9 Peromyscus (trap 85) 155-66-20-19-20 gms ♀ 3x3 emb 6 mm

This afternoon made trip to basin w of Bald mt. (near Reid mt) to check on a peculiar lake observed yesterday from top of Bald Mountain. A study of the variation of alpine lakes and bogs would be a very fascinating and informative endeavor. (see route on map of Aug 14. This route is relatively level and follows thru good spruce forests, one of which measured 124" in circumference at 4' height. At near destination made photo 690815-15 of Annette C, Anette M and Mary at Coyote Lake (new name). Photo 690815-16 of some lake with island of sedge. About 150' east of this Lake toward Bald mt., noted a coyote approx 50' ahead. It was standing still and facing an area of brush where 3 birds (white-crown sparrow) were calling. As we approached the coyote turn and moved, fearlessly to a new position 20' to the S where it stopped. Photos 690815-16 and 690815-17 show these two positions. The coyote then walked,

never running to the N side of gulch and climbed to small
 ridge (20' high) 50' away where it watched us directly below. When
 approached it moved off another 50' and stopped, this time on
 a large boulder. When approached again it moved E, again
 stopping 50' away. This pattern continued east of gulch
 and then to N where the coyote seemed to be trending back
 toward its original position. At each time it stopped,
 it chose a place of prominence, a log, rock or open position,
 until approach, as if trying to make itself conspicuous.
 This animal was definitely more curious than afraid. The
 primitive conditions of this basin was probably responsible
 for its behaviorism. Photo 690815-18 is family at
 point where the coyote was first observed. Continued
 to original destination, Sedge Wall Lake. Photo 690815-19
 of the N end of this unusual lake. The wall or dike or
 barrier is across center of photo and consists of a clow
 of organic vegetation and sedges. This wall separates the
 lake into one area of sedges of small hummocks and
 sparsely distributed sedges from the lower end of lake
 of deeper water and larger islands of sedges. An outlet
 is at extreme right of photo and is lined on bottom and
 sides with organic material, an outlet that could be easily
 enlarged. any kind of mud digging animal (muskrat for
 example of whose tracks were associated with Coyote Lake but
 not noted at this lake). This precarious outlet and its
 modification and interruption is probably the cause of the
 life form of this and other such lakes. Photo 690815-20
 is of S or lower end of Sedge Wall Lake and shows con-
 trasting life form of large sedge islands, open water, and
 normal lake shore sedges. Photo 690815-21 of the upper
 end of above lake. On east side of this lake is a trail of
 small pebbles which is maintained by native animals. This
 trail parallels the lakeshore and passes thru lakeshore grasses
 In this area made photo 690815-22 of crossbedding in
 rock structures. Photo 690815-23 just S of above lake,
 showing family and interesting rock slide to right in which
 slabs of rock are oriented. Photo 690815-24 of extensive rock
 talus at SW corner of base of Bald Mt. Two marmots and 1
 pika were heard here. Only 5 marmots and 5 pikas were
 observed on the entire trip to Sedge Wall Lake and return. Returned
 to camp and noted again the extension of snowslides beyond
 the usual limits of the past.

* After leaving Chris, Mary & Jimmy at Aspen Grove, drove to divide. Along way inspected flat NW of Coneifer covered mt (meade flat?) where I have found Indian artifacts associated with a spring. Could not find area but discovered the undergrowth more luxuriant than I had ever known it to be; some places grasses almost to high and thick to pass thru. In early days these some places were kept sparse of vegetation by sheep. The budlife was approx. 80% more numerous than at Butterfly Lake in The Umetas. Noted a flock of 18 crossbills which is unusual for this area. From divide followed new road to E. at lower levels it passes thru shrub or scrub growth & noted at least 30 rock squirrels. This road-to Heber valley should be surveyed for small mammals because of its newness and accessibility.

Returned to camp, packed and departed for Provo. Followed Provo River drainage. First magpie at upper end of community of Samak. From here to Provo noted these birds in usual number. For a bird that is publicized as a 'varmit' it seems to be holding its own and perhaps even increasing in numbers. Arrived Provo in evening and stayed at Graces (255 E 1st So).

Provo, Utah Co., Utah.

Aug 16, 1969

Started to organize mineral collection and archeological material for shipment.

Aug 17, 1969

Packed minerals & archeological material

Aug 18, 1969

same as above.

Aug 19, 1969

same as above.

Aug 20, 1969

Final packing of collections and some repair around the house.

Provo, Utah Co., Utah

Aug 21, 1969

Annette C, Mary & Jimmy made trip to top of Mt. Timpanogos. They left Aspen Grove at 7:45 A.M. and followed the regular trail via terraces, Emerald Lake, glacier, thence to top. On return they followed trail to American Fork cove, thence to Emerald Lake and then to Aspen Grove. At 3:00 P.M. they signalled by mirror from the top of Timp. The small hand mirror came thru as a high intensity signal. The most notable observation was the Calif. gulls on top of Pump. These gulls were there (12,000 ft) in quest of refuge left by hikers. This was also the case of gulls (Calif or Herring) on top of Medicine Bow Peak in the Snowy Range. The occurrence of gulls at these elevations are apparently associated with increase use of these mountain peaks by man. They returned to Aspen Grove at 5:00 P.M.

* Earlier today, made photograph of the W exposure of mt. Timpanogos from Provo River Valley N of Provo. This photo shows the condition of clouds on Timp. They were always present on lee side of mt but never on valley side. Some rain showers to E near Heber from these same cloud masses forming at mountain & passing to E.

Provo, Utah Co., Utah

Aug. 22, 1969

In evening took trailer to mouth of Provo River on Utah Lake. Camp on dike on n side of boat harbor. All evidence of Indian sites now destroyed and mouth river of artificial or modified design. In evening there was very little evidence of bird life. Notable however was a migration of bank swallows passing over dike from n to s at the rate of 500 individuals per minute. The migration ended abruptly at late twilight (9:00 p.m.). During the day there was approx 5,000 bank swallows resting on dead willows (or tamarisk) inundate along E shore just n of mouth of river. A few gulls, 3 kelledees and 1 greater yellow-legs in area. The lake support a green skum on protected waters and rocks of dike were covered with a green moss, perhaps from increased nitrogen of water contamination. These mosses were not present 30 years ago.

Mouth Provo River, Utah Lake, Utah Co., Utah

Aug 23, 1969

Early this morning skies clear but clouds moved in later. Photo 690823-1 of Cimpanogor and clouds from camp. It is interesting to compare a night at the mouth of the river last night with observation at night some 30 years ago. Last night the area was quiet; 30 years ago great blue heron fed along shore all night, black-crowned heron fed a call, sandpiper worked beaches, grebes called and ducks swam by in the moonlight & called as well as others. This morning there was an increased in bird activity including Calif gulls, Forster tern, spotted sandpiper, Cinn teal, bank swallow, pied bill grebe, western grebe, kelledees, greater yellowlegs. These birds were in only limited numbers. There was an absence of pelicans, great blue herons. One western grebe fed in harbor in spite of boat activity. On a busy day of boating, a pelican would absolutely have no chance of survival. A section of the lake should be held inviolate to motor boat. On return to Provo, noted approx 510 black-faced glassy ibis in field approx 1 mi. E of mouth Provo River. Photo 690823-2 is of this group of birds. After being flushed they curled and alighted again. This field had been irrigated last night and the farmer claimed they were feeding on night crawlers. These birds seem to be increasing in numbers since 20 or so years ago.

This evening camped in State Park N of Homestead. Fished at mouth of Provo at Deer Creek (in submerged channel about 1/10 mi lakeward). Jimmy caught 2 trout and I caught 2. These trout averaged 1 1/2 lbs. Approx. 50 perch were also caught. Calif. gull numerous in area and feeding on dead perch.

Aug 24, 1969

Stay at Homestead with Mary & Don. In evening moved trailer to mouth Provo River at edge of lake. Caught 5 nice trout averaging 1 1/2 lbs. They began to feed at 8:30 P.M. and perch seem to stop feeding at about the same time.

Aug 25, 1969

Fished in morning and then returned to Provo. ^{Mary and I} Had conference with Dr. Robert Thomas the vice-pres to Dr. Wilkinson. In later morning Maryflower picked up material to be shipped to Kansas. ^{Total} Charge \$430.99 for 2,776 lbs at \$13.03 per 100 lbs. \$23.00 label, 12:25 packing of pictures, \$9.00 packing of 3 statues, \$8.50 special crate. At Mary's made photos of her home and a few scenic shots from her yard. These will be enlarged and sent to her, nos. 690825-1 to 690825-26 including 4 shots of mts including Camp, Cascade & Y mt.

Provo, Utah Co., Utah

Aug. 26, 1969


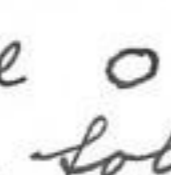
Left Provo for Lawrence, Kansas at 10:30 A.M. at mileage 29752. Followed S to Springville. Water slightly lower in marshes but many ducks. Continued up Spanish Fork Canyon. Magpies all the way to Soldier Summit but mainly in lower reaches of the canyon. A few magpies all the way to Price but again mainly in lower reaches of Price Canyon and beyond in valley as far as cultivation extended. Color in higher areas turning to ^{some} yellow but rarely red. First roven (2) at 15 mi. E Thompson; only other conspicuous bird was the horned lark and then only occasionally observed. Between here and Colorado border noted 2 more roven. Arrived Black Canyon of the Gunnison at 9:00 A.M., mileage 30103. Camped in regular camp site.

Black Canyon of the Gunnison, Colorado

Aug. 27, 1969

Visited the south rim of canyon at several points and took the following photos of canyon: ^{690827-2 and 690827-3} 690827-1, to E from Tomichi Point. There is more hummocky erosion types of the surface of the Precambrian formation at the east end of canyon than at the west end where the contact with overlying sediments is even and sharply demarked. Directly below was a golden eagle with

well defined separation of white of base of tail with the rest of the body. It circled up the side of the canyon for 6 consecutive loops of the upward spiral and then disappeared from view, covering approx the area from 1/5 to 3/5 the height of the canyon. The ranger reports that the bald eagle is only rarely observed in the canyon but the golden eagle is frequently observed. Clarks crows were the dominant birds in the canyon proper and flew from one ridge to another.

at Gunnison Point made photo 690827-4 of canyon wall. At Cedar Point photos 690827-5 and 690827-6 of pegmatite intrusions on wall just down canyon from Painted Wall. An open in forest above is correlated with base of rock cliffs. The vegetation in area is predominantly the desert form of Amelanchier or Service Berry. In contrast to the unusually large service berries of mt. Pimpanogas , these from Gunnison Canyon were small  and dried. The yellow color in landscape is from the foliage of the service berry. Junipers, pines and pinyons? bordered the canyon. This national monument is fascinating and easily accessible. A trail will eventually lead to bottom of canyon. The formation of this canyon is from uplift, exfoliation into canyon bottom and subsequent removal by water. The boulders in stream bed are angular and large. An exposure of river worn boulders are at edge of road near headquarters. Collected several good specimens of granites and pegmatites from road cut just beyond the Monuments Headquarters.

Left monument and continued east up Gunnison valley. Many magpies here. These birds are associated with the grass + sedge meadows. There are also many ducks, some ponds saturated with them as if presence was for social rather than for feeding purposes. The area of the Blue Mesa Reservoir is of more recent volcanism and lava flows on Cretaceous and other formation. This lake should become an unusual area of interest for geologists + fishermen alike. Stopped at Gunnison to visit Peggy. Visited the College. She reports a gray animal the size of a rock squirrel above timberline. Continued E to Solida, Colorado where the girls swam in "hot mineral pool."

Solida, Colorado

Aug. 28, 1969

Left 7:30 A.M.

On east side of pass, mining is removing surface as if

189
143

for open mining. At ^{Cañon} Canyon City, Chris 690828-186 areas of investigations of her geology summer camp. ^{pointed out the} This area of the front range is a classical example of structure and stratigraphy. Stopped at the museum and found ^{collections of big} game mammals. For its size, this is one of the best organized and neatly kept city museums I have seen. Continued east to Colorado Spring, thence to Limon. The high prairie is unusually green. East of Limon beyond escarpment to Kansas border the SW wind was blowing dust from plowed field to the extent that visibility in some areas was less than 150'. Beyond in Kansas there was noticeably less of this activity and even further on was absent. In western Kansas there were large holes formed from recent rains, some covering shoulders of road and in one place covering the interstate highway. There was an unusual amount of eroded soil, in some cases it appeared that the entire field was eroded of its soils. I have never seen such devastation or amounts of rain in western Kansas. As a result of these rain in summer, the vegetation is green whereas in normal times is brownish. Continued to about 50 miles W of Salina.

50 miles W of Salina

Aug 29, 1969 ^{no mileage recorded.}
Continued E to Lawrence, arriving at 10:30 A.M. Usually at this time of year there are large flocks of blackbirds. This year has been characterized by lack or only a few flocks. Five red-tailed hawk across Kansas. Did not keep complete list on return except the 5 above. All hawks and large birds were record on trip west. Rock specimens were collected from: SE Laramie, Wyoming; Medicine Bow Range, Snowy Range, Wyoming; Barrier W of Snowy Range, Wyoming; W of Little America, Wyoming; Butterfly Lake, Uintas, Utah; Bald Mt., Utah; Pimpanogus Mt., Utah; Mouth Rock Canyon, Utah; Black Canyon of the Gunnison, Colorado. These areas will be given specific locality nos. and will be catalogued according to these localities using the regular system of date-number which will be correlated with locality and whenever possible the formation. Duplicate specimens will be presented to K.U. geology dept.

Lone Star, Douglas Co., Kansas

Sept. 9, 1969

Annette C. and I canoed from W end dam to S end of main arm (not arm with summer homes but next one to E) from 6:00 P.M. to 9:00 P.M.

A group of 14 wood ducks at S end of arm among aquatic vegetation and among willows. They remained as one unit, although 4 others joined them from the north at about 7:00 P.M. They called frequently ~~without associated~~ ^{while feeding} with flight. 3 Coots in same area as was a yellow-crowned night heron. a little green heron left upon our arrival and flew N along east side of lake. 2 pied billed grebes in deeper waters at mouth of bay. A great horned owl arrived from S and alighted in top of tall tree (one of the highest) at west side of bay on shoreline. It remained for 20 minutes and then left to N, dropping down to near level of the water. It did not call. at approx 9:00 P.M. 3 great horned owls called from 3 different areas of the lake forests for approx 4 1/2 minutes.

at late twilight at about the time the great horned owl left its perch, the two great blue herons arrived from the S and almost alighted ^{on} the canoe before recognizing me. They continued to the north down the lake. Most of the fish in the open water in arm of lake are bluegills (2" to 6") and croppie (overaging 6" and of about equal proportions. When captured the bodies felt warm. A check of body temp might allude to their position in the water, whether having been on bottom or top prior to capture. Checked the old spawning area but found no fish there.

Lone Star Lake, Douglas Co., Kansas

Sept 18, 1969

On arrival at S end of South arm at sundown, 16 wood-ducks were feeding in one group. They remained as a group whenever they adjusted their movement, either by flying or swimming. Toward late twilight they moved into aquatic vegetation in center of lake. They called frequently when disturbed. Two great blue heron arrived from the north; one chased the other and a low grunt noise was offered. One great blue arrived from the S from forested area. Another alighted in top of the same

dead tree that was used by the great horned owl ~~on~~ on Sept. 9. At about 1/2 hour after dark, 3 great horn owls called for 5 minutes from the deciduous forests surrounding the S end of the Bay, as they did on Sept 9. At the extreme S end of the arm of lake noted either the whip-poor-will or chuck-wills widow, the latter having been heard in the same generally ^{area} on previous visits during the summer. At late twilight a kingfisher left ~~the~~ an overhanging tree. (On a succeeding evening the kingfisher was not using the same tree as a roosting area).

At about sundown 12 black crowned night heron flew south across lake at about 200' high. As they left the lake area they continued S and for a long time seemed to be gaining altitude rather than move away from the lake. At a high altitude they then moved S. out of sight. A single green heron used the east shore of the arm of lake.

At about middle stage of twilight to dark, 2 species of bats fed over the water, one a large one and the other a small form. They continued feeding after dark.

On return to Lawrence, counted 18 frogs jumping across the road. There seems to be more frogs and more generally distributed than on previous years.

Lone Star Lake, Douglas Co., Kansas
Sept. 19, 1969

At late twilight a whip-poor-will call from deciduous forests NE of E end of dam. Heard whip-poor-wills calls from this same area on many occasions earlier this summer. A 4' blow snake had been recently (freshly) killed at W end of dam.

Lawrence, Douglas Co., Kansas
Sept. 25, 1969

Chimney swifts still in area. Many monarch butterflies migrating S across Univ. Kansas campus. In morning & evening they congregate on trees on brink of east side of ridge of Mt Oread. Cicada ^{stages} and grasshoppers unusually abundant this year.

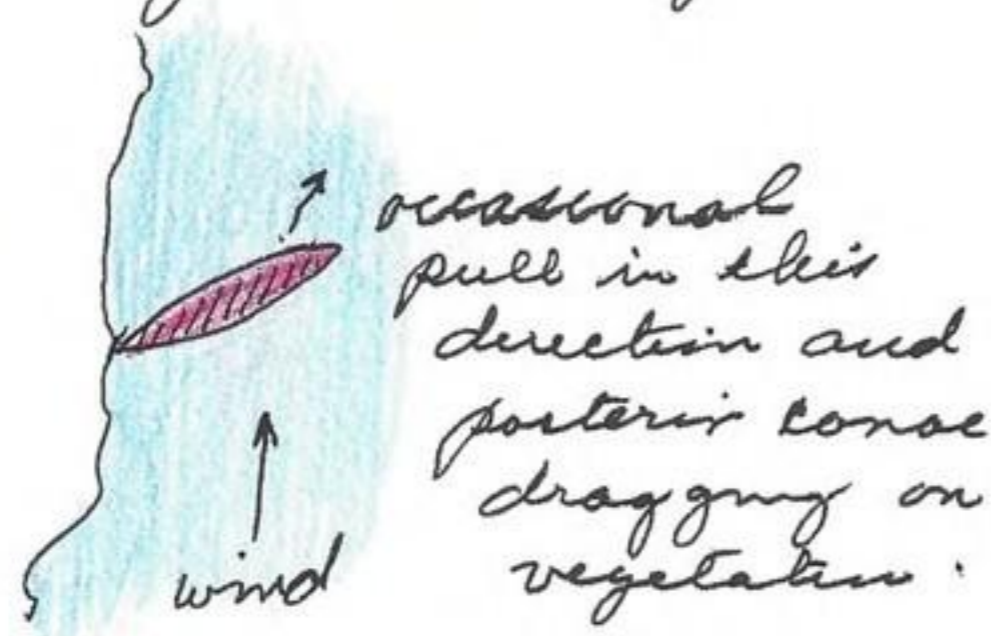
Sept 26, 1969

swifts still in area in usual numbers,

Lone Star Lake, Douglas Co., Kansas
Sept. 27, 1969

Left Lawrence 7:50 A.M. Will keep complete record of birds from ^{Wakarusa Bridge on 59} city limits to Lone Star. Sky clear, slightly hazy, Temp 60°F. Slight wind from NNE. Rained last night. At 600 this morning, noted 68 night hawks fly E at about 200' altitude. They were in a loose formation. Wakarusa River slightly higher than usual summer level. Rocks showing in channel below bridge. Left highway 59 at 7:59 A.M. at mileage 31555. Dominant color along side of road is the yellow of sunflowers. Field green and unusual for this time of year. Hillside dark green with some evidence of yellow and ^{tree foliage not dried.} rarely red. It is a summer condition rather than a fall one. meadowlark 56.5 starling, 57.2 Washington Creek. 58.1 killdeer left road, 58.5 Banning Corners & now to S. 58.8 starling, 59.5 6 meadowlarks, some calling. 60.2 starling. 60.3 2 meadowlarks, 3 bluejays. 60.5 2 meadowlarks, 1 mourning dove. 60.9 redtail hawk on top of telephone post. A meadowlark arrived and alighted 8 feet away from the hawk. The hawk faced N but flew S. 64.4 village of Lone Star. 3 starling one Eng sparrow. A black walnut tree overhanging road and approx 50 nuts on ground. This has been an unusual good year for large and numerous walnuts. 65.4 2 Eng Sparrows 65.5 bluejay. Fox squirrel road kill. 66.8 East end of dam of Lone Star. Fox squirrel run across road. Continued to W end of dam. 5 killdeers on main road some 40' from water, at 8:35. 3 bluejays, 4 crows, 1 redbellied woodpecker call in vicinity of dam. Left W end dam in canoe at 8:35. Will keep record of birds and mammals to S end of Lake (arm directly S of lake and dam). 8:40 2 redbellied woodpecker, one chasing the other. Sky clear, slight breeze on lake. 2 starling left group of 8 resting in top dead tree and flew E. across the lake. Fox squirrel along bank. 8:44 The yellow cabbage butterfly dominant and in unusual aggregation on open slopes of W. side of lake, occurring approx 1 per 10 feet. A few white ones present. Can hear several bluejays (3) calling in area. Wind from NE. 8:47 black-

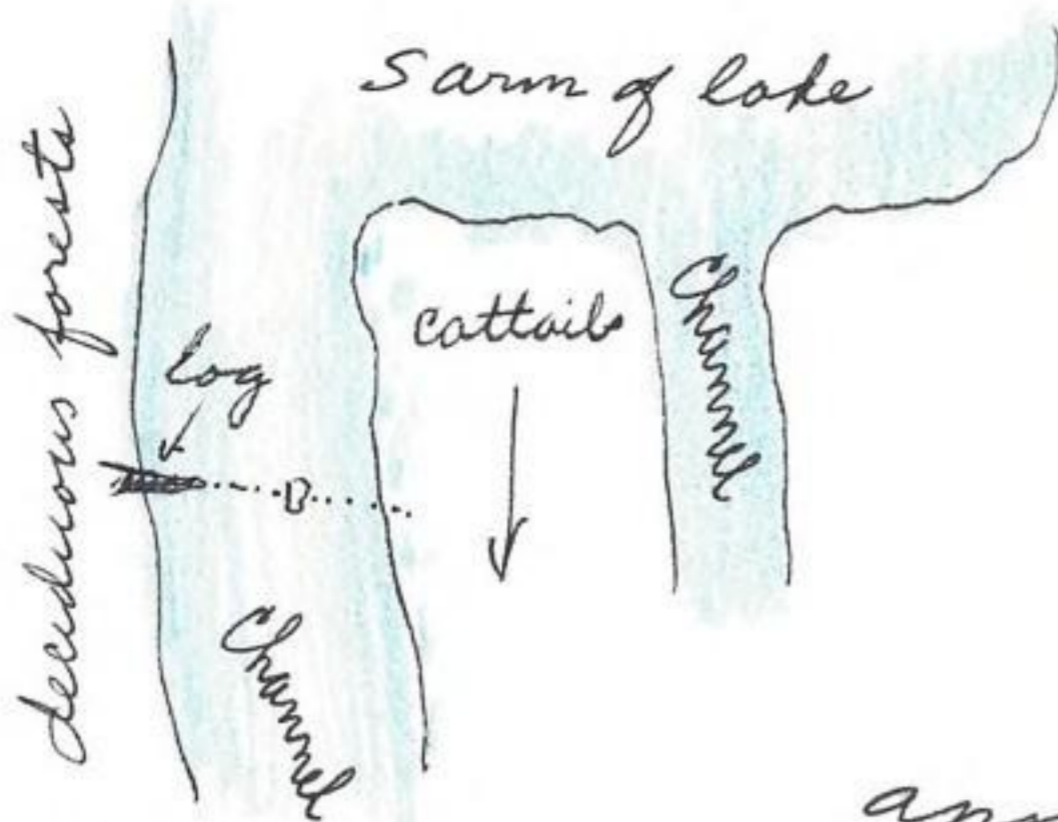
capped chickadee calling. a knygfisher called from N of the dam. Crossed center of lake to E side at point E of Elk's Point. Wind velocity increasing to waves 4 inches high. 4 Eastern blue ^{birds} jays and 3 blue jays calling here. 9:58 waves now with few whitecaps and clouds (low and foglike, ^(but not fog) and completely covering blue sky but still separate masses, forming abruptly in place. This cloud cover formed faster than I have even witnessed. I would judge that it took approx 8 minutes to form from a blue sky to complete sky coverage. Between 9:55 and 10:00 the temp dropped from 65°F to 62°F and five minutes later at 10:05 the temperature was 59°F where it remained. Yellow-shafted flicker called continuously and 5 Crows called from forests. One crow in top dead tree at edge of lake. A knygfisher flew S along top of ridge above deciduous trees some 200' from water. Leaves now falling ^{into water} from trees along side of lake. Vegetation around lake predominantly dark green with slight change of greenish-yellow, yellow leaves rare. Some red leaves herb of Virginia Creeper. 9:40 now down E shore of lake about 1/2 distance of this S. arm, utilizing the wind for movement and fishing at the same time (4 size fly). The dominant fish is the bluegill (up to 7" length) and green sunfish associated with logs. This area is the best for fishing in the bay. The canoe rides 90° to wind when moving with the wind and if one drags the back end on emergent vegetation and pulls front end slightly lakeward and forward, one can move slowly with wind. at the midpoint, a pied-billed grebe swam S about 100' W of shore. It did not feed as it moved S. Along the E shore have seen 3 single fox squirrels, one of which was on beach among root system, 1 flicker, 3 crows and 2 pairs of red-bellied woodpeckers. Arrived S end arm at 10:30. Sun has been completely ^{hidden} ~~seen~~ by clouds and wind ^{causing} white caps. At about this time the sun was occasionally breaking thru for



of shore. It did not feed as it moved S. Along the E shore have seen 3 single fox squirrels, one of which was on beach among root system, 1 flicker, 3 crows and 2 pairs of red-bellied woodpeckers. Arrived S end arm at 10:30. Sun has been completely ^{hidden} ~~seen~~ by clouds and wind ^{causing} white caps. At about this time the sun was occasionally breaking thru for

a few minutes at a time. within 20 minutes the clouds completely disappeared and temp rose to 66° F. As I say, this has been a very unusual atmospheric change. At S. end of arm can hear 3 bluejays, 5 crows, 2 redbellied woodpeckers, 1 yellow-shafted flicker. 3 fox squirrels in area. The bluegills and green sunfish decrease (100' before S end) as one approaches the shallower end of lobe. Some remain in deeper channel. Continued ^(+0.5) up main center channel to bridge. This channel is beautiful with overhanging willow trees. The average depth is 3 feet and bottom lined with small pebbles. Fish predominantly ~~bluegill~~ ^{green sunfish}. Considerable muskrat activity and one beaver house on W bank about 100 feet from entrance of channel. 2 willow trees, one of which is approx. 1 foot in diameter, barked and chewed by beaver. ^{5 flatbacked turtles in this channel.} Returned to mouth channel. Area beyond channel about 1' deep. Between the mouths of the two channels stopped and tested the old breeding grounds of the blue gills (see previous notes) and found water only about 8" deep, clear and with undisturbed mud & moss covered bottom. No fish in this area. Continued W & then up the abandoned channel. At 1/2 way mark noted a 3 1/2 foot Natrix swimming N along W bank (10' away) It moved full length of lobe with concern and when I placed the line and fly across its path, submerged and was not observed again. 50' away observed a fox squirrel travel down a log that was down toward water, being submerged at its distal or outer end. The squirrel followed the log to the submerged portion, continued along the submerged log which gradually took the squirrel deeper & deeper into the water. At a point in which it lost footing with the log, it left uninteruptedly and swam 10' to an emergent log where it climbed over the barrier and then again, gracefully and without losing rhythm of movement continued another 10' of deep water to the east shore of the channel. This squirrel behaved like a muskrat in gracefulness of swimming. The head and most posterior part of tail were

emergent and dry; the back was wet but about $\frac{1}{4}$ inches above water . On east



side of channel the squirrel again gracefully and confidently left the water and slowly walked into the cattails which averaged 9 feet high. The whole procedure indicated a

behaviorism in which the animal was confident about the water. In this channel noted 2 flat bocked Turtles, one sunning on a log. There is considerably more activity of turtles in these channels and shallow bay than in the deeper parts of the bay or lake. Continued to upper end of this abandoned channel. Good composite and easy approach from road but may suffer inundation in high water from creek which at this point flows over into this abandoned channel. Checkodes, nuthatch (volume of call like red breasted), 3 blue jays and crows calling to W. Left at 11:15 A.M. Did not notice unusual birds, or any bird for that matter in high cattails. Air temp $65^{\circ}F$, water temp in middle of S arm of lake $68^{\circ}F$ or 3 degrees warmer than air. Wind subsided to waves just under white caps. Sky clear & blue. Electric motor on high to make progress against wind. Cabbage butterfly still on open slope above shore on W side lake and in same numbers as observed earlier this A.M. Rare in S arm of lake. Crossed to E to Core Lake and purchased Cone license, thence to E end dam, thence W to car at W end dam. Good fishing along dam, especially toward W end. Largest blue gill 6", largest green sunfish 6". Arrived car 1:30 P.M. The Park Service employees were seeing rearing pond below dam and one seen across pond caught 2 bushels catfish and many smaller fish. Two snapping turtles (approx. 24" total length) were picked up by the tail, thrown onto dry land and trampled to death, first by stamping on either upper or low carapace or plastron which extended the head and then crushing the head with the seener's foot. These turtles should be transported and released elsewhere, or if sacrificed should be analyzed for stomach

* The lawn. Another preceeded it one captured. These two cottontails were displaced by a lawn mower. The young rabbit was placed in a cardboard box to test it viability under conditions of unmolestation. Young rabbits are known to die from fright when captured. It would be an interesting research to work with insulin capacity and regulation within the rabbit.

Content. I have wondered at the time, why the lake could not be used for propagation of fish rather than a small pond, even if an arm of the lake had to be fenced off. Left dam at 67.5 mileage and will keep completely census including road across Clinton Reservoir area via tornado point road. Left dam 1:55 P.M. 70.3 Lone Star village. 71.1 rd to W. 71.6 Now to N 72.5 to W. many grasshoppers in this area. 72.8 to N. 73.0 top hill and begin census of Clinton Reservoir valley. 73.4 blue jay call. 73.6 Rock Creek bridge, water low & brown. 74.4 to E. 75.2 to N. 75.4 Collins corner & continue to N. 76.9 Wakanusa bridge, water not as low as usual summer level. 77.24 2 blue jays 77.7 to N 78.2 Sigel school, 2:20 P.M. Not one bird across valley!

Lawrence, Douglas Co., Kansas

Sept 28, 1969

Collected the following glass snake at Edgehill at top of stairs (NW corner Moeppin residence, 1913 Tennessee). This lizard had been run over by a car. I have collected this kind of lizard from exactly the same area for the last 5 or so years (see previous notes). It is recorded as follows:

690928-1 Ophiosaurus.

S end Clinton Reservoir Dam (proposed), Douglas Co., Kansas

Sept 29, 1969

Mary P Bee called this snake (road kill) bordering channel at above locality.

690929-1 Natrix.

Corpus, Univ. Kansas, Douglas Co., Kansas

Oct. 1, 1969

A fox squirrel called like redbellied woodpecker. The squirrel has, however, 3 or 4 low almost inaudible notes following. One fox squirrel 150' from trees. It was in short cut grass. One flock 24 robins among trees nearby. From Chancellor's residence captured a Ole Kay's snake and a small cottontail rabbit, just capable of hopping across

[see opposite page] *

[Faint, illegible handwritten notes, likely bleed-through from the reverse side of the page.]

Univ. Kansas, Lawrence, Douglas Co., Kansas

Oct. 3, 1969

The young cottontail [see notes of Oct 1, 1969] was sacrificed today. It was just as viable as when first put in box although it had not been fed or watered, nor was there feces or water from urine. This mammal measured 170 mm total length and 80 mm in weight.

Oct 3, 1969

Chimney swifts still in area and in usual numbers,

Lawrence, Douglas Co., Kansas

Oct 1, 1969

noted migration of nighthawks from 1620 T. sun. These birds were distributed from at least the E end of mt. Oread to as far E as I could see with 10x binoculars which represented a distance covering the wooded section of the city. At any one time could see 7 or 8 birds, some 200 or so feet apart, others 2/10 mile apart. They were all moving S and with the least amount of feeding. They would beat wings 3 or 4 times and then sail for 4 or 5 seconds. Time 5:20 P.M. to 5:50 P.M. First noted at 5:20 but ^{they} could have been in air previous to that time.

Lone Star Lake, Douglas Co., Kansas

Oct. 1, 1969

at late twilight, 2 groups of nighthawks (one group of 12 and one of 30) flew S across dam. They were of one group and distributed evenly across the full extent of the dam. Groups separated by 10 minutes. A great blue heron arrived from N at about same time and as it passed over dam lowered hind feet and gradually circled downward to within 15' of water but they left and again bring feet to a horizontal position. Neck held curved at all times. I have on previous occasions observed herons with neck fully extended upon approach to landing area. 2 wood ducks flew S at late twilight.

[see opposite page for Oct. 3, 1969]

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

Oct 4, 1969

Group 13 robins, one singing, 2 scolding and several with call of 5 or 6 abrupt notes.

Oct 6, 1969

First cold wave of autumn and a few trees with leaves turning yellow, some indication of reds. There has been considerable wind associated with this cold wave but this year has been characterized by lack of drying effect on leaves. One noticeable effect of the wind was the release of dead pine needles (especially white pine) and dead cones. Some pine trees produced an inch of dead needles on ground.

Lone Star Lake, Douglas Co., Kansas

Oct 8, 1969

Annette P and I circumnavigated lake including arm of lake with summer homes and exclusive of S arm of lake. Time from near sunset to dark. Only birds observed were 1 coot, 1 kingfisher and 6 great blue herons. The herons arrived from S end of lake and flew by us to the N and then circled and flew S again (40' above water, at late twilight when color and pattern of birds were gone). In this group was one bird that called with the typical low harsh note and another one called with a high pitch, resembling the call of a goose but unquestionably from the heron, probably a young of the year.

Lawrence, Douglas Co., Utah.

Oct. 9, 1969

Chimney swifts in area at 5:30 P M

Lone Star Lake, Douglas Co., Kansas

Oct. 10, 1969

Trip to Lake View, thence to Clinton Reservoir area, thence to Lone Star Lake. Rain last night, cool this A.M. and clouds covering sky 100% but differentiated. Will keep note of kinds of bird and unusual occurrence [all raptors] to Clinton area and then complete census beyond. Left 8:57 from area of Goodrich Distributing Co beyond Hallmarks. Wind from NW.

Sparrow hawk, starling, Eng sparrow, blue jay, 5 bluebirds 51.6 at Lake View. At east end of lake noted 1 cormorant and 5 lesser scaup ducks. Kingfisher at dike where water crosses from E to W. Cowbird. 52.5 now to W at Bruner, 2 sparrow hawks, 52.6 sparrow hawk, 52.7 Sp. hawk, 53.3 at marsh on right side of road at W end of Lake View lake noted 9 ♀ and 6 ♂ woodducks. Area of open water and cattails. Sp. hawk, 2 mourning doves and 17 meadowlarks as one group at 54.5. 55.5 crossing railroad tracks and now along hillsides road. Collected most at 55.8. Crows calling. Kaw relatively low with extensive sand bars. One group 16 eastern bluebirds. 58.9 LeCompton Rd + now to S. 59.7 redtail hawk in dead tree. Sparrow hawk. most sparrow hawks are in flat, open, river bottoms. 61.7 going turnpike road. 62.3 main rd [highway 40] + now to W,

62.9 now to S. yellow shafted flicker, 64.7 main Still Road and
 will continue S and keep complete census. 9:40 AM
 cloud like earlier but clearing slightly. 65.5 starling
 3 meadowlarks, 65.8 yellow shafted flicker, 9 meadowlarks,
 2 starling and 3 grackles; 66.1 2 mourning doves,
 66.4 6 bluejays, 66.8 grackle, meadowlark, 69.0 main
 lateral road (first N of main road) and continuing W.
 68.3 starling 67.4 23 starling chasing a crow,
 yellow shafted woodpecker; 67.7 2 mourning doves;
 68.0 Deer Creek bridge; 2 cardinals, water slightly
 higher than usual and silted. 68.2 3 bluebirds,
 8 goldfinch, 1 bluejay. 68.6 1 group 4 yellow shafted
 woodpeckers, 6 mourning doves, 18 meadowlarks, 3
 bluejay. 69.0 now to S. starling; Sun shining
 locally for first time today, can see other spots of
 sun in distance. 69.1 yellow shafted woodpecker.
 Deciduous forest dominantly green with some yellow
 showing and occasionally a reddish brown tree.
 69.8 Dry Creek and flowing at 3 gallons per second
 and result of last night's rain, 4 bluebird, 70.0
 pond to right never productive of birds. 70.1 top of hill.
 70.3 crow, 12 mourning doves, 4 meadowlarks, 2
 yellow-shafted woodpeckers; 70.6 2 mourning doves,
 3 meadowlarks and 1 loggerhead shrike; 70.7 main
 Clinton road and now to E.; 70.8 loggerhead shrike, 71.7
 3 bluebird and 1 bluejay and 1 mourning dove; most tent
 caterpillar nests on outer circumference of trees, especially
 noticeable on dead trees; 71.5 Belvoir Bridge, yellow shafted
 woodpecker, higher than usual summer level and now get-
 able; 71.6 yellow-shafted woodpecker, meadowlark; 71.8 sparrow
 hawk; 71.9 sparrow hawk and meadowlark 10' away on
 telephone line; 72.3 2 bluejays; 72.7 Cemetery (Clinton)
 shrike, redbellied woodp; 79.0 Crow being chased by 30 starling
 73.4 now S toward Lone Star Road, 5 meadowlarks and 3
 mourning doves; 73.5 6 meadowlarks and 2 mourning
 doves; 74.3 starling, meadowlark, meadowlark; 74.7
 sparrow hawk; 75.1 Rock Creek bridge; 75.4 bluejay;
 75.6 3 bluejays & 1 yellow shafted woodpecker; 76.1 top
 of hill of S side valley, bluejay, 2 starling. 76.6 red-
 bellied woodpecker, 2 bluejays, will continue complete
 census to Lone Star Lake; 77.0 sparrow hawk; 77.4 5

bluebirds; 1 meadowlark; 78.0 yellow shafted wood-
 pecker; 78.4 now to E., meadowlark; 78.5 sparrow
 hawk; 78.9 starling, 2 mourning doves; 79.6 main
 Lone Star Road and now to S., 79.8 4 bluebirds;
 80.0 redbellied woodpecker; black-capped chickadee;
 80.2 Lone Star Lake at 10:23 (end of census) left
 Lone Star at 10:35 and will keep ^{complete} ~~complete~~ ^{complete} census
 to highway 59 (via Banning Corners). bluejay. mileage
 at dam 80.8. 9 bluebirds (all birds are eastern), shrike,
 skunk, roadkill, starling, gray squirrel, grackle,
 Eng sparrow, mourning dove, meadowlark, meadowlarks
 and yellow-shafted flickers are frequently associated
 together. up to Banning Corners have seen 24 meadow-
 larks, 40 starlings, 4 ^{and 3 flocks starling of 30 each} mourning doves. There seems to
 be unusual numbers along ^{this} route today. From Banning
 Corners to highway 59 will keep complete list. Sparrow
 hawk, 14 starling. Starling, 92.6 highway 59 at
 10:55. As census would indicate, there are more birds
 between Banning corners and Lone Star than from
 Banning corners to highway 59. Wakarusa River up
 approx 3 feet from last night rains & is just right
 for canoe navigation.

Lone Star Lake, Douglas Co., Kansas

Oct. 12, 1969

Left 8:00 A.M. Temp 50°F. Rained all night. Slight drizzle
 now, clouds low but differentiated. Fairly dark for this
 time of morning. Wind from ~~E~~ ENE and sufficient to
 bend poplar trees and blue weeping willows 45° angle from
 the perpendicular. Will keep complete record from point
 where Lone Star Road leaves highway 59 approx 2/10 mi
 S of Wakarusa bridge. Water about 1 foot higher than
 yesterday. Begin census at 31.5. Local distribution
 of fog in valley. Fields have accepted rain of last night
 but drainage channels full. 33.4 Washington Creek
 bridge, water relatively higher than in Wakarusa. 33.7
 Eng sparrow & bluejay. 34.3 5 meadowlarks. 34.8
 Banning Corners. starling. 35.6 mourning dove. 35.7 2
 starling. 36.4 6 starling. 36.7 4 mourning doves. 36.8 1
 mourning dove. This area always supports mourning doves.
 38.2 sparrow hawk. 39.2 six meadowlarks. 39.5 red tailed hawk.

when these fish were placed in hot water to kill them, all pectoral fins reversed their normal position and lay pointing anteriorly. The tails of the green sunfish are more frayed than are the tails of the bluegills.

flying in slight rain. 40.1 3 starling, 40.3 village of Lone Star. 40.9 seven bluebirds, one starling. 41.1 three bluebirds, 41.3 1 crow, seven starting closing the crow. 42.4 bluebird. 42.7 nine bluebirds. 43.2 east end of dam at Lone Star. One bluebird and 1 bluejay. On water ^{and} generally distributed are the following groups of lesser scaup. 2-4-7-2-1. At west end of dam at mileage 43.5 at 8:26 A.M. Temp water in lake 66°F, air 51°F. 8 crows on ridge to W. 2 Kingfishers called from N side of dam and then flew up over dam and S down middle of lake. At 10:05 eleven killdeer flew S over dam, called. 10:15 a cormorant arrived from N and flew over dam, turned east and paralleled dam to east bay, then S over flock of 8 scaup & then W again to alight at west side of lake near point just beyond outlet. It waded 150 to edge of vegetation along lake and fished 5-15 feet from shore in an area that would produce bluegill & green sunfish. 10:16 the 11 killdeer that flew N over dam at 10:05, returned and flew S across dam. Between 8:30 and 11:30 fished from cement outlet along dam to W overflow and along edge of dam from shore to 10' lakeward. 4 small patches of emergent vegetation just off shore. Bottom of dam rocks. The measurements of these fish are as follows: (standard length & weight ^{in grams})

Bluegills = 128-72gms; 112-50gms; 118-55gms; 130-76gms; 120-59gms; 107-40gms; 95-25gms; 98-30gms; 128-48gms;

Green sunfish = 121-58gms; 131-68; 128-58gms; 118-52gms; 114-49gms; 108-38gms; 111-43gms; 104-34gms; 102-30gms; 100-31gms; 98-29gms; 100-30gms; ⁹³103-24gms; 91-23gms; 92-25gms; 93-24gms; 79-15gms; 80-17gms; 76-14gms.

Crappie = one caught and measured 138 mm standard length.

Left Lone Star 11:35 ^{at mileage 44.0} and has been rain most of the time. will keep complete census between Lone Star Lake & highway 59, now raining hard and necessary to keep windshield wipers on double speed to keep windshield clear. 44.2 7 bobwhites 44.5 8 bluebirds; 46.4 3 starling; 47.1 yellow-shafted woodpecker; can just see outlines of hills thru rain; fields in some cases flood, others accepting rain, drainage ditches full. 48.3 5 Eng sparrows and rains slowing up. 50.2 meadowlark; 50.5 mourning dove; 52.4 Panning Corners; ditches on N side even with field, on S side 1/2 full; 53.7

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Washington Creek and relatively higher than Wakarusa.
55.8 Highway 59. End census, 11:55 A.M. Wakarusa up
2 feet since early this A.M.

Lawrence, Douglas Co., Kansas

Oct 13, 1969

Rain and cool weather last 2 days. at 5:30, temp 40° F
and temperature scheduled to go below freezing this P.M.
yesterday in NW Kansas, snow & temp 20° F. All day today
with clouds. At noon observed 2 chimney swift from
1620 Tenn. in period from 12:00 to 1:00 P.M. and these
were high. At 5:30 only 4 in sky. at 6:15 there were,
at one time 8 in sky and other frequently passing thru
area in all directions. There was a tendency for the
swifts to move from higher to lower levels and at 6:15
they were about 200' above tree tops. Also noted 3 night
hawks and 158 geese (could not tell species) in 2 V forms
→. They were all moving S (geese), at 6:30 swifts
still in area and about same concentration as at 6:15.
One night hawk moved N & feeding. At about 6:05 approx.
30 swifts in a close order formation passed by at a height
just below the tree tops.

Lawrence, Douglas Co., Kansas

Oct 14, 1969

This A.M. clear sky and lowest temp last night was 31° F. No swifts in
air between 8:00 A.M. - 9:00 A.M. In evening usual number of chimney
swifts both in numbers and behaviorism. Because of clear
sky and full light, the length of activity was extended at least 45
minutes in comparison to last yesterday evening.

Oct 14, 1969

On Univ of Kansas Campus 38 robins were noted, some singing, some
with the rapid call of notes. These robins are generally distributed.
Berries of great abundance this year. Some maples are turning red.

Oct 14, 1969

Annette Christine Bee painted the second of two matched oil paintings of orientated
scenes. A modification of the paint by number produced a very attractive
and professional painting. This painting is no. 691014-1 (Garden of the
Ming Tree).

Oct 14, 1969

Delbert Kilgore just returned from Rocky Mt. Biological Station. He reports that spring
was 3 weeks early and autumn 3 weeks early. Cinquefoil preferred by both marmot
and pikas and selected over many other types of vegetation available.

Lawrence, Douglas Co., Kansas

Oct. 15, 1969

Chimney swifts (*Chaetura pelagica*) in area (1620 Tenn) in usual numbers for this time of year. Flight activity and feeding ended at late twilight which, because of heavy clouded condition was 6:30 P.M. Day cold. Weather forecast for to-night is low temperatures and rain.

Oct. 16, 1969

Chimney swifts in area in evening and in usual numbers and behaviorism. They feed high in late afternoon and then move down to treetop level in evening.

Oct. 17, 1969

Chimney swifts in area and activity same as last evening. Wasps more noticeable as they search the house for crevices and holes for retreat.

Oct. 18, 1969

Chimney swifts in area (all observations at 1620 Tenn) in evening and in usual numbers and behaviorism. Last few days have been cold and considerable rain. I am surprised that these birds have not moved south, especially as concerns influence of low temperatures.

On a trip to Kansas City this A.M. (Mary to airport for Seattle), noted the number of flocks of redwings and grackles increased as we approached the more deciduous elements of eastern Kansas. Also noted 2 redtails (on turnpike).

Oct 19, 1969

Chimney swifts in area (1620 Tenn) in a.m. between 8:00 A.M. and 9:00 A.M. (period of observation). Ordinarily swifts are not noted in A.M. at this season. This evening because of clear skies, the swifts did not leave for roosting area until almost 9:00 P.M. Night hawks also observed in sky this evening as has been the case in previous evenings. Their flight is directed to the S as if in migration.

Oct. 20, 1969

There were no chimney swifts observed in air during the day or in the evening. Weather moderating to clear skies and warmer weather.

Oct 21, 1969

No chimney swifts in air today or in evening. Weather clear and pleasant in contrast to last week. Black moths and gnats were at the windows this P.M. at twilight. Starling, that

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are frequently seen perching on tops of high trees just before seeking roosting places for the night, were flying up to 100'-150' above trees to feed on mothlike insects. Maple trees are about 1/3 toward most brilliant colors and have been in color change for about one week. These trees are the first to change color.

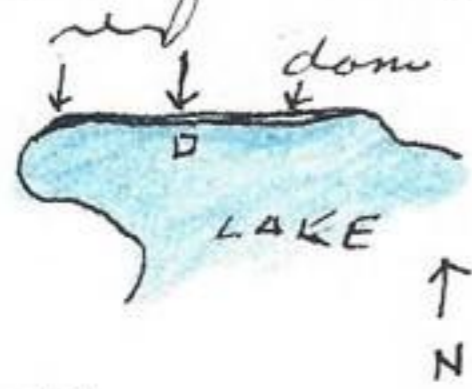
Lawrence to Kansas City via highway 32, Kansas
 Oct 23, 1969

Trip to Kansas City Missouri airport to meet Mary Pauline returning from Seattle. Will keep record of all birds observed. Sky herringbone, day cool. mileage 43.0 at Lawrence P.O. Left 11:07 A.M. Kaw River just a little higher than normal 45.4 Eng Sp. 46.1 3 Eng sp., 2 horned lark. 46.7 38 killdeer in one group alighting in plowed field. 47.9 now on 32 to E. 49.8 2 starling, meadowlark. 49.9 redtail. 50.3 Eng sp. 50.7 yellow-shafted flicker 51.8 opossum redhell. 53.5 Eudora road, 1 opossum redhell. 54.0 redtail. 54.6 2 starling 56.2 redtail on top telephone pole, other so far have been on dead limbs of trees, 56.7 Lenwood. 57.1 Sp. hawk. 57.5 Shauger Creek, water normal. Trees in area mainly green but considerable yellow, golden and some red. Some trees have lost leaves. 58.6 opossum redhell. 59.3 5 starling. 59.5 yellow-shafted flicker. 60.3 striped skunk 60.5 redtail circling. 63.1 3 starling. 64.8 Mourning dove. 65.1 opossum rd kill. 65.8 13 starling. 68.0 Bonner Spring at 11:40. 69.6 road cut to left with shale sandwiched between sandstone. 70.0 Lone Star Cement Co., 75.5 26 starling, 3 Eng sparrows; 76.0 2 starling, 2 Eng Sp at 79th St., Kaw River 1/5 of river valley. 77.1 32 starling; 77.5 13 starling, 40 Eng. sparrows; 77.7 14 starling; 77.9 6 starling; 78.3 15 starling; 78.5 2 starling; 78.8 9 starling; 79.0 2 starling; 79.5 8 starling; 80.1 Turnpike entrance. 80.8 Kaw River filling entire channel, skunk rd. kill, willows green and some yellow, cottonwood more yellow than willows and some deep yellow. 82.4 Now on Turnpike, 87.0 Lewis & Clark Viaduct. at 12:08. I am surprised that there were not more starling in the area of Commercialization near Kansas City. Airport at 12:15 or 1 hour and 8 minutes from Lawrence.

Lone Star Lake, Douglas Co., Kansas

Oct. 23, 1969

This evening sampled small fish from cement outlet to NW end of dam (at twilight and caught the following: (standard length & wt.)



Bluegill: 125-68, 145-106, 124-69, 130-83, 121-58, 107-38, 92-24, 94-26gms.

Crappe: 127-42gms, 136-60gms, 120-40gms.

notemigonus crysoleucas (golden minnow) 140-54gms.

There were no green sunfish which are generally the dominant fish along the edge of the dam. This was true in one other area tested where there had previously been many green sunfish. a killdeer was the only bird noted in the area. Great horned owls called at late twilight.

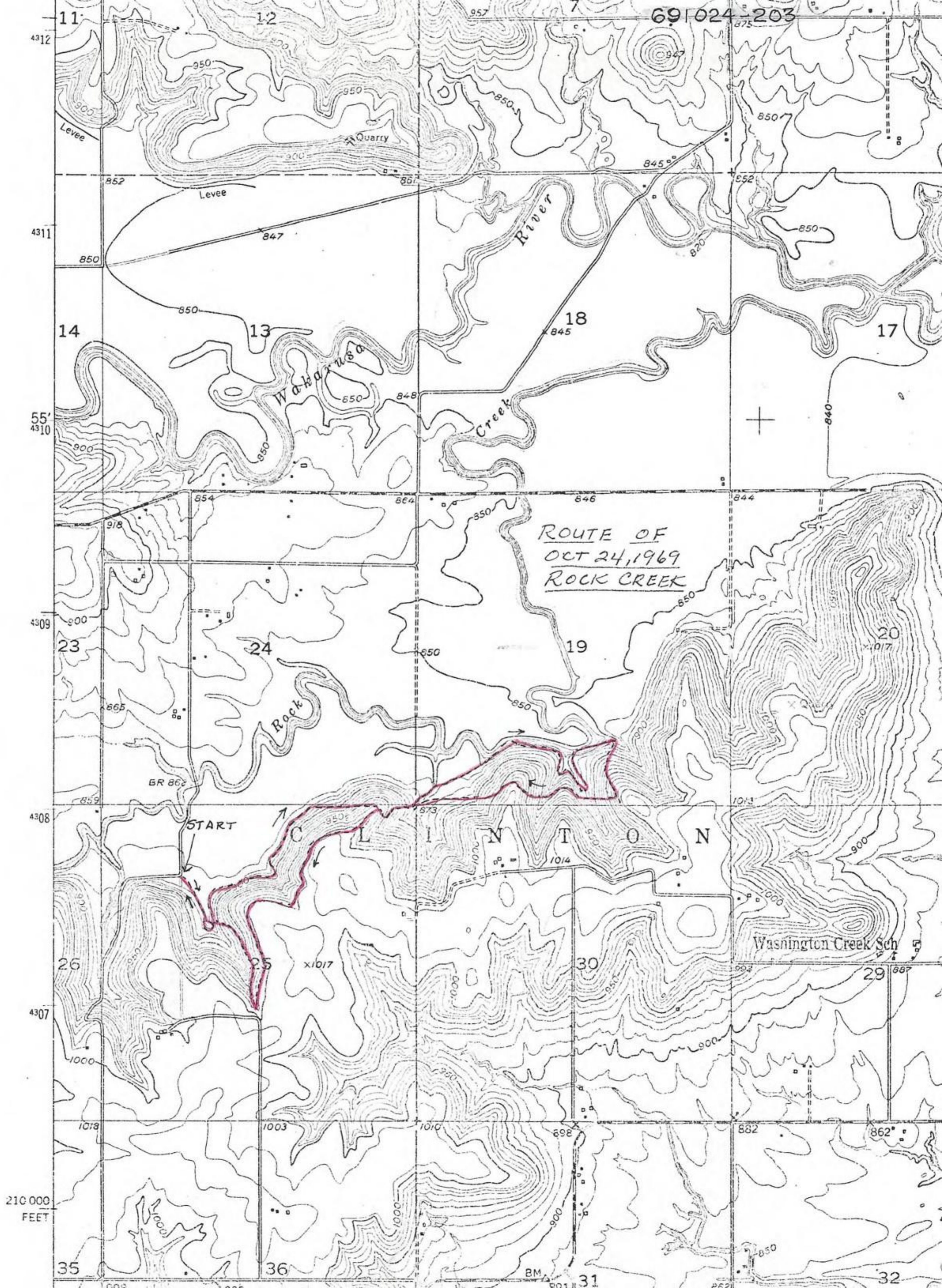
Rock Creek, Clinton area, Douglas Co., Kansas

Oct 24, 1969.

made census of birds and mammals on south slope of Rock Creek valley (see map), SE of Clinton. Birds between Lawrence and Sigel school were: starling, meadowlark, redtail, Eng. sparrow, mourning dove. Started census at Sigel School House at 35.6 at 10:15 A.M. cloudy but differentiated clouds, cool temp. 50°F, will keep complete census to Rock Creek. meadowlark, 36.8 Y in road. 36.9 Wakarusa Bridge, 2 cardinals, 3 Eng. sparrows, 1 bluejay, yellow-shafted flicker. Water slightly higher than usual and relatively clear, banks muddy. 37.0 starling. 37.1 yellow-shafted flicker. Riparian vegetation 1/2 green, 1/4 yellowish green and 1/4 brown and golden. 38.1 at a field of corn (2/3 cut yesterday and stalks shredded) observed an unusual aggregation of birds, indicating that birds from surrounding areas are attracted to food by the activities and calls of other birds. This group consisted of 8 mourning doves, 2 yellow-shafted flickers, 42 crows, 21 meadowlarks, 32 starling. 38.4 main road at Collins and will continue S. From here the sidehill to S in area to be traversed is 30% green, 60% golden & brown, and 10% bright yellow. There is a general consistency of color except at base of hill and at top where the base color is green. The base due to orange-orange and the top is huckleberry. 39.3 meadowlark, 39.4 now to S. some winter wheat up 2 inches. 39.6 sparrow hawk, 2 yellow-shafted flickers, 4 starling. 39.9 blue jay, 4 starling. 40.2 Rock Creek bridge. water slightly above usual level and relatively clear.

203
Oct. 25, 1969
781

691024-203



mileage at base of hill 40.6 at 10:30 A.M. Left car and
 proceeded E at base of hill. Will keep complete census.
 Drainage without running water but damp and signs of
 previous higher water. In one opening noted 18 slate-
 colored juncos, cottontail, 2 black-capped chickadees,
 2 myrtle warblers. There is considerably more ground
 cover and weeds than in previous years and is probably
 associated with unusual amount of rain this year. 4
 golden-crowned kinglets and 2 robins. 10:38 5 black-
 capped chickadees, 2 redbellied woodpeckers, 8 goldfinch.
 2 titmice, fox squirrel. 10:40 8 chickadees, 2
 myrtle warblers, 1 red-bellied woodpecker. This valley
 below pond is full of birds that I can hear but cannot
 see. 10:44 pond. 3 feet below normal (full) which,
 again, is unusual. 20' below pond a drainage hole
 2' x 10' with 12 lava pipies on bank. They jumped
 into water. In similar holes beyond there were no
 frogs. nor were there frogs at pond. At pond only one
 bird was observed, a cardinal. Crows called to the W.
 2 robins flew ^{high to} 5 over pond. 10:47 E end lake. There
 were several fish in shallow inlet water at a piece
 of green vegetation that had been carried into the lake.
 They immediately swam to deeper water. A few small
 frogs at pond (*Pseudacris oraria*?). Cracks in bottom
 of lake would indicate that water has been even lower
 than at present. Can hear 1 hairy woodpecker, 1 red-
 bellied woodpecker, 2 chickadees. Continuing N down
 E side canyon below pond. Just below pond noted.
 (10:52) redheaded woodpecker. On sidehill among oaks,
 the lower leaves are first to change and or brown. The
 understory bushes are 90% without leaves, the ground
 cover green. 10:52 2 titmice, 1 redheaded woodpecker.
 10:53, 2 titmice and 4 golden-crowned kinglets, 5
 chickadees, 4 juncos. 11:00 5 chickadees, 4 golden-
 crowned kinglets, 2 titmice, 1 downy woodpecker. 11:01
 3 eastern bluebirds. Sumac red & most leaves off. On
 an occasion noted sumac leaves still green. Trees in
 area unusually green, crickets calling. 11:05 mouth of
 canyon S to E, 1 yellow shafted flicker, 2 blue jays. From
 on osage orange tree 22 feet canopy, counted 456 fruits,
 (fresh yellowish-green) on ground. There were no fruits in
 the tree. 14 of these fruits had been eaten by either rabbits
 (cottontail)

neotoma or squirrels.. and these fruits were those under
 overhead protection of bushes. Some however were in
 open under tree, ^{1' in diameter}. ^{80% of leaves still on tree but are dropped.} Other trees showed fewer fruit and
 approx 1/3 consumed by mammals. One cottontail
 rabbit 25' from this tree. 11:10 downy woodpecker.
 11:11 2 redheaded woodpeckers. There are definitely fewer
 birds in this area than in canyon below pond. 11:12
 red-headed woodpecker. 11:17 ridge fence convergence.
 (trail follows, up to this point a E-W line). 11:20
 crossing drainage a large elm (measured on previous trips).
 Although there is very little wind, leaves are falling at
 the rate of 1 per 3 seconds. The mat vegetation ^(up to 8") below trees
 at base of hill is still green although understory shrubs are
 90% devoid of leaves. 11:25 2 downy woodpeckers, 2 yellow-
 shafted flickers, 4 black capped-chickadees, 2 eastern blue-
 jays, 2 cardinals. 11:30 2 red-headed woodpeckers, 3
 eastern bluebirds. 11:32 trail that leads to open field.
 Checked birds moving along contact between open field and
 forest and are: 6 chickadees, 2 white-breasted nuthatches,
 3 titmice, 7 goldfinch, 1 yellow-shafted flicker, 1
 house wren, warbler (all green without identifying marks),
 4 song sparrows, ^{2 cardinals} 3 redtails soaring above field just to N.
 Pop Paul-paul's perfect for eating. all fruit on ground
 with 80% fresh, greenish yellow and 40% brownish (older).
 Leaves off trees except a few in some cases. Left 11:47. Flies
 at fresh horse droppings in trail. 11:48 2 red-bellied woodpeckers,
 8 goldfinch, 7 chickadees, 1 downy woodpecker, 2 titmice,
 1 yellow-bellied woodpecker. 11:54 2 redbellied woodpeckers.
 11:55 now up graded trail. 2 redbellied woodpeckers. The
 piled brush at edge of forest does not seem to be supporting
 birds. 11:59 trail leveling on benchland. Trail (previous)
 below benchland, muddy from seeping waters. Redheaded
 woodpecker. 12:01 rack on fence. Ridge just beyond of oaks
 and leaves both green and golden-brown. 12:03 ridge +
 trail now down E slope. Can hear crows calling to E. and
 3 bluejay to S. 12:04 trail diverging & now to left. yellow-
 shafted woodpecker, 2 mourning doves among leaves in forests.
 There was a definite hum of wings. A yellow-shafted flicker
 was also feeding among leaves at base of tree in forest. 12:06
 now at fence line (section line) again. 12:07 flat on trail
 and 4 yellow-shafted flickers among leaves on ground.

12:08 fox sparrow, 2 bluejays. 12:09 bottom of trail at head of field. 4 bluebirds, several crows calling to E., 3 chickadees, 2 downy woodpeckers. 12:15 crossing drainage. Deer tracks (3 sets) measuring 75 mm in length. This crossing is now modified for trucks which are hauling out the cut timber of the climax forests beyond the open field to the east. red-bellied woodpecker. 12:17 now into cut deciduous forests. This area is now sectioned into roadways, cut timber above 10" and high brush piles of residue branches. Red-headed woodpecker, yellow-shafted woodpecker, 3 robins. 12:20 red-headed woodpecker. Trail sign (trail to rattlesnake nest). Main road follows old single path trail. 2 cardinals. Leaves still on trees of downed timber and although partly dried, are green. 12:21 2 red-headed woodpeckers, redbellied woodpecker. 12:25 Collin crossing of Rock Creek. Water higher than normal but ripples present below crossing. Water relatively clear. Raccoon + deer tracks at edge of creek. *Acer* or *Pseudaceris* (6) at edge of creek. One 2 birds associated with this area and they are (2) redbellied woodpeckers. Water has been 5 feet higher than present and recently. Back at regular trail (now a logging road). Red-headed woodpecker. yellow-shafted flicker calling. mole tunnels crossing trail and recent. Can hear 3 yellow-shafted flickers calling. Red-headed woodpecker. 2 titmice. red-headed woodpecker. 3 titmice, 2 chickadees. 12:36 red-headed woodpecker. These woodpeckers are increasing in number and are associated with good climax forests. yellow-shafted flicker. Red-headed woodpecker. 12:36 Short cut trail to Chimney but will follow right hand trail. Red-headed woodpecker. 2 titmice. 12:40 first drainage crossing. 1 red-headed woodpecker, 3 titmice. No running water in creek. 12:42 3 red-headed woodpeckers, 3 golden-crowned kinglets, 5 chickadees, red-headed woodpecker. 12:45 crossing second (main) drainage. Red-headed woodpecker, 4 golden-crowned kinglets, 2 titmice. 12:47 yellow-shafted woodpecker, downy woodpecker, titmouse, red-headed woodpecker. 12:50 2 titmice, 2 red-headed woodpeckers. 12:52 10 bobwhite. 12:53 red-headed woodpecker. Sycamores below in creek to W. 12:54 Chimney (old house remnant). Have noticed many small holes (2" deep & 2" wide) excavated by fox and

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grey squirrels. Immeasurably more actively than is indicated
 by slight observations of squirrels. 12:57 trail crossing
 drainage. now return to trail to Hangman Cliff. at 12:59.
 1:00 2 bluejays. 1:08 Hangman cliff at point where trails
 passing ^{upward} thru cliffs. but will turn to right and return thru
 deciduous forests N of the E-W section line fence but
 well in forests. 1:14 red-bellied woodpecker, yellow-shafted
 woodpecker. 1:15 first drainage. This drainage leads down
 to Chimney and lower trail about 200' N of fence line.
 1:16 yellow-shafted flicker. 1:18 yellow-shafted flicker and
 2 bluejays, 2 titmice. 1:19 2 red-headed woodpeckers. Ooks
 cover rocky ridges. 1:21 second drainage that converges
 with enters Lost Creek just above Chimney drainage. 2
 red-headed woodpeckers. 1:24 red-headed woodpecker. 1:25
 3 red-headed woodpeckers. 1:26 2 red-headed woodpeckers. When
 these birds occur in groups, there is always 1 calling vigorously.
 1:27 red-headed woodpecker, downy woodpecker, 2 red-
 headed woodpecker, yellow-shafted woodpecker, downy,
 2 titmice. 1:30 2 redheaded and 1 yellow-shafted flicker.
 1:32 fox squirrel, 2 redheaded woodpeckers, 2 titmice.
 Can hear crows calling to N in valley. Sign says "short
 cut to creek", 3 crows passed overhead, calling. 1:25 2 crows,
 2 redheaded woodpeckers, red-bellied woodpecker. 1:37 minor
 drainage. 2 redheaded woodpeckers. 1:42 2 redheaded wood-
 peckers. 1:45 at drainage (just W from cut over climax forests)
 will continue up usual trail to ridge, then up ridge to top of
 valley slope. monarch butterfly left edge of forest and flew
 out into open field. 1:48 now leaving head of field at gate.
 1:50 downy woodpecker. 1:52 fox squirrel. 1:53 fox squirrel.
 1:54 yellow-shafted flicker. 1:55 white breasted nuthatch,
 yellow-shafted flicker, 3 chickadees, 3 titmice, 3 red-
 headed woodpeckers. 1:56 now on ridge and trending
 5 up ridge. 8 chickadees, yellow-shafted, redbellied
 woodpecker, 3 redheaded woodpeckers, 3 titmice, 2 bluejays.
 yellow-shafted on ground. 2:00 7 chickadees, 2 redheads,
 1 yellow-shafted. now on flat portion of ridge. This part of
 ridge is peninsularlike and would be an excellent place
 for a home site as it gives a view overlooking valley
 on three sides. Trees principally oaks on flat area. 2:02
 edge of open field. One yellow cabbage butterfly in field.
 and only butterfly there. yellow Green cabbage on
 crest of hill are huckleberry. 2:06 redheaded woodpecker-

no wind on uplands. 2:07 yellow-shafted woodpecker.
 2:08 3 red-headed woodpeckers. 2:09 red-headed wood-
 pecker. 2:12 trail momentarily to field then back again
 into forests. 2:14 trail to right down gully. 2:17
 2 red-headed woodpeckers. 2:22 angle on corner NW of
 field. Gravestone area, and good exposure to poisoning.
 2:24 3 red-headed woodpeckers. 2:27 2 cardinals,
 cardinal, fox squirrel, yellow-shafted flicker.
 2:30 Cattertail. 2:31 trail ends at road. Well
 follow trail down canyon toward pond. Hairy wood-
 pecker. 2:32 red-headed woodpecker, 2 bluejays, yellow-
 shafted woodpecker. 2:32 downy woodpecker. 2:35
 red-headed woodpecker. 2:36 hairy woodpecker. E slope
 canyon mainly oaks. 2:37 2 red-headed woodpeckers.
 2:40 pond. 2 bluejays and only birds associated with
 pond. 2 yellow cabbage butterflies at pond. 2:44
 2 red-headed woodpeckers, 2 cardinals. 2:50 returned
 to car. Grasshoppers active. Left at 2:53 at mileage
 40.6 4:0.9 Rock Creek bridge, bluejay. 41.7 crow
 in field. 41.9 starling. 42.7 main Elston road and
 continuing to N. In area where great numbers of birds
 were feeding in cut-over corn field, there were no birds
 now. Temp 61°F. 44.2 Wakarusa bridge. 3 goldfinch.
 44.4 2 mourning doves, bluebird. 44.8 1 bobwhite.
 45.5 Sigel school, keeldeer at 3:10 P.M. and end of
 census.

Lawrence, Douglas Co., Kansas

Oct 27, 1969

minimum temp early this A.M. 28°F. The first and earliest
 maples to change color are now in late stage of color and
 have changed from brilliant yellow to reddish to golden to brown. Some
 of these trees are without leaves. Oaks and in various
 stages and are later in changing color than maples.

In crossing a practice football field on way to K.U. have
 noticed that some mornings the grasses are saturated with
 water while on other mornings the grasses are absolutely dry.
 This is an extreme ^{variation of} condition and must certainly have an
 influence on animal activity.

Oct 28, 1969

First major falling of leaves. Some mulberry trees lost
 all their leaves in 1/2 day, some accumulating to 5" deep.

this falling of leaves was associated with temperatures and wind. Minimum temp last night 26°F . Trees with compound leaves shed leaves, separate from stems. the latter being conspicuous on the ground.

Oct 29

Leaves still turning color and more green trees than usual. Some tree bare of leaves. 24 robins on Univ. Kansas Campus this A.M.

Oct 30, 1969

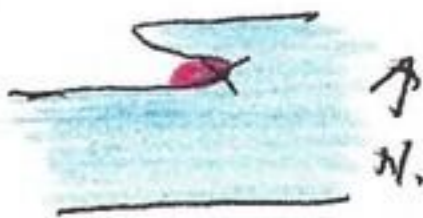
many trees still with green leaves and with rains of today are even greener than usual. This year has been characterized by lack of drying from fall winds before change of color in leaves and prolonging green in leaves at the same time as maples are going thru their regular color change.

Lawrence to Linwood, Kaw River, Douglas and Leavenworth Cos., Kansas.

Nov. 1, 1969

made canoe trip from dam at Lawrence to bridge on Stranger Creek at Linwood. Left budge at Lawrence at 8:18 A.M. Day cloudy with low clouds completely covering sky but well differentiated. no sun. Clouds similar to low clouds in arctic. Breeze from SW. Air temp 39°F , water temp 42°F . Water relatively clear and of greater quantity than usual for this time of year. 20 ring-billed gulls searched for food on S side of river below dam. 3 other gulls arrived from the east ^{at 300' get study}. They remained in the area as long as I was there preparing to leave and either searched for food over water or rested on sandbar. One can see own respiration moisture in air. 8:36 36 red-wing blackbirds flying to S. 8:40 first set of utility lines. Can hear blue jays, chickadees and bluebirds from riparian community. Will keep complete record of birds directly associated with water and only kinds of small birds on bank unless unusual occurrence. 8:43 only 2 fish have jumped since departure. 8:44 sewer entrance to right. water reddish, oily and some foam reaction. moisture clouds from egress. or effluent water. 8:47 first starling. 8:50 FMC effluent, steam, heavily silted but not on bank as usual because of higher level of water. Can hear flicker and robin for first time.

willows along river ranging from greens of summer to dominant greenish-yellow (near green) to an occasional yellow. Cottonwoods slightly more yellowish than willows but and with nearly full complement of leaves. Some cottonwoods brighter yellow, some trees (a few) without leaves, especially on lower levels of tree. The condition of leaves on or off tree depends on two factors: trees exposed to wind and trees in a young consociation have few leaves than others. The dominant unchanged condition of riparian leaves from late summer condition is probably a result of excessive moisture this year and lack of drying winds. Can hear crows calling to right. Flock of approx. 60 redwings flying south. 8:55 first observation of gulls since leaving Lawrence population, there being one ruddybill flying up river and one flying down river. 8:57 spotted sandpiper on broad sand bar. Cottonwood tree leaves here about 85% on trees. Slight increase in wind and from back, favoring movement of leaves. Enough wind to cause leaves on tops of cottonwood to move vigorously and cause some slender branches to bend. Less noticeable on water. 8:55 Harlan redtail fly from left to right across river. 8 crows calling down river, 5 of them alighting on sandbar and drinking. Redbellied woodpecker calling. 9:04 first set submerged pipes (hissing noise on bank. 9:05 second set of pipes (bubbling water), 9:10 second set high utility lines. One great blue heron left edge water and flew down river. Ruddy-bill gull flew up river. 21 killdeer on sandbar and in close formation. All of them bathed in water and within area of 20 linear feet. 16 killdeer flew upstream at approx. 400' altitude. Considerable sand along N side of river and in positions unusual for this channel. 9:13 lone long-billed dowitcher feeding along edge of river on sand bar. One greater yellowlegs associated with dowitcher and flew with the dowitcher when I approached them. 9:20 Great blue heron left top of tree, circled ^{downward} and flew up river. This may have been the same one observed previously. 9:23 first swallow cliffs to right supporting approx. 75 nests in a restricted

section of the cliffs. This area of nest was drier than other parts of the cliff, perhaps because of drying mechanism of holes in the cliff. Elsewhere there was more vegetation and green mosses on cliffs which could have been a factor in excluding bank swallows. 9:28 18 black-wing teal on end (downstream) end of sandbar left, circled twice and flew up river. 

Some beaver activity but not as general as in previous years. Grass on bank below trees is brown. 9:34 beginning of trash area on S side. The old closed bank trash area of Lawrence has now moved to this area and is just as extensive as before with garbage, cans etc. 9:40 end of trash or 6 minutes of canoeing at about 4-5 miles per hour. Meadowlark singing beyond bank. 1 ring-billed gull flying down river. A kingfisher left hole in bank at about center of bank swallow nesting area and flew down river for 200 feet, attempted a bank landing, then flew downstream 150' to make a second bank landing. The swallow nest are about 150 down stream (right) from end of trash deposits and consisted of approx. 110 nests. 30 additional holes just beyond colony downstream. Ring-billed gull flying up river. Since Lawrence hole noticed 2 dead eel, one 5 inches long. 9:45 eleven killdeer on sand bar to N and evenly spaced at about 80' apart. This sandbar is a point bar and is much more extensive than on previous years both as to width and length, in fact it crosses 3/4 of river channel from N side. 9:48 Capsize Point. The more man attempts to protect sand banks, the more erosion occurs. At a point approx 1/10 mile from Capsize Point (downriver) is a colony of bank swallow nest consisting of approx 410 nests. Another 150 continue a short distance downstream from the main colony. 9:55 18 horned larks flew N across river to sand bar. This area has always supported horned larks. 9:58 five killdeer to left. At a point about 100 feet upstream from first trees before Pirate Channel noted approx. 300 bank swallow nests. The point bar on corner (N side) curve is extensive and runs to within 200 feet of Mud Creek. Wind now

blowing from NW and may represent a channeling effect. 10:04 recent beaver cutting ^{willows} and activity on S side river. 10:06 Kerate or Short Cut channel. Water in river 3' below channel bed. Temp 38°F. 10:11 across from Mud Creek. On concave side of river 300' beyond Mud Creek are 3 large cottonwood trees cut by beaver, one of which is downed and in water. 10:15 now at end of curve and trending SE. 4 fish surface - 1 in water. Group 7 goldfinch and downy woodpecker. 10:30 Temp 40°F. 3 killdeers to right and recent beaver activity on island. 10:42 2 killdeer. 8 more flew up river. 10:45 approx 1500 redwing ^{flying} to S. Mass of birds does not undulate but individual birds do. 10:52 greater yellow legs. 10:00 leaving curve at high point of bank. Oaks on ridge to north mainly colored, some green, some yellowish-green, some golden and some brown. Temp now to 38°F. Conspicuous of cottonwoods where exposed to winds are free of leaves, the willows below still maintain greenish leaves. 11:08 tree island to left now with drawages becoming more separated. No nests of bank swallows where present last year. Kingfisher. 11:15 beginning of large grove of cottonwood with 95% leaves of pop trees. 11:18 end of trees and beginning of ear barriers. 11:19 approx. 375 nests of bank swallows just before rock barrier. First indication of increase in height from W with low clouds moving E. Other clouds above excluding sun. Killdeer to left. Flock approx 15 redwing flying to S. Considerable sand on left side of river. 11:48 Temp 44°F. 11:38 Euclora bridge. Sands in different places than usual. Open area of low clouds now closing in from other low clouds from NW. 12:00 mouth Waharusa River. Kingfisher left mouth and flew N across river (Kaw), hovering twice enroute. 12:23 large cottonwood on right now down but junipers still on bank. There are no bank swallow nests on entire curve of the bend since Waharusa. 11:27 beginning of forested area on right. Sands in river beyond as usual but log jam now removed. Waves with occasional white-caps. 12:34 now on left side of river on lee side. Kingfisher. 5 crows feeding in sandbar to right. 2 cardinals in brush to

left. This bank is usually populated with winter birds but today there are practically no birds there. Temp 40%
 12:50 now at ^{first of} bend at railroad tracks. This is an unusual great amount of sand on left side before bend. Sand bar on right hand side has moved down river. Several years ago the sand formed a partial barrier across river and was almost shallow enough to wade across. 12:56 downed airplane about 300' up stream from high utility lines. The lines were broken at time of plane contact. It appeared that plane was flying up river at a low altitude. 12:58 utility line. 12:59 arched railroad bridge marked 1940. Movement of canoe variable. 1:26 leaving railroad tracks and trending \approx SE. 1:35 redtail like hawk hovering for prolonged period and could be American roughleg. Back and tail black, white at base tail, wings more checkered than redtail. 1:38 along perpendicular cliff at drainage from left. Base of cliff with Coyote, deer and dog tracks as well as raccoon. 1:45 down pipe, no bank swallow nest in crevity but approx. 100 associated. 1:47 *Quadrula quadrula* shell in clay at river level no 691101-1. no other shell noted. 1:53 along black clay beds. There is a coarse sand below black clay, and granules to 1/4 inch with topset-facet-bottomset beds. Some rocks up to 2". 2:04 beginning large trees at bus trailer. beeldeer, redtail hawk, 5 beeldeer to right. 2:10 log jam and to left. 2:25 wood duck left bank and went into willow, could not find. 2:33 continued on. Temp. 44°F. no frogs so far. 2:45 spotted sandpiper. Beaver house on island to right. 2:50 part of wing of airplane. 2:52 great blue heron. 3:00 opposite creek from right. ^(stranger bird) Cricket call 1 per 50' and facultly culling. Spotted sandpiper on log and not tettering as usual. 3:06 Arched railroad bridge, water of river (Kas) 1 foot below drop of apron of lateral creek. Approx 1 gal per second of water. 3:30 following cliffs to right and stable with mosses on aquifers and some weeds. 3:32 Cliffs showing more and more dissection



and when river is high dissection from field water. will facilitate accentuated erosion of the cliffs by eddy action. On this stretch of river have noted seven instances of beaver ^{tracks} on muds. There are no trees or vegetation along these cliffs. 3:40 beginning of bank nests. 145 nests

in one group. 60 nests in another group near first rock barrier. Below this site is a layer of gravel, sand and mud balls (to 1 foot diameter). 350 feet rock barrier. 2 mallards left bank just beyond barrier and flew directly east, 3:52 erosional gully heavily used by beaver. 2 Kingfisher left bank and chased each other. Temp at 4:00 ~~52~~⁴²°F. 4:15 mouth Stranger Creek. The old channel on left side leading to mouth is now in sand. Considerable change in sand deposits. Great blue heron left mouth & flew E down Kaw River. Bridge on Stranger Creek 4:25 P.M.

Summary of birds observed:

ring-billed gull 20-3-2-1-1-1-
 redwing blackbirds 36-60-1500-75-
 crows 4-8-5-
 spotted sandpiper 1-1-1-
 redtail 1-1-1-
 great blue heron 1-1-1-1-
 killdeer 21-16-11-5-3-2-8-1-1-5-

spotted sandpiper 1-
 woodcock 1-
 long-billed dowitcher 1-
 gr. yellowlegs 1-1-
 bluewing teal 18-
 kingfisher 1-1-1-1-2-
 mallard 2-
 Coyote & deer tracks
 raccoon

Kinds.

bluejay goldfinch
 bluebird downy
 chickadee cardinal
 starling
 robin
 yellowthroated flicker
 redbellied woodpecker
 beaver
 meadowlark
 horned lark.

Perry Reservoir, Kansas

Nov. 7, 1969

Observed the following from dam: 3 white pelicans, 28 ring-billed gulls, 13 mallards, 9 ^{1 cormorant} scaup. Had expected more ducks.

LeCompton to Lawrence, Kaw River, Kansas.

Nov. 7, 1969

Conoe trip from old LeCompton bridge to Lawrence bridge. Left 10:50 A.M. from N side river. 10:56 new bridge. steel structure 1/2 completed. 8 killdeer right side and calling, 5 killdeers on left hand side and generally dispersed. Sand pattern shows more change than in last 15 years. I have always put in at base of N side of bridge but this time sands from bank to 1/2 way across river to S. Air temp in shade 58°F. water 48°F. Sky clear, slightly hazy. No wind. 11:10 18 killdeer on sandbar at edge of water and generally distributed, 1 lesser yellowlegs, beaver activity. 7 killdeer to left and calling. 2 crows in trees on bank, also yellowthroated ¹ woodpecker, black-capped chickadee. Tree on ridge to S mainly oak and dominantly brown, secondly golden and fewer yellow. No greens of summer. willows greenish yellow, some yellow. Cottonwoods 50% without leaves and yellow to yellowish-brown. Very few with summer greens. Gnats and numerous spider line on crossing river. meadowlarks singing & calling from right (except for water associated birds own listing only kinds or unusual occurrence of riparian birds) 11:22 8 killdeer

to left, 5 to right and calling almost constantly and chasing of one bird by another. Pairs are participating in special behaviours. On some trips killdeer seldom call. 11:25 passing over log barrier parallel with river and water dropping 5 inches. Kingfisher. Temp inside canoe in sun 65°F. 11:30 2 killdeer to left. Beaver activity & paths on bank to left. Considerable fish activity. 11:36 5 killdeer to right. Ring-billed gull bathing. ^{One dead one (first year) measured 17 1/2 inches total length.} Temp in sun on cloth surface 80°F. Air in shade 56°F. 11:48 5 killdeers to right. These birds occur all along the way but are in groups. 11:52 2 killdeers to left. 11:57 5 killdeers to right. 2 to left. 1 pair of killdeers performing by expanding tails and tilting bodies either up or down, then assuming feeding but still concerned with each other at 10-12 inches, and calling. 12:02 18 killdeers generally distributed. 19 pigeons alighted on sands and in 3 minutes had dispersed to 30 or so feet separations. 3 crows arrived and joined pigeons. Few white clouds to N. Now light breeze from E. 12:10 4 killdeers to right. Canoe now on N side of river. Song sparrow singing and 18 slate-colored juncos. Carp sucking on foam on lee of log jam. 12:17 6 killdeer to right. 12:20 first large cottonwoods to left across from a high point of hill (S side). Black and predominant yellow wasps on S exposure of bank. They are searching holes in bank and are about every yard. 12:24 4 killdeers to right, 3 crows flying up river. Single cricket frog calling, and only one heard so far. 12:30 10 killdeers to left, and characterized by calling and chasing one another at edge of sands at water edge. One seldom sees them on dry sands removed from water. 12:32 Kingfisher left perch, flew 30' down stream and then returned and allowed canoe to pass within 20'. Ordinarily they are not so confiding. Can hear blue jays and a red-headed woodpecker on bank. First butterfly ^{flying} across river. 12:38 2 killdeers to left. The large climax type cottonwoods along river here are 80% in leaves, and dominantly yellow with seldom a green color. 12 killdeers to right. Not all exposures of sand (S exposures) are used by wasps. 12:50 5 killdeers to right. Snapping turtle 10" carapace on stump and is weary. Back exposed to sun. 12:55 Now river now leaving hill on S side river. Wind from E and slight.

9 killdeer to right; 6 to left. 1:05 6 killdeer on sand
 allowed canoe to pass at 30 feet, and is unusual compared to
 the other killdeer which leave at 100' to 200'. 1:10 mouth
 major drainage to left. Carolina wren calling. Kingfisher.
 5 killdeer to right. 3 to left. 1:13 9 killdeer to right,
 1:15 3rd butterfly flew from N to S. (color of a luna moth and
 smaller than monarch). 1:18 11 killdeer to right. 40 starling.
 1:26 killdeer to right. 1:30 snapping turtle 1 foot carapace
 sunning. 1:35 10 killdeer flew up river. 1 to left, 1:43
 4 killdeer to right, monarch butterfly. 1:47 9 killdeer in compact
 group and bathing. 1:48 21 killdeer in compact group, calling
 and bathing. Redtail. 2:00 30 killdeer left. 1 right. Bee
 fly at house. 2:15 beaver. 2:22 lesser yellowlegs, 2 killdeer.
 4 killdeer to left. 2:29 Old Fraser Building stones to right.
 2:35 76 killdeer in rather compact group. muskrat. 2:41
 5 killdeer to right. 2:44 17 killdeer. Rana pipiens on shore
 and jumped into water. 2:47 great blue heron. Occasionally a
 cricket calls but rare. no following along by canoe. Some
 grasshoppers at base of cliffs at edge of water. 2:50 mouth of major
 creek () to left. 3:00 5 killdeer to right. 3:02
 21 killdeer to right. Unless otherwise specified, killdeer are
 generally distributed in feeding operation. 3:10 5 killdeer to
 right, great blue heron to left. 3:13 11 killdeer to right, 1 lesser
 yellowlegs. 3:15 approx 1800 redwing-grackles. 3:23 5 killdeer
 to right, mourning doves. 3:30 8 killdeer to right. Have been
 using motor since drainage (left). 3:31 32 killdeer to left ^{on N side to}
 Cardinal. 3:33 eastern extension of Brune Road and sands ^{within}
 120' of S side of river. 3:35 15 killdeer to left. 3:38 good
 beaver house 150' up river from trash pile. Now on short cut
 to Kansas Power & Light Co station. 3:43 2 killdeer to left.
 3:50 Power Plant. 3:54 2 great blue heron, 2 killdeer. 3:59
 16 killdeer to left. On this stretch willows grow on straight
 part of river but give way to cottonwood on the bend. A third
 great blue heron joined the 2 previously noted. 4:05 2 killdeer
 flying up river. 4:06 5 killdeer to left. 4:08 6 killdeer to
 left. 4:12 5 killdeer to right. 4:15 red + gray moth flew
 N across river. 4:23 Turnpike bridge. Water like a mirror.
 Cormorant left water, circled 4 times + flew E down river.
 4:34 Lawrence water intake point. 4:44 W end of
 dam at Lawrence. Sundown 5:05 P.M.

Summation of birds observed as follows:

Leaves falling about 1 per 5 seconds in 200' of river. The few leaves in river are flowing down stream in center. Trees essentially yellow and tending toward ^{red and} dark browns; green leaves being in the minority. 4/5 of trees have shed leaves. Banks of river are covered with bright yellow leaves, mainly maple, and produce a most unusual color sight to every edge of water. Some trees have relinquished their leaves in a short period of time and in many instances there is a concentrated layer of leaves ^{beneath} the individual trees. This color on side of river is in contrast to the usual dark clay & mud banks of summer. With a gust of wind the leaves fall in great numbers, each species of tree producing a leave of special adaptation for falling to the ground. Some glide, some whirl either erratically or evenly, while some act as parachutes and drop smoothly and slowly to the surface of the water. Willow leaves are most distinct and quake and girate in unison, especially when great numbers fall at one time. A movie of this action would be a great feature for a Disney production. The manner in which each kind of leaf floats is also varied. Maple trees have the most color to contribute, although the ^{golden} red & browns of oaks are beautiful. Sycamores have leaves that are basically yellowish green with brown dried edges. 10:13 2 yellow-shafted flickers, 2 bluejays in area. 10:15 great horned owl left tree & flew back up stream, via outer edge of riparian community, fox squirrel. 10:16 red-bellied woodpecker. 10:17 2 bluejays, cardinal. 10:19 yellow-shafted flicker, 5 black-capped chickadees. 10:20 redtail, 3 bluejay calling, yellow-shafted flicker calling. Carolina wren calling. 10:23 6 robin, yellow-shafted flickers, 2 cardinals. 10:25 beaver house with considerable corn stocks at mouth of hole, 2 cardinals. Leaves in center of river and meander. Leaves about 6 per sq. yard. 10:26 2 cardinals, red-bellied woodpecker, yellow-shafted flicker, 3 chickadee and a Kinglet (~~is~~ yellow-crowned?). 10:28 major creek to right. Rapids above and below creek which is unusual as ordinarily rapids are below mouth of creek entrance. This might indicate that entrance has been shifted. About 8 sq yards of exposed rock below entrance. Canoe did not touch river bed.

10:30 3 cardinals, yellow shafted flicker, red-bellied wood-
 pecker, 3 black capped chickadees. 10:34 2 cardinals,
 3 fox squirrels, one on opposite side of river. Raccoon
 tracks on both sides of river. 10:37 now to NW on reverse
 course. 10:39 yellow-shafted flicker calling. 10:45 bend
 and now trending E. 2 fox squirrels, 1 redbellied woodpecker, 5
 chickadees calling. 10:47 great horned owl flew down
 river and no birds responded. 2 yellow shafted, 1 red-
 bellied and 4 chickadees in general area of owl. 10:50
 2 blue jays calling. 10:53 Cliffs of Tonganovic sandstone
 to right. More mosses on cliffs and some plant growth
 out of wall. 2 bluejays here. Surf test rapids here
 but navigatable. Leaves above rapids are on surface
 of water but after passing rapids become submerged or
 partly submerged with just points of leaves protruding
 above water. 2 cardinals in area. There is more water
 in channel than on previous years. 11:04 2 yellow-shafted
 woodpeckers, fox squirrels. 11:05 3 kinglets, hairy wood-
 pecker. 11:09. Beaver left bank house. 11:12 long
 stretch ended and now to right. 11:10 3 bluebirds. 11:13
 redtail hawk. 11:23 6 robins. wind increasing but
 mainly in gusts. 11:27 second set of cliffs and rapids.
 These Cliffs of Tonganovic sandstone seem to have been exposed
 more than in former years. Carolina wren singing,
 redtail, 2 yellow-shafted flickers, redbellied woodpecker.
 11:30 2 bluejays calling, 4 chickadees (all rapids have
 been navigatable. 11:31 sycamore leaning over river
 still has bees in hollow limb and the bees are
 entering at a rate of 1 per second. This tree has been
 used as long as I can remember. 11:33 redbellied woodpecker,
 2 yellow-shafted woodpeckers. 11:35 2 cardinals and 1 yellow-
 shafted flicker, fox squirrel. 11:37 bobwhite 11:40 inclined
 cliffs and will stop and check. No unionids on rocks. 11:45
 8 chickadees, 1 yellow-shafted flicker, 2 bluejays. 11:48
 Eudora bridge. 3 Eng. sparrows. 11:50 2 chickadees, red-
 bellied woodpecker, kinglet. 11:53 yellow-shafted flicker.
 11:57 old bridge (RR) pilings only. Since last rapids (second sand-
 stone Cliffs) have been using ^{electric} motor at low speed. 12:00 3 chick-
 adees calling. Great horned owl left tree over river and
 flew down river. 12:02 regular railroad bridge. 2
 yellow-shafted flickers. 12:05 2 yellow-shafted flickers.

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12:09 3 wooducks left river and called on leaving. They flew down river for about 100' and then angled almost 45° to fly out of river channel and above tree tops by at least 50'. 12:13 3 more wooducks. More leaves in lower reaches of the Wakarusa and occur from bank to bank except where wind entrals channel. Leaves about 40 per sq. yard. 12:16 3 chickadees. 12:20 2 chickadees. 12:22 Eudora bridge N of village water level about 1 foot below old bridge piling and piling cracked perpendicularly with age. A butterfly flew across the river and was larger than a white or yellow cabbage butterfly and was color with the same shade of green as the luna moth. This same kind of butterfly was noted on the Kaw yesterday. 12:30 drainage to right and entrance of sewer from Eudora. Detergent soap bubbles flowing up stream from wind blowing up river. Great horned owl, 2 bluejays & redbellied woodpecker in area. Beaver cutting trees 8" in diameter. 12:35 2 yellow-shafted flickers. 12:36 beaver house on bank to left. 12:37 red-bellied woodpecker, fox squirrel. 12:40 Carolina wren singing. Great blue heron flew from right side of bank to left directly across river and alighted in small tree 8' above water and after 10 seconds flew down river into the Kaw River. At mouth of Wakarusa took temp 100' up channel of Wakarusa as 45°F. Arrived Kaw 12:47. Temp of Kaw just beyond mouth of Wakarusa 50°F or 5° difference between the two rivers. Air temp 68°F. Wind blown clouds now in sky and are 20° covering. Sky blue. End of complete riparian census. From here will keep census of waterbirds and birds associated with river and sandbars. Just below convergence of Wakarusa and Kaw, noted a small natrix (15" long) with tail in water and body on damp clay at edge of river. Action torpid. Crow left sandbar. 1:16 old tree now in water. Great blue heron left from here. Continued slowly along lone curve of bank to beginning of large trees. Water now mainly on left side of channel. From here (1:56) counted 172 killdeers and 3 semipalmated plovers, feeding on broad, damp to muddy flat associated with sand bar. These birds were within an area of 200 x 300 feet, and acted as one large group. These are the first killdeer since leaving mouth of Wakarusa River. 2:05 marsh hawk

flew across river. 2:10 27 killdeer in one group.
 2:20 beginning of railroad track section of river. (n. curve)
 2:25 airplane being removed with great effort and strain on structure and still they are 200' or so from bank. The best procedure for this kind of operation is a helicopter. The plane has been in the water for too long a time. A rise in river would be disastrous.
 2:28 utility lines 2:30 arched railroad bridge on side drainage. 2:33 killdeer flying to left. 2:44 2 killdeer. 2:46 5 killdeers. 2:48 8 killdeer. 2:49 end of sand cliffs and beginning of large trees (also bus and rock island).
 2:52 log jam & now to left channel. 16 killdeer to right in ^{main} river channel. 18 mourning doves left bank. ^{collected a mallard ♀ here & measured 22 1/2".} 3:10 8 killdeers to right. 3:21 24 killdeer in close group, they were wary and all left at some time and 300' away.
 3:35 greater yellowlegs called. Inspected sandbar for 15 minutes & left at 4:00 one deer track measured 90 mm. Two sets of deer tracks were on the sandbar and tracks showed their movements which was extensive and at places playful. 4:07 greater yellowlegs alone. 4:10 13 killdeer to left. 4:15 5 killdeer to right. All killdeer were associated with damp sands at edge of river. 4:17 mouth of Stranger Creek at Linwood. A great blue heron was fishing at mouth of river and left down stream. Arrived bridge 4:30 P.M.

Summation: (Waharusa River)

red-bellied woodpecker 1-1-1-1-1-1-1-1-1-1-1
 yellow-shafted flicker 1-1-2-1-1-1-2-2-2-2-1-1-1-2-2-
 meadowlark
 black-capped chickadee. 2-3-3-5-4-4-8-2-3-3-2-
 great horned owl. 1-1-1-1-1- great blue heron 1-
 titmouse 2- beaver 1-1-
 bluejays 2-2-2-2-1-2-2-2- wooducks 3-3-

Eng sparrow 3
 towhee 1-
 cardinal 1-2-2-3-2-2
 fox squirrel 1-3-2-1-1-1
 redtail hawk -1-1-
 carolina wren -1-1-1-
 kinglet 2-3-1-
 raccoon tracks
 hairy woodpecker 1-
 eastern bluebirds 3-
 robin 6-

Summation (Kaw River)

nativity 1
 killdeer 172-27-1-2-5-8-16-8-24-13-5-
 semipalmated sandpiper 3
 marsh hawk 1

mourning doves 18.
 greater yellowlegs 1-1-
 great blue heron 1-

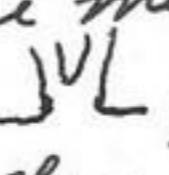
Lawrence Waterworks, Intake gates, Douglas Co., Kansas
 Nov. 10, 1969

In the general area of the intake gates for the city water-works, noted the following birds: (between railroad tracks and Kaw River, mainly Cottonwoods.) Started 11:47 A.M. Will keep complete list of birds observed in area

In the unaltered riparian community east of the Lawrence waterworks and beyond railroad tracks measured the following cottonwood trees: (selecting by sight only the larger trees and these as a sample only)

7'5"; 10'2"; 9'1"; 9'8"; 9'5"; 9'7"; 8'5";
10'10"; 10'6"; 10'5"; 8'5"; 11'7"; 9'8"; 10'5".

These forests were relatively free of birdlife. One leaf of a sycamore measured 18" across.

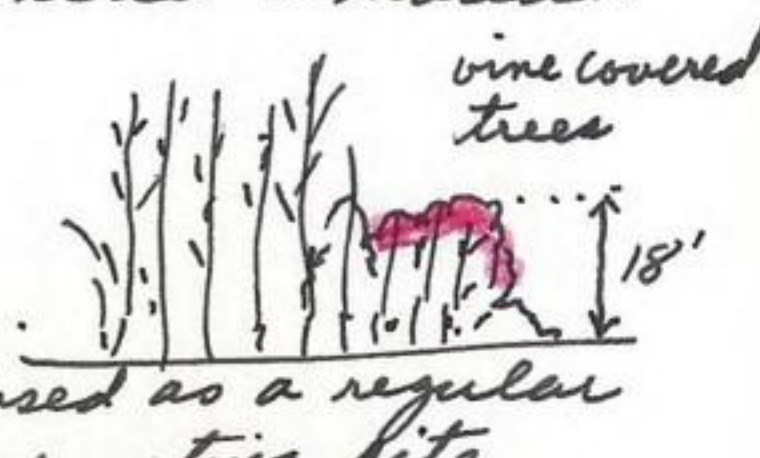
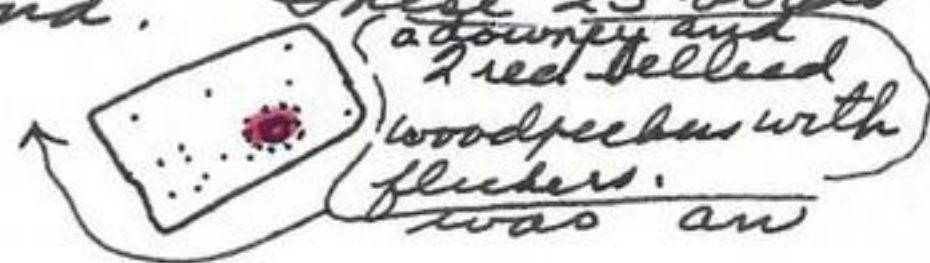
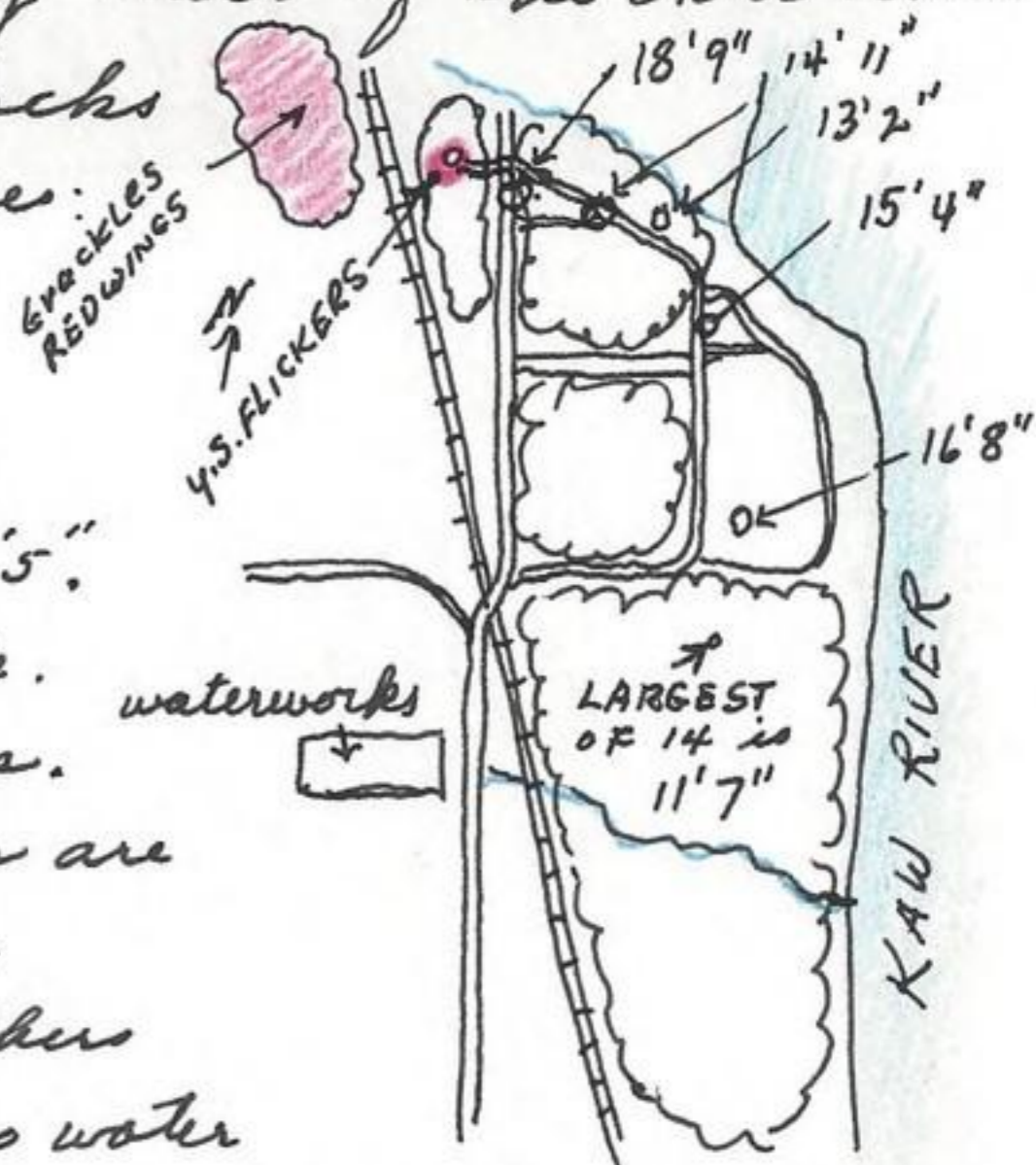
Other large cottonwoods and their position are indicated on the map. The one measuring 18'9" is a double trunk type , all others are single main trunks. There were no water

birds on river between the dam at Lawrence and the Turnpike bridge. At a point labelled yellow-shafted flicker, noted an unusual aggregation of these birds. Along the trunk of a 1 foot diameter cottonwood tree in an area of second growth cottonwoods, and there were 13 yellow-shafted flickers ranging ^{along the tree trunk} from 2 feet above the ground to 22 feet high. These birds were feeding on the berries (0 in size) of the climbing variety of poison ivy (). Both the leaves of the tree and the ivy were off the branches. 10 other yellow-shafted flickers were in adjacent trees and within 20' of the tree supporting ivy berries. There was some calling by these birds, especially as I made my appearance. On close approach they left as individuals or small groups and dispersed in several directions, and generally to higher positions in trees beyond. These 23 birds ^{agony and} ^{2 red-bellied} woodpeckers with flickers was an

At a point labelled grackles and redwings aggregate of approx. 3,000 birds including again, approx. 70% redwings (of which 50% were ♀♀ and young and 20% ♂♂) and 30% grackles. There was some segregation when in trees but when flying appeared to be distributed at random.

These birds were extremely vociferous and were resting on and among small trees ^{mostly ash and} covered with vines and at periphery of a second growth patch of trees cottonwood trees. There was approx 3 inches of newly fallen leaves on the ground beneath the trees and leaf disturbance indicated a limited amount of feeding. There was excrement below

the trees but not enough to indicate the area being used for repeated roosting. There were no dead birds beneath trees as is usual when used as a regular roosting site



The following birds were observed and are correlated with time: 12:05 P.M., kingfisher. 12:07 yellow-shafted flicker. 2 blackcapped chickadees, 3 bluejays. 12:22 23 yellow-shafted flickers (reported on previous page). 12:30 3,000 redwings and grackles (see previous page). This flock call loud and continuously until I approached them and then almost at the same instant stopped silent and after about 10 seconds started calling again. They all left as one group after I had been in the general area for about 5 minutes. In the general area were tracks of raccoon and a set of deer tracks measuring 87 mm length. Returned to car at 1:08 P.M.

Lawrence, Douglas Co., Kansas
 Nov. 12, 1969

This has been an unusual year for color change and is characterized by prolong color changes, for instance some maples are in full color while others (maples) have been thru color and have lost their leaves some weeks ago. There has also been a perpetuation of green leaves thruout the period of color change. These leaves are in good condition in contrast to previous years when dry winds of fall have dried up leaves and reduced the late greens. In other words there is now green leaves, colored leaves and trees without leaves. Percentage ^{of color} of leaves of trees are: elm 95%, oaks 10% and brown, maples bare to most brilliant and longest active, sycamore 20% and green centers + brown edges, willow + mesquite 10% and yellowish green, poplar 40% yellow, sage orange 30% + greenish. Nov. 13, 1969

Snowed late this A.M. as a regular blizzard with 1/4 inch fine snow. At 2:00 P.M. the front had passed over and the sky started to clear. By evening the sky was blue.

Nov. 14, 1969

A repeat of yesterday storm as another front moved thru. About same amount of snow. Sky blue in late afternoon. Below freezing temperature tonight.

Perry Reservoir, Jefferson Co., Kansas
 Nov. 15, 1969

Made census of Perry Reservoir from dam, thence up west shore, thence to Ozawie, thence down east side to dam. Left Lawrence at bridge over Kaw at ~~4:18~~ ^{52.0} at ~~11:48~~ ^{12:15} A.M. Will keep list of different kinds of birds between Lawrence and Perry Reservoir.


Annette^p & I made trip. Day clear and not a cloud visible. Temp. approx. 48° F. Wind from N. Drove along new dike on N side Kaw (^{Army} Corp of Engineer) to junction with highway 40. River side being surfaced with rock. This dike is some distance back from river with riparian community along edge of river. I am wondering what use will be given to this area of potential inundation. No ducks or waterbirds noted from the dike.

Ice on ponds along side of road from last night's low temperature. Not a single bird noted between Lawrence and Wilcox town.

66.0 Wild Horse turnoff. Will follow up this canyon and then cut across to Perry Reservoir dam. No birds up to this point.

67.0 2 redtail hawks circling in valley. One junco & 1 cardinal, meadowlark, yellowshafted flicker, 69.0 now to W. 69.2 Wild Horse Creek. Water in ice except ripples. 70.3 E end of Perry Res. Park. 71.1 sparrow hawk at headquarters. 71.3 east end of dam. white caps on lake. 3 white pelicans in bay directly below administrative headquarters. The last time these birds were observed ^(Nov. 7) they were at edge of water at W end of dam. There were also 3 gulls ^(ring-billed) associated with the pelicans. A group of 32 gulls ^{ring-billed} were generally distributed approx 2/10 mi N of dam and aligned parallel to the dam. One franklin gull flew along the edge of the water at dam. One cormorant 1/10 mi. N of outlet gates. 20 ducks (scaps?) about 1/2 mi to N.

72.9 W end dam and now travelling to N along lake. Approx 20 gulls along west edge of lake. 74.9 Promontory and 35 gulls. These birds were in area that would represent the old river course thru this area, now submerged. 23 mallards in one group to E. To the N and extending from lee of promontory to E of Rock Creek to promontory SE across lake and mainly in leeward protection of NNW winds were approx 11,000 mallard ducks in one continuous linear raft. These ducks were rearranging their formations by these birds at SE end of raft in main line of wind. This raft was estimated on the basis of an actual count of 1000 birds and then using this number, estimated the total population. These ducks were at a distance that prohibited critical estimate of ♂ to ♀ percentages. One cormorant among mallards and no doubt other smaller ducks were associated but the great percentage, almost 100% were mallards. 18 ringbill gulls beyond toward Ozaukee. 2 redtail hawks to N along shore. 78.8 7 crows in one tree. 80.3 leaving main road to Jefferson Point & trailer

Park area, 81.0 redtail, 16 meadowlarks left edge of forest and flew to open field. 81.3 Trailer Comp area, now under preliminary construction. 3 white tailed deer in open. A buck (right antler with defective angle with points below eye level.  It was walking rapidly with head down toward a doe, both in open clearing. a second doe stood at the edge of the forest. This area of development will place trailers on open slopes at edge of lake and will not add to the natural setting of the lake shore. Now there is no permanent or inabstrusive obstacles along the lake and the countryside is enchanting. When the park gets under full development, this attractive feature of the lake and surrounding environs will be destroyed. Trailers should be placed just inside forests and open fields bordering the lake should be left undisturb. 81.8 redheaded woodpecker. 82.4 Jefferson Point and re-turn. A large water tower mars the skyline to the west. 83.1 main road leading to the Rock Creek bridge. 86.7 In and out of ^{Lake Ridge} Welldale area. 88.3 redtail hawk. 89.0 back to main road from Three Hills. 89.6 ^{Slate-colored} juncos and cardinal. 90.7 County road at edge of lake and now return. The water is at level where the old valley road passes by the hill road. No ducks but 15 gulls to N. 94.5 back to main road from Welldale ^{and west shore Estates} development area. 95.4 now to N. 96.7 marsh hawk. 97.3 sparrow hawk, 3 meadowlarks. 98.2 4 meadowlarks. 98.6 highway 92. at 2:55 P.M. 98.7 3 starling. 02.0 Ozarkie bridge at center. 10 gulls to N and 2 to right. 9 ducks to N but no ducks to right (S), which is surprising as this area supported thousand during spring migration this year. 07.1 redtail. 10.5 2 sparrow hawks. 10.7 10:07 Lakewoods ^{Hills} Estates. 11.5 leaving Lakewood Wells Estates. This area is the most progressive of the various developmental areas, having sold approx 620 sites out of 660 sites. Price range from \$2,000 to \$6000 per site. 13.7 Longview boat ramp. This point has the best view of the reservoir. 2 mallard flew to S, otherwise no ducks in area - 15.1 3 crows. 17.4 Lakewoods Hill again and now to E, ^{eastern} main road & now to S. 20.8 redtail & 2 crows. 21.5 3 bluebirds. 24.4 2 bluebirds & 1 quail (bobwhite). 25.1 Gap Point. kingfisher and 15 slate-colored juncos. ~~28.0~~ ^{28.0} 28.4 Left for Slough Creek. yellow-shafted flicker. 26.9 redtail, red-headed woodpecker. 28.1 30 starling. (4:35 P.M) ~~26.7~~ 28.7

main road. 29.0 marsh hawk. 30.1 Slough Creek bridge.
 3 pied-billed grebe below bridge to W, no ducks in area.
 32.1 redtail. 32.4 SE end Perry Park area and end of Complete
 Census. This day has been marked by the lack of small water
 birds and small birds in general. Will continue E to
 Horse Creek and will keep track of kinds of birds and
 special observations, 34.5 marsh hawk, 5 robins, 3 meadow-
 larks. Continued down wild Horse valley to Kaw
 River valley at highway 24, thence East.


At a point 7/10 mi. E of Buck Creek on a county road
 running E of Buck Creek School in Jefferson Co. (1/2 mi. S and
 1/10 mi. E of the NW corner of sec. 26, R 19 E and T 11 S) noted the
 migration of the robin (*Turdus migratorius*). Flight already
 in progress at 5:03 P.M. at about sundown. The birds were
 flying in a corridor approx 1/10 mi wide and from N to S. It
 is estimated that 5 birds passed by per second from 5:03 P.M. to
 5:11 P.M. as the major flight and after 30 seconds for 2 minutes beyond
 5:11 there were approx 200 as stragglers. In the 8 minutes of
 observation it is estimated that 2400 birds passed by or for the
 full time of ¹⁰8 minutes = 2600 birds. Most of the birds were
 flying about 200' above ground, some as low as 20' and some as
 high as 400 or more feet. As far north and south as I could see
 with 10x binoculars could see these birds in flight. There were,
 however, several robins in orange trees at side of road. These
 birds left on our approach and flew S with the other robins of
 the main migration flock. Car mileage here 43.0. Arrived
 Lawrence 5:30 P.M. at mileage 50.0.

Perry Reservoir, Jefferson Co., Kansas


James Robert ^{Nov. 22, 1969} ^{canoe} and I made ⁱⁿ ^{area} ~~Per~~ trip, around Perry Reservoir, between
 Valley Falls ~~the dam and Ozawie. Travelling clockwise. Investigated~~
~~all lateral roads that approached the lake. Left Lawrence.~~

Polly & Martha drove us to Valley Falls. Left Lawrence at 8:45 A.M. and
 will keep list of birds between Lawrence and Valley Falls. (as
 usual will keep complete list of raptors.). Sky 98% in clouds
 but some spots blue. Wind from SW at about 20 miles per hour.
 Redtail, bluebirds (7), all forests without leaves except a few
 oaks with brown leaves, meadowlark, redtail, bluejay,
 redtail (juvenile) roadkill, redwing blackbird, grackle, redtail,
 Eng sparrow, killdeer, sparrow hawk, redtail, sparrow hawk

sparrow hawk, redtail road kill (juvenile, 525mm total length, 810 gms wt.), redtail hawk. Old bridge SE of Valley Falls at 73.2 mileage. at 10:20 A.M. Left bridge at 10:30. Will keep complete list to Ozawie. 10:40 piling of old bridge. redtail and kingfisher, downy, 2 song sparrows & 8 slate-colored juncos. Beaver activity all along way with considerable cutting and trails to corn fields. The stabilized water level permits normal underwater entrances to bank or stick houses on bank. 10:50 great horned owl left tree at side of river, flew down 300' and alighted in another tree; Crows concerned (4), another great horned owl 100' beyond. 10:55 fox squirrel, and first abrupt turn to right. A left turn just beyond with drainage to right. 11:00 sapsucker, nuttatch (white breasted), downy, 4 juncos, 2 song sparrows. 11:05 robin, 2 redbellied woodpeckers. 2 bluejays. 11:10 5 juncos, 8 tree sparrows, yellowthroated flicker. 2 song sparrows. 11:12 redbellied woodpecker, chickadee. 4 large trees (over 1 foot) cut by beavers. 11:18 2 song sparrows, 6 tree sparrows. 11:27 2 cardinals, redbellied woodpeckers. 11:28 great horned owl. 11:37 male & female wooduck left edge of river among inundated trees. 11:38 kingfisher. 11:50 lunch - left 12:10. Long stretches of river with 3-4 inch waves and difficult to navigate. E-W trend protected. The river is at lake level and no appreciable current, no cascades. 12:14 kingfisher - bluejay calling, flicker. 12:17 west side of valley and now to left. 12:23 mourning doves. 5 trees in river with bark removed but no evidence of cutting except one in shallow water. 12:24 seven wooducks left brushy area at edge of river. The last two groups left at about 100' or less. 12:33 mallard ♀, 5 juncos, 4 chickadees, 12:40 2 bluejay, 5 song sparrows and 8 mourning doves, redtail. Water surface, according to protection from wind varies from mirror surface to wave 4" high. This factor of wind should make a difference in distribution of birds, especially if temperatures were low. 12:45 approx. 40 mourning doves on south exposure of bank among brush. As they left they had difficulty in flight because of the bushes. They flew to higher trees 50 or so feet beyond. abrupt turn to right along base of ridge. white-breasted nuttatch calling. 4 juncos and a kinglet (yellow-crowned). 12:48 kingfisher. This river with high water is ideal for kingfishers, 8 juncos, 6 tree sparrows. 12:53 flicker. 12:58 Water temp 39°F. air temp 52°F. and as usual temperature taken in shade. Sky clearing to 60%. 1:00 7 cardinals, downy, 5 chickadees. 1:02 4 cardinals, 8 juncos, redbellied woodpecker, 10 tree sparrows. 1:03 redbellied woodpecker, 1:08 bridge

8 goldfinch, crow. 1:20 3 cardinals, 3 yellow-shafted flickers.
 1:25 beaver cuttings of approx 60 ^{willow} trees 1 to 2 inches in diameter,
 These were cut in an area of approx 25' x 15' and was complete
 except a few very small trees and to this extent produced favorable
 pruning for growth of large trees. Other small cuttings in
 general area. One elevated hole in bank used for resting,
 6 crows, 2 cardinals, redtail hawk, 2 titmice; 3 redbellied
 woodpecker. 1:30 Kingfisher, cardinal. 1:31 end of riparian
 growth and beginning of cut forests, except where river approaches
 and parallels ridges at sides of valley where trees of hillside are
 associated with river channel. Water confined to channel proper -
 4 blue-wing teal. 1:36 west side of valley. 8 juncos, redbellied
 woodpecker, 4 chickadees, fox squirrel. 1:42 ♂ & ♀ blue-winged teal.
 1:47 ♂ & ♀ mallard. 1:50 2 pair & a single blue-winged teal.
 These ducks have been along side of river and leave downstream,
 1:52 3 song sparrows, 14 tree sparrows. There are other small
 birds in weeds along river but can not identify positively. 2:00
 artifact site (see notes of march 2, 1969). Water now 2 feet from
 top of bank. Approx 250' downstream from site, the bank is
 at water level and then further beyond becomes higher (2 feet).
 The trees on Gap ridge are free of leaves. Oaks with leaves
 average 1 per 1/10 mile. 2 coots here. At end of course at
 point where channels turns abruptly to left. A beaver house
 on bank at point . 7 mallards just around point on
 windward side. 2:10 2 bluewing teal, 2:12 3 coots and
 2 mallards. 2:16 1 mallard, 3 coots. 2:18 contact with
 Gap Ridge. This ridge protects river from wind and is almost
 mirror like. Trees on left and flats to right make interesting con-
 trast. Valley to N is in weeds and partially inundated. Mallard.
 Chickadees on sidehill. 4 of tree sparrows and 2 ~~tree~~ song
 sparrows in weeds. 2:26 gray squirrel & 3 chickadees. 2:28.
 16 bobwhite, 2 feet above water and missed by hunters that had
 just passed thru area along ridge. 2:29 kingfisher. 2:30 red-
 bellied woodpecker. 2:35 2 bobwhite, redbellied woodpecker,
 downy & 1 yellow-shafted flicker. 2:40 first gull on river. 8
 tree sparrows to right. 2:45 at end of ridge (Paradise Point)
 and leaving old river channel and following ^{W.} edge of peninsula
 The old channel still identifiable to W by growth but valley,
 now inundated from here to Valley Falls. Wounded bluewing
 teal. In the lake to W can see approx. 15 pintails & 30 mallards
 in one flock resting among floating weeds, 25 coot, 12 bluewinged
 teal and 1 redhead duck. The center of this body of water would

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 be an ideal place for a blind. Hunting, in my estimation should be eliminated from the lake and adjoining lands as well as boating (in certain arms or bays of the lake where water birds could receive protection from harassment). 3:07 old camp site (see previous notes) at SW end of peninsula. This may be more specifically called Paradise Point. From this area there were approx 10 mallards, 18 bluewing teal + 10 coot directly to S. Continued SE thru gap of old dike that now outlines the old river course and continued to S toward the Ozaukee bridge. To E in bay were approx. 80 mallards, 20 coot and 30 bluewing teal. This area to S of the peninsula seems to be the most popular area for ducks. Arrived bridge 3:58. motor (electric) used all power in battery (approx. 6 hours of nearly continuous running). From bridge continued to boat ramp to E at old Ozaukee, arriving at 4:18 P.M. The last 2 hours has been ideal for travelling on the lake because of the smoothness of water + lack of wind!

In the lake bordered by the bridge approach to N and the old Ozaukee land mass to E were 11 Franklingulls and 3 ring-billed gulls. These gulls fed from at least 4:00 P.M. to 4:45 in this general area, ranging out as far as 1/10 mile in radius. The Franklingulls were about 40% adult + 60% young with black band in outer border of tail feathers. The adults were white headed, gray upper wings + back and white tail. It was difficult to see details of head but there did not seem to be as much black on head in region of the eye + nose as usually observed at close range. There was also a faint wedge of gray in wing  like Bonapartes. On the basis of size would say these gulls were definitely Franklins. In late evening near sundown with unusual reds + yellows of clouds of sunset and blues of sky, the birds occasionally appeared as blue as a bluebird. For the period of observation, these gulls fed continuously and in a mannerism not usual for these gulls. They search for fish at about 25' and when a fish was spotted would drop down to 4-10 feet and then with wings partly closed they would dive into water at a rather rapid speed, reminding one of the wing angle and velocity of brown pelicans diving for fish. There would be a splash and complete submergence of the gull, averaging from 3 to 5 seconds below the water. They would frequently emerge 2 or 3 feet from the point of emergence as if the force of the dive (depending on the angle which was from perpendicular to 30°), carried the gull forward. This forward movement could have been by underwater wing + foot movement.

The type of feeding was the only method used and continued uninterrupted for the full time of observation. There was always one or more gulls diving. This behaviorism was in contrast to the ring-billed gulls which picked up debris on the surface either by hovering just above the surface of the water or alighting on the water to feed.

I would estimate that there were 12 ring-billed gulls north of the bridge and 20 S of the bridge (exclusive of the gulls under observation). The sunset this evening was as beautiful as I have observed, with yellow like steel reflection.

Perry Reservoir, Jefferson Co., Kansas.
~~Jefferson Co., Kansas~~
 Nov. 23, 1969

Made trip to reservoir to get additional evidence of gull behaviorism and to check accessibility of Paradise Point for car and trailer. Left Lawrence at 50.5 at bridge Time 9:00 A.M. Day clear, no clouds. Temp cool. Well keep kinds of birds between Lawrence & Perry Reservoir. Starling, Eng. sparrow, meadowlark, redtail (dark), 65.3 Perry turnoff. bluejay, 150 starling, redtail. 68.1 SE corner Reservoir area and beginning of Complete census. 9:25 A.M. Eng. sparrow, 69.0 E end dam. At this point were 2 white pelicans, ^{together} about 20' from shore. They separated and one swam W & one swam E and separated by 300'. The one to the W left water and flew W to a point 200' W of outlet gate. This bird had an injured wing with primary feathers angling upward.



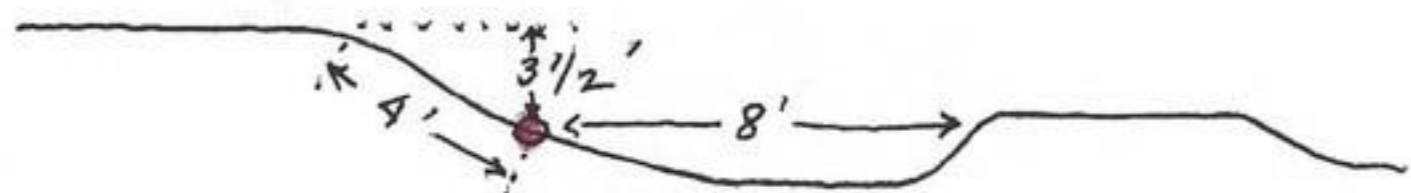
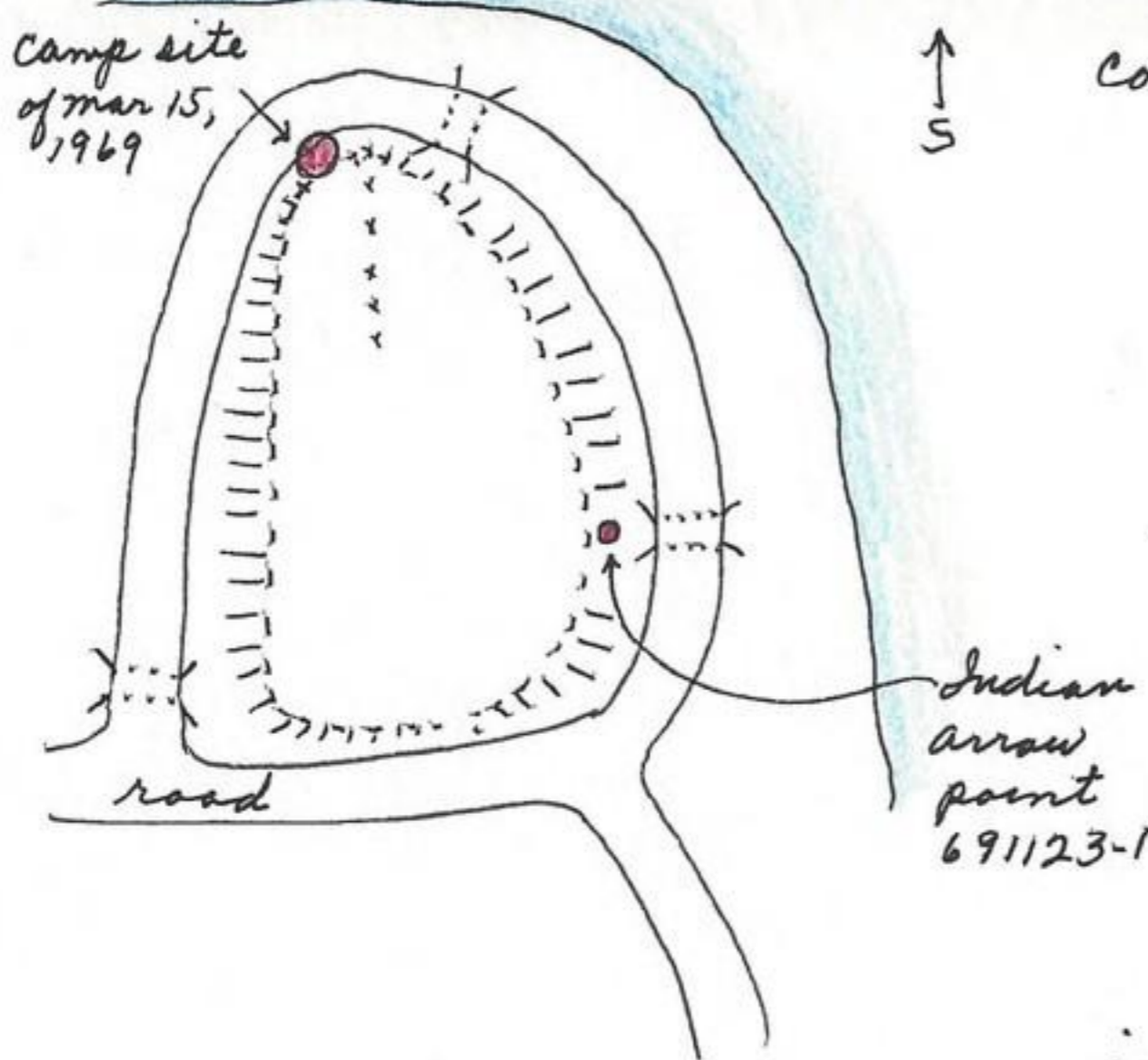
This injury did not seem to interfere with flight. Of the two pelicans, this one had a whiter back and upper surface of wings (resting) than the bird that swam to the east. Continued to gate in center of dam at mileage ^{70.0} 70.0. As far north as I can see (to bridge) cannot see ducks or gulls. Returned to SE part of part at 71.8 and will travel N to Ozawie. Wind from N. ~~71.8~~ 9:40 A.M. meadowlark. 72.1 redtail. 72.7 5 bluejays. 72.9 leaving main road and travelling on road to Slough Creek. 73.3 marsh hawk. 74.1 Slough Creek bridge. 53 ring-billed gulls in compact group in bay E of bridge. One pied-billed grebe associated. These gulls appeared to be resting but upon my arrival all started to swim to N. Of the 53 gulls, 28 left and flew up over the bridge and then started to form a spiral flight that carried them W & S at an upward angle of perhaps 50°. They kept this formation until almost out of sight. By the time these gulls were out of the area the remaining 25 gulls left, and instead of flying over bridge, started to form spiral

at 11:07

in area E of bridge. They also moved W but more to S until almost out of sight (10x binoculars) and then flew straight ^{at 11:12} W. They could have been ~~been in reservoir area and just moving to other parts of the reservoir,~~ ^{moving to other parts of the} but more likely to points beyond reservoir in their southern migration. As was in the case of the first group that left, the spiral was of short radius and birds moved flockwise and counter-clockwise. Of the 53 gulls 15 were white backed adults.

On the west side of Slough Creek bridge noted 15 Franklin gulls feeding in bay ^{moving in a loose group} from bridge to W side of bay. They fed in characteristic way with a bird diving into water at approx 1 per 10 seconds. These gulls and the ringbills left the Slough Creek area and no gulls or ducks could be seen thereafter. One marsh hawk hunted field on W side of bay. Kingfisher in area. At 11:15 left bridge and continued N. Census of small birds handicapped by faster speed of vehicular travel because of need to get to Ozaukee + Paradise Point and return to Lawrence. Larger birds more conspicuous. 76.4 2 bluejays. 78.6 marsh hawk. 80.7 bridge over creek that leads to bay S of old ozaukee. 82.1 redtail. 82.6 old ozaukee. No gulls or ducks in area where yesterday evening there was considerable gull activity. 84.7 redtail. 86.5 2 bluejays. now at Pleasant View Orange. and continuing N. 87.2 now to left to Paradise Point. Eastern bluebird. 88.6 Tonguassie sandstone like formation. 69.4 can see approx 1000 ducks in bay S of peninsula + E of old river dike now emergent just above water level. Of these 800 are mallards which are resting among surface emergent weeds, 100 coots and 100 small ducks. One group of 22 Canada geese. Approx 15 ring-billed gulls in same area and following a group of 20 coot. and some diving ducks. The gulls were continuously harassing the ducks + coots by body contact in some cases, but mainly profiting from debris or food brought up by diving birds. They flew about 5 feet above the feeding ducks + coots. A marsh hawk flew across the bay some 1/10 mile from shore. The ducks ^(90%) were resting among short weeds rather than feeding. A redtail sat in top of tree bordering the lake. 9:02 38 Crows in one group and among trees. 9:06 W end Paradise Point. 3 bluejays. Turned N and checked NW corner of peninsula arriving there at 9:09. In the area W + NW of point can see 21 coot, 2 ring-billed gulls, 1 redhead, 4 mallards + 2 bluewing teal. Returned to main road (via 2 turnoffs) and continued to SW Point at old camp grounds (see previous notes). From here can see 10 mallards, 8 coot and approx 10 small ducks and 3 ring billed gulls. These birds are W of the old river dike now emergent about 2 feet.

at a point approx 8' directly E of second culvert (from old camp site of Mar. 15, 1969, collect an arrow or spear point (691123-1)



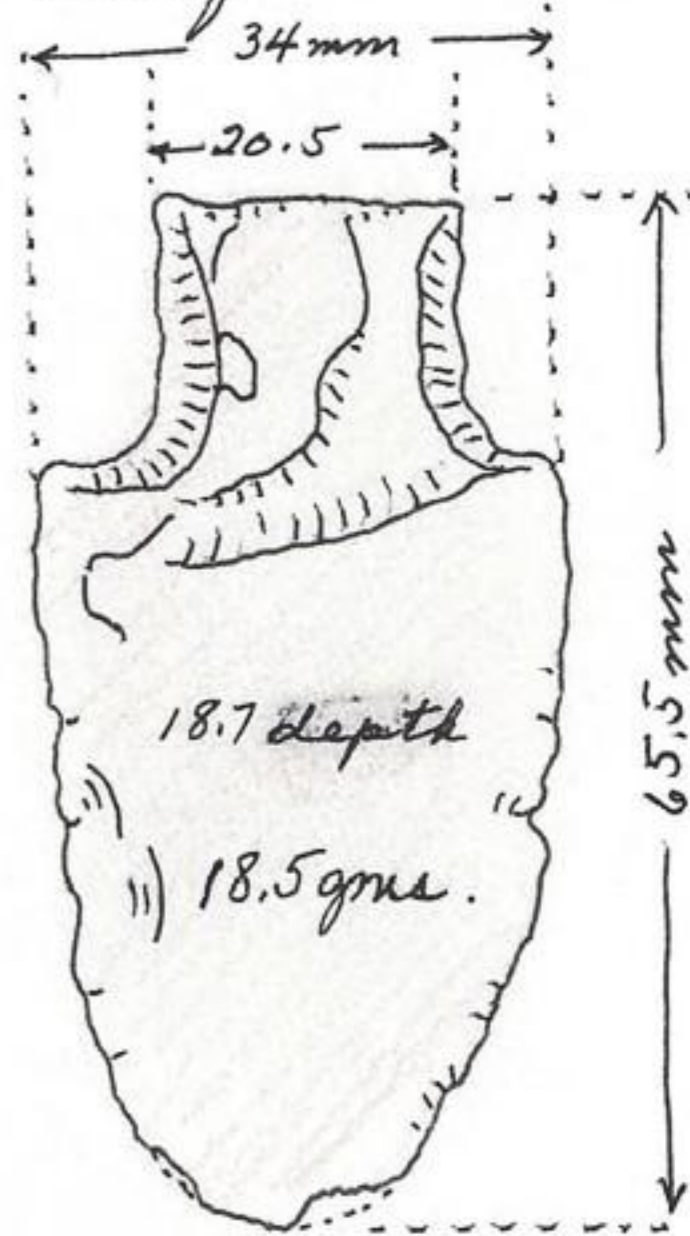
from graded surface adjacent road. The point was 4 feet down grade from original surface and 3 1/2 feet below original ground level. It could not be

ascertained whether point was in its original position or whether

it has migrated down from original surface of ground. The soils were stratified with several layers of gravel, conceivably deposited in late Pleistocene when the Delaware River was moving across the peninsula. This point is from Paradise Point, 1/2 mi. S. and 2400 ft E of NW corner sec. 24, T9S, R17E, Kerry Reservoir, Jefferson Co., Kansas. The point is of material and reddish yellow in color.

One surface carries a greenish-yellow color of a plant growth. This area is also referred to in previous notes (before area developed) as Windy Peninsula Point and Hop Peninsula.

Left area and followed road to E along S side peninsula. 92.3 bluejay. 92.4 main road and continuing N on second N lateral. Can see flooding adjacent to N beyond peninsula but no ducks there. 93.0 now back to main road. 93.1 2 redtails circling above. 94.2 now leaving main road and going S to Ozawake on old road across valley. yellow-shafted flicker. 18 meadow-larks in lone tree. 94.6 marsh hawk flying across water 1/10 mi from shore. 95.4 water



point no. 691123-1

to road and any increase in height, will prohibit using this road. new road to Paradise Point from E and now under construction. It is possible but rough. This water approaching road is approx. 200 feet N of road cut in side of hill. Cardinal, 6 juncos, 2 black capped chickadees. 95.7 redbellied woodpecker. 96.0 entrance to Lake Shore Estates now being developed. 97.4 main road and

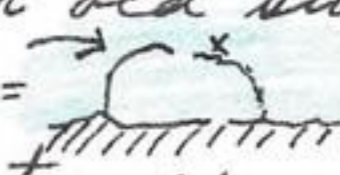
w to Ozawkie. 98.2 middle bridge. Continued to Ozawkie, thence returned to E (12:10 P.M). 02.4 now to S from main highway. 03.2 Little Slough Creek bridge. 05.4 to left on county road. Will cross ^{upper} Slough Creek and Evans Creek and then return to main road further S. Census of small birds about 50%. 2 titmice, 4 Chickadees. ~~at~~ 05.9 song sparrow. 06.7 2 bluejay. 06.8 Creek (Slough Creek), ~~at~~ 07.4 2 titmice, 8 tree sparrows. 07.7 blue jay, 8 juncos, redbellied woodpecker. 08.9 7 tree sparrows, yellow-shafted flicker, 10.6 to water edge and return. yellow shafted flicker. 11.8 bridge over Evans Creek. 11.3 main road (new and ending at this point) and now to S. 14.1 redheaded woodpecker, 2 bluejays, 15.8 marsh hawk. yellow-shafted flicker. 17.1 main road at point where road leaves to w to Ozawkie by lake route. 18.2 SE end park. at 1:00 P.M. An injured Franklin gull had black bill, typical black of head around eye + nape, blackish or dark feet. End of complete censuses. On return to Lawrence noted 5 redtails, one dark. One left telephone pole, dropped to burrow pit, picked up a *Microtus ochrogaster* and with tail down + head up, carried the mouse ^{back} to top of telephone pole at about a 45° angle ascent. Kaw River now down to about normal for this time of year. Temp at 1:43 = 53°F.


Paradise Point, Perry Reservoir, Jefferson Co., Kansas.
Nov. 26, 1969

made survey of birds and mammals of the contact between water and land of the Paradise Point (previously designated Gape Peninsula and Wind Ridge Peninsula in notes before the official name of Paradise Point). The route followed almost precisely the 890 ft contour line of the U.S.G.S. map. Route followed from base of peninsula on South side west along shoreline, thence N, thence E to base of peninsula on N. side. (see map.) Enroute from Lawrence recorded complete census of birds and mammals via highway 40 to Perry thence N to Perry Reservoir, thence N to Paradise Point. Left Lawrence. 7:06 AM at mileage 76.4. Day with sky ^{60%} in clouds and blue otherwise. Temp. 31°F. Wind from SW. 79.7 Eng. sparrow. 80.3 3 starling. 80.6 30 Eng sparrows. 80.8 meadowlark. 18 Eng sparrows. 81.4 ice on ponds + roadside drainage. 82.4 17 Eng. sparrows, 2 starling. 88.3 2 Eng sparrows, 8 starling. 89.0 Williams-town crossing. 89.8 3 bluejay. 90.5 redtail sunning on limb 1/2 way up tree and bordering valley. 91.6 redtail as has the conditions of the above. 92.3 ⁵ starling 92.5 Perry turnoff, now to N. meadowlark.

92.8 2 tree sparrows. 93.3 yellow-shafted flicker. 93.9 cardinal. 94.7
 8 tree sparrows. 94.9 8 starling. 95.5 SE entrance to Perry Reservoir Park.
 96.4 east end of dam. 3 white pelicans resting on bank at W edge of
 small bay directly below administrative building. These three pelicans
 have been in this general area or along dam to W for at least a
 month (check notes on other records of these pelicans) and at no other
 place on reservoir. The idea is proposed that these pelicans are
 injured or incapacitated to make migration S and that their
 presence at the dam is an attempt to move S by river course.
 As there is no currents indicating direction of flow of water, it is
 conceivable that they are attempting to move S by recognition of
 trees south by built-in directional mechanisms. Breeze
 breaking surface of water but there is no wave action. The smooth
 water extends out 200' beyond dam. The greater the force of the
 wind the less smooth water on lee of dam. 97.3 outlet gate
 near center of dam. At a point from main promontory point extend-
 ing out into the lake from the west to a point just S of the N side
 of Slough Creek valley (bordering main lake), counted 63 ring-billed gulls,
 all on water and generally distributed in a long linear line. This
 was the case on a previous trip but gulls were nearer dam. No
 duck can be seen from this vantage point (x10 binoculars). 98.9
 sparrow hawk. 99.1 S.E. corner park. 99.6 blue jay, 00.2 2
 flickers and 1 blue jay in 4' high shrub 200' from forest. This
 is at point where 2 main roads divide. 8 redwing blackbirds.
 00.4 blue jay. 00.5 38 starling on top of tree and another flock of
 approx. 80 coming into same area. 00.7 redtail, sunning $\frac{3}{4}$
 way up tree and bordering open field. 00.9 starling. 01.5 Slough
 Creek Bridge. To E in bay are 2 pied-billed grebes separated by
 approx 300 feet. On W side of bridge near S side of bay were 21 ♀
 and 1 ♂ American merganser. The male was definitely the
 American. As they swam S to shore of bay, the females formed
 a linear, loosely organized line and parallel to shore. At a pre-
 determined moment. 15 of the mergansers dove and after approx. 12
 seconds surfaced. 4 of the mergansers had fish. The male did
 not participate in the diving. At about this time 5 ring-billed
 gulls joined the mergansers and came in close contact with the
 merganser, some of the gulls making bidily contact for the fish.
 As time passed the gulls were noted swimming with the
 merganser, awaiting for the time of the next organized hunt by
 the merganser. I have observed this hunting action (diving)
 of the red-breasted merganser in northern Minnesota. 22 other

ring-billed gulls in area but did not participate in the merganser feeding. Ring-bills will dive and splash water but do not dive under water as do the Franklin gulls. Left bridge and continued N. 02.4 bluejay. 02.7 80 starling. 03.4 Cotton-tail rabbit roadkill. 03.1 8 slate-colored juncos. 03.5 Cardinal, 5 juncos. 04.1 bluebird + 13 cowbirds. 04.9 Approx 30 starling, most starling are sunning in tops of trees. 07.0 old railroad car to right and now going down grade. 08:0 Little Slough Creek bridge. Redtail & bluejay. 08.4 new road to left on old road to Ozarkie. 08.5 3 tree sparrows. 09.3 2 bluejays and 1 flicker. No ducks in bay because of quail hunters following along edge of water. 09.5 marshhawk over deciduous forests and now flying to open fields. 09.9 Old town of Ozarkie at point. No ducks in immediate area but approx. 200 on W side of bay. Downy woodpecker and bluejay among trees of old town site. The bluejay displaced the downy woodpecker. 10.4 main road but continuing N. 2 starling. 11.3 entrance Lake Shore Estates (just being developed). 11.7 approx 100 redwing-grackles. 11.8. Road cut at end of E ridge. 11.9 water at edge of road and 6" below road. A slight increase in height would inundate road and make this approach to Gradue Point impossible. The road from the E to P. ^{Point} is under preliminary construction and in winter will be impossible so access to P. Point may be prohibitive later this season. 12.3 main drainage ditch. Water about 1 gal. per 5 seconds. 12.5 strike and second drainage which is dry. 12.6 contacting main paved road that leads to circle to left. 12.7 ^(10:35) now at ^{circle} and will park car here and continue by foot. Started ^{census} from car at 10:38, enough of a breeze to produce waves (3-4") on lake beyond. 2 meadowlarks. 10:39 3 meadowlarks. Now following down drainage to lake, willows up to 10' high. 10:41 song sparrow among weeds and willows. 2 crows calling to E. water in drainage intermittent and frozen. 3 tree sparrows. 10:43 8 tree sparrows, 2 song sparrows. 10:47 2 Swamp sparrows. These sparrows were associated with drainage and were at base of willows. Well developed muskrat trails among saturated soils and vegetation. 10:48 ^{lake} 7 tree sparrows. 10:50 mouth of drainage and contact with ~~lake~~ water. One woodduck and 1 gadwall, both injured left area and moved out into open water. Considerable evidence of ducks having used this area for both feeding & resting. One pied-billed grebe in open water beyond. Ducks are out beyond last fringe

of slightly emergent vegetation and not bordering shore as was
 the case of a previous trip. 5 case of dead ducks
 having been consumed by raptors or mammals. Would
 estimate there were a thousand ducks off shore in
 eastern part of bay. Others in western part but will survey
 when in that general area. 2 mallards ♂ & ♀ only ducks
 near shore. 10:55 7 Cowbirds and 4 meadowlarks. Debris
 along lake of approx 4 feet wide of dead logs and finer
 material in a windrow on or shoreward placed there by higher
 waves of previous days. Considerable cans, bottles etc mixed
 in with logs and probably from trash dumps of upper
 Delaware River system. Some meadowlarks singing. 10:57
 2 song sparrows. 10:59 Reithrodontomys in blackbird nest.
 nest 3 feet high above ground in small single stemmed bush.
 Wet marsh grasses & weeds associated. nest of mouse within
 the blackbird nest. It jumped to ground when disturbed.
 11:00 second instance of Reithrodontomys in old blackbird nest.
 2 meadowlarks, marsh hawk, 4 song sparrows, 2 tree sparrows.
 11:04 mouth drainage from pass of ridge along straightline
 course (first drainage or pass west of pond on pass to E).
 Red tail hawk left tree bordering lake (this tree seems to always
 support a hawk and would be an excellent area to observe
 hunting range or place a blind for close photography. It flew
 5 out over lake in area of ducks then returned. Area
 along lake predominantly fox-tail grass but other weeds are
 present. mallards calling on the bases of 1 per 20 seconds although
 variable. 11:17 mouth drainage from second divide (west of
 divide with pond). 2 song sparrows, 4 tree sparrows. The water
 enters lake on W side alluvium. Crayfish activity all along way.
 11:25 drainage from 3rd divide with old submerged field
 border outline like an inverted Γ =  just to left
 of drainage. 4 song sparrows and 3 tree sparrow. The song
 sparrows can be separated between adults and this year's young
 on basis of behaviour. The young are more confident and
 expose themselves higher on weed stems and appear not to
 be as dark as the adults. 11:26 from this area would estimate
 1500 ducks as extension of earlier estimate group and include
 90% mallards. Ducks that were near and could be identified
 were 15 pintails, 18 coot, 20 blue-wing teal, 10 gadwall,
 and 1 Canada goose. A muskrat house in emergent shrubs
 (above diagram) about 3 feet in height. Another house of some

size among cattails. 2 song sparrows, a third muskrat house associated with drainage. 4 [♀] merganser resting on log 3 feet from shore. They left by splashing down to water and at the same time gaining momentum by foot paddling on top of water until airborne. They were ^{American} ~~red-breasted~~ mergansers as close as I could ascertain but I would place a question mark on identification between this species and the ~~red-breasted~~ ^{42 American} merganser in one group 2.10 mi. to S. Dull following them. They had a small quarter size dot on wing which was forward of usual wing mark. 

11:35 fence line to edge of lake. 11:40 4th drainage and ridge with trees just to west. 2 song sparrows. 11:44 top of this ridge at E end to check ducks in lake. Kingfisher. Can see 5 Harris sparrows, 3 tree sparrows & 4 song sparrows among shrubs on hill. The song & tree sparrows were curious about the Harris sparrow. This promontory is a good vantage point to check ducks but lighting is poor for detailed color because sun is producing only back lighting. This is true for any position on Paradise Point or Peninsula in winter season. Lighting condition good at points N of Peninsula. High, straight stemmed weeds (up to 8') associated with the ridge that now parallels the lake and walking thru them is difficult. There is an increase in tree & song sparrows. 11:53 some native ^{rock} outcropping along ridge. Trees at east end predominantly locust. Well developed small mammal trails (rabbit size) 1/2 way up slope of ridge and trending E-W. 11:56 3 song sparrows, 8 tree sparrows. 11:59 5 tree sparrows, 2 song sparrows, 4 slate-colored juncos on sidewalk. 12:00 5 song sparrows. 12:02 3 tree sparrows, 4 song sparrows, some of which (song sp.) are singing and some giving warning calls. 12:03 old road down ridge. Large rock against base of tree. 2 crows calling to N. grasshoppers active. 12:04 directly below old isolated cement wall. 12:05 fence line. 4 tree sparrows and flicker. 12:06 2 song sparrows. Opening along lake without tall weeds. 4 song sparrows, 2 tree sparrows. 12:09 now back into high weeds! 4 song sparrows, 7 tree sparrows, 3 chickadees. 12:12 song sparrow calling. 12:17 3 chickadees, 4 song sparrows, 8 tree sparrows. 12:18 3 tree sparrows, 2 song sparrow. Muskrat house 3' high and placed on outer edge of log debris which would indicate that it was constructed after they

had moved onto shore. This house is precariously placed
 when considering effects of high wind on logs along the
 shore or it might indicate that there is very little move-
 ment of logs when in position along shore. Another
 question is why the logs are evenly distributed (width)
 along the shoreline instead of wider log jams at certain
 points. 12:20 beginning of pond to right. 8 tree + 2
 song sparrow. 2 bluejay on hill. 12:21 cottontail.
 2 song sparrows, 5 tree sparrows. 12:25 7 tree and
 3 song sparrows; 2 crows calling to N. 12:26 west end
 of pond and beginning of emergent river dike to S. 12:27
 muskrat runways. The tall weeds associated with
 ridge to N are now reduced in size + frequency as the
 influence of the ridge becomes reduced. This area is
 mouth of drainage from N. 12:33 final drainage. 5
 song sparrows. 12:36 Campsite Point. From here can see
 only 4 coot to S & W. There are neither ducks or gulls
 flying. waves 4" high but no white-caps. Leaving Point at
 12:47. Impractical to follow steep slope so gained slope to top +
 will reenter when feasible. 12:55 14 bobwhite under tree that
 had recently been felled. 1:02 old road to edge of water.
 song sparrow. This has been a weedy stretch on rather
 steep slope and again seems to be associated with ridge.
 1:06 Harris sparrow and 6 tree sparrows. 1:08 beginning of
 first turnout road. 2 tree sparrows, at least 8 sets of
 tracks of the cottontail across the sand. 7 tree sparrows.
 2 song sparrows, 2 chickadees. 1:15 beginning of second road
 turnout (now, as usual, following along edge of water). 3
 coots in area to NW. Redtail and crow in tall tree to right.
 The redtail left first and in 10 sec. the crow left. 1:22 NW Point
 of peninsula and beginning of ridge at old road grade trending
 N. 1:26 Cooper hawk flying W down what would be considered
 the center of the river at about 50' above height of trees. It
 continued W and at the same time circling up to 500 ft in
 height. It then descended as it moved to S over water. A
 redtail, which is probably the one noted at 1:22. It circled
 over the inundated valley to N. There are about 10 muskrats
 in inundated valley to N. Downy woodpecker. 1:30
 stopped. The redtail circled in valley about $2\frac{1}{10}$ mi ~~to~~ ^(off boat ramp) E ~~and~~
 after gaining height in circular movement headed straight
 W and without flapping wings and gradually descending

sailed the entire E-W valley to the W side of valley where it descended to about 6' above water before gliding up to alight in a tree. Left 1:40. 2 chickadee, 1 tree sparrow. Only one boat in river. 1:43 song sparrow, at deep water channel from river. 15 tree sparrows. 1:45 ♂ + ♀ green-winged teal in secluded channel just beyond the one noted at 1:43. The green-wing teal are frequently found in quiet waters of channels leading from main river. This second diagonal channel leads SE to a major drainage that at one time has supported a road but now eroded back from river as a channel with abrupt ^{grassy} wall. 1:47 head of channel of above drainage. 14 junco raccoon tracks common in muds wherever mud is exposed. 4 chickadees. 1:49 7 tree sparrows, 1 cardinal, 2 song sparrows. 1:50 3 tree sparrows. 1:51 5 tree sparrows. 1:52 approx. 30 tree sparrows generally distributed in a section of weeds. 1:53 5 tree sparrows. 1:54 boat ramp into river. 1:55 4 tree sparrows. 1:56 5 tree sparrows, 4 song sparrows. 1:58 first drainage E of boat dock or ramp. 2:00 from this position can see 4 marsh hawks in valley to N. 5 juncos. 2 song sparrows + 8 tree sparrows. The flooded valley to N (30% open water, the rest in weeds which could be inundated) can see 12 new muskrat house averaging 3 feet high. This dry area of last year has been rapidly invaded by muskrats with inundation with water and would indicate that the river can support just so many animals with the surplus deleted by limits of population by space & food. Now new areas are available and this surplus can expand and perpetuate themselves. I would judge there to be many times more muskrat house than can be seen from this vantage point. From hill on N side valley one can see more of the flooded valley. 2:05 river now in contact with ridge and flat valley and weeds are not represented. Will follow hillside to point where river leaves ridge and then again follow weeds. Above on top of ridge is a vantage point where road has been developed as a circle drive. 2:12 cardinal, 2 chickadees. 2:13 8 cardinal, 6 juncos. I am surprised that there is not ducks in open water of valley to N. 2:16 double drainage. 28 tree sparrows, 12 song sparrows + great horned owl, 4 chickadees, 2 cardinals, 6 Harris sparrows. One small oak (3 1/2' high and in protected gully with red leaves and only tree in area with color. 2:18 vantage point beyond double drainage at circular ^{road} turnoff where a structure is being constructed. This point

is one of the best vantage point for observing valley to N.
 The large trees on downslope will probably be removed to
 create uninterrupted view. Delaware River directly below.
 12:25 cattail at end of N-S man-made drainage. 8 tree
 sparrows, 3 song sparrows and 2 chickadees in cattails or
 associated trees. 2:30 angle of river to N. One good
 point for photography thru unusual tree form. 2 cardinals.
 This is at a spot with a gentle swale (no erosional gully).
 Carolina wren. 2:40 downy, ^{and redbellied woodpecker,} walked to divide to S and can
 see lake to S. The ducks are in same general area and of
 some numbers as this A.M. They seem to rest in the emergent
 weed (just coming to surface) so that their position can be con-
 trolled. The redtail is in tree at edge of lake as usual.
 2 marsh hawks in fields below. Now back to north sidehill.
 There are small animal trails (rabbit) on this exposure among
 trees. These forests seem quite barren of birdlife. 2:50
 digging on sidehill on order of a badger. In valley to N (directly)
 can see 3 marsh hawks feeding over weeds. On this slope
 among deciduous forests there is a lack of understory or
 near lack, and walking is convenient although slope is steep.
 2:53 base of road that leads up slope to SE. There are no
 weeds or small trees or understory until near or at the brink
 of ridge where weeds, grass and small trees have invaded and
 making forward movement almost impossible. ^(because of own exposure) 2 Crows calling
 to right! I believe these 2 crows are the same ones that
 have been observed on several occasions today. Considerable
 brush and especially thorny vines (rose-hawberry) at this divide.
 Old trees also pushed N to level line at brink of ridge. From
 point where previous road contacts top of ridge, another one
 goes diagonally downhill to NE. 3:05 now at base of ridge
 and contact with weeds of valley + trees of hillside. 4 tree
 sparrows, 7 goldfinch. Meretric runways common. Cardinal.
 3:09 5 tree sparrows. 3:10 4 tree sparrows. 3:11 mouth of major
 drainage with road leading S to divide. 24 cowbirds circling
 near old Indian artifact site. Chickadee, wind blowing directly
 up to canyon. 3:16 chickadee, cardinal, ^{old} pond on N side of
 divide now dry and grown to large willows. Road with gully
 3 feet deep and on W side approx. 6' deep at one spot. 3:18
 divide. Water impound to rocks at base of tree + pipe or 4 feet
 below last mud-vegetation contact. 5 tree sparrows. 3:19
 main road and will follow S down fence row from pine tree.

Just west of the pond-divide area is an exposure of what appears to be Tonganotic sandstone. This same outcrop is also to the east in new road cuts being developed for E approach. This kind of rock or sandstone may be responsible for the peculiar topography of the peninsula. Deer tracks along side of road measured 55 mm. 3:20 now leaving main road at pine tree and following S along hedgerow. 3:28 2 tree sparrows. I would recommend that the slopes of this entire peninsula be modified by removing all contours, man-made drainage ditches, hedgerows or any kind of shrub or tree associated with fence line ^{roads} etc. and convert the slopes to smooth natural slopes. Plant to native grasses and maintain grasses by cutting every 2 years. Leave buffer area of marsh plants at edge of lake in the supersaturated areas. 3:32 8 meadowlarks. my small dog chased these birds and the birds responded by flying back to dog and pausing momentarily and awkwardly for a second or two above the dog. 2 crows left hedgerow. 13 ♀ redwing blackbirds left hedgerow. They were overlooked until they fled and acted as if they were resting and hiding as they made no movement or noise until approached within 30'. 3:36 2 Cardinals, 3 tree sparrows. 3:39 end tree line. Redbellied woodpecker. Now E to car. Car at 3:41. No clouds in sky. Temp. ⁵² 57°F. Mileage 12.7. Slight breeze. Left and drove south and will follow same route back to Lerry Dam. 12.9 5 meadowlarks. 13.6 Cut bank at end of ridge, wasps on rock exposures of road cut, 3 bluejays. 13.9 5 juncos. 14.2 Entrance to Lake Shore Estates. Shrike. 15.0 main road (E-W). 15.6 Outer point of old town area. no duck or gull activity. 2 gulls in Little Slough Creek. 16.3 mourning dove. Considerable muskrat activity (houses) in upper wet area of slough. 17.1 main road to S. 17.3 bridge over Little Slough Creek. 18.5 top hill. 18.8 meadowlark. 19.0 turnoff to Jayhawk Camp and Lake Wood Wells. 2:39 Slough Creek bridge. no birds along entire area from last mentioned area. (4:15 P.M.) 2 ring-billed gulls on W side but no other activity. Redtail in tree on S shore. 24.9 marsh hawk carrying mouse, 2 yellow shafted flickers 25.2 main road forks. 26.4 SE end of Park area and end of census. This designation (SE) is just NW of gravel pits. Will keep list of kinds of birds between here and Lawrence. Starling, English sparrow, yellow shafted flicker, meadowlark, tree sparrow, fresh coyote road kill (32.0), 32.8 Wellmontown, cowbird, Lawrence

bridge 33.9 at 7:45 P.M. Temp in Lawrence 52°F. End of Census.

Summation of part of today's censuses including only the complete census of lake-shore contact of the entire peninsula of Paradise Point (see map). Birds listed according to first occurrence.

meadowlark 2-3-4-2-8 = 19

song sparrow 1-2-2-4-2-4-2-2-4-3-2-5-2-4-4-4-1-4-2-2-2-3-5-1-2-1-2-
4-2-12-3 = 93

crow 2-2-2-1-2-2 = 11 (could be duplicates of a pair)

tree sparrow 3-8-7-2-4-3-3-8-5-3-4-2-2-7-8-3-8-5-7-6-2-7-1-15-7-3-5-30-
5-4-5-8-28-8-4-5-4-5-2-3 = 249

swamp sparrow 2

woodduck 1-

gadwall 1-

pieb-bill grebe 1-

ducks 1000 (mixed), 1500 (mixed).

mallard 2-

Cowbird 7-24 = 31

Reithrodontomys 1-1 = 2

marsh hawk 1-4-2-3 = 10 (estimate 3 are duplicates)

redtail hawk 1-1-1-1-1 = 5 (estimate 2 are duplicates)

pruntail 15

Coot 18-4-3-1 = 26

bluewing 20

godwall 10

Canada goose 1-

mushrat houses 1-1-1-1-10-12 = 26

red-breasted merganser 4 (sp.?, could be american)

american merganser 42 king-billed gulls 14.

kingfisher 4

Harris sparrow 5-1-6 = 12

slate-colored junco 4-14-5-6 = 29

yellow-shafted flicker 1-

black-capped chickadee 3-3-2-2-4-2-4-2-1 = 23

bluejay 2-

Cottontail 1-

bobwhite 14-

Cooper hawk 1-

downy woodpecker 1-1 = 2

green-winged teal 2-

roccorn tracks (generally distributed)

Cardinal 1-1-2-2-1-1-2 = 10

great horned owl

Carolina wren 1-

red-bellied woodpecker 1-1 = 2

goldfinch 7-

deer tracks (occasional)

redwing blackbird 13-

Lawrence, Douglas Co., Kansas
Dec 5, 1969

Established bird feeding station this A.M. Two minutes after food was placed on feeder, an Eng sparrow arrived. This has always been my experience in past seasons that birds inspect the food only minutes after being available. Approx. 1/2 hour later, a female red-bellied woodpecker arrived and made at least 18 trips. On each visitation the woodpecker picked up a sunflower seed, flew to telephone post 50' away and at an average height of 20 feet placed the seeds in hole made by the spike of the climbing equipment used in climbing the pole. Two other trees, one a black walnut and one an ~~oak~~ mulberry tree for depositing the seeds.

Dec 7, 1969

Snowed lightly all day yesterday and most of night. Snow deposit approx. 2 inches. The following birds were at feeder yesterday and today. English sparrow (average no at feeder at one time, 25); slate-colored junco (2); red-bellied woodpecker (1); starling (2); blue jay (2); cardinal (3).

This morning had door of mammal cabinet open and dog inspected trap, mainly by smelling holes of the front ends of the trap. Without contact with mammal skins but by olfaction only (no sight), the dog initiated a behaviorism of rubbing the side of its head, neck and back on the floor some 2 feet from the cabinet. It would also rub its head on front of trap. Ordinarily the dog has a dead organism ~~to~~ on the ground to initiate this type of behaviorism.

At 8:15 A.M. a gray squirrel was noticed to move from one large tree to another over a precarious bridge (at one point crossing a 4 1/2' open area by jumping) and to move up and down the snow covered limbs without loss of footing. As it approached the base of the tree it proceeded cautiously down to the snow on the ground and then retracted and ran spirally around trunk of tree as if being pursued by another squirrel. There was only one squirrel in this tree and the behaviorism was entirely playful at experiencing snow for the first time in its life.

Lawrence - Topeka, Douglas Shawnee Cos., Kansas

Dec. 9, 1969

On a trip to Topeka, via highway 40 (thru Still), noted 8 great horned owls generally distributed. Time, sunset to late-twilight.

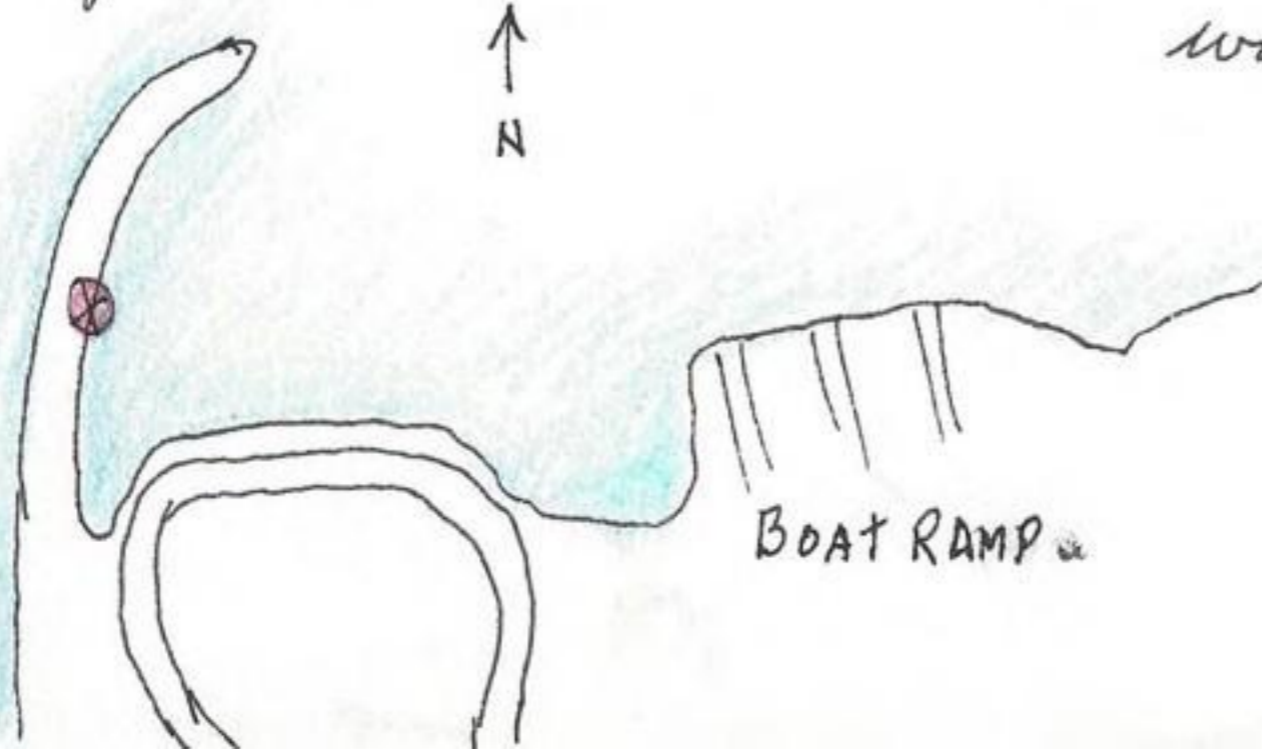
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Lawrence, Douglas Co., Kansas
 Dec. 11, 1969

At 1620 Tennessee, at sundown, there were 9♂ and 6♀ cardinals at the feeder at one time. 3 slate-colored juncos fed on the ground.

Perry Reservoir, Jefferson Co., Kansas
 Dec. 14, 1969

Made complete census of birds between Lawrence and Perry Reservoir and checked birds at dam and in Slaughter Creek. Left Lawrence 08.7 at 8:40 A.M. Sky 95% clear, temp 28°F. Will start census at Tepee junction on highway 24. 12.5 Tepee junction. Starling. 12.8 6 starling, ice on ponds & side of road. 15.0 9 starling. 15.2 Harlan Hawk on top telephone pole (in same area as one noted on a previous trip). 15.3 5 meadowlarks and 3 starling. 15.8 7 meadowlark. These meadowlarks are feeding on side of road although there ~~are~~ ^{is} no snow in the valley. 16.0 approx. 35 Eng. sparrows, 3 cardinals, 16.8 2 Eng. sparrows, 2 starling. 17.4 4 crows, 9 starling, 8 Eng. sparrows. 18.17 1 starling, 8 Eng. sparrows, 2 robins. 19.6 meadowlark left road and was followed by an English Sparrow. 20.5 meadowlark. 20.6 sparrow hawk. 21.5 Wellcomstown. 21.8 approx 60 starling in one group. 24.1 sparrow hawk. 25.0 Perry turnoff at 8:54 A.M. frost on bridges. yellow-shafted woodpecker. 26.1 5 tree sparrows. 26.3 approx. 40 starling, 8 meadowlarks. 27.0 redtail in some tree as frequently observed (normal tail), sparrow hawk. 27.7 40 starling and 2 bluejay, 1 redbellied woodpecker & 5 tree sparrows. 28.0 SE entrance to Park. (8:58 A.M.) 29.0 E end dam. Water open and no evidence of snow or ice. Wind from NW. No birds. 9:00 A.M. or 20 minute trip from Lawrence. Some patches of snow on N side of dam among rocks. 29.8 gate at middle of dam. 30.7 return to headquarters, shrike (loggerhead). 31.4 5 crows & 1 redbellied woodpecker at base of rock pier. Redtail in normal adult plumage. At a point on east side of rock peninsular, noted 3 American white Pelican on rocks at water level. They were sunning with backs turned toward the sun and wings partly spread. The group consisted of the same 3 birds that



have been observed at the E end of dam on several previous trips (see notes) and consist of an adult and 2 birds of the year. The adult has a whiter plumage, orange feet and a brighter, although fainter tinted pinkish bill with lower part and near base of lower bill a yellow. The left wing has been injured, and although capable of flight, shows a weakness at the joint between the hand and outer 2 digits; ^(of the second finger) that part of the outer wing that supports 5 or 6 of the primary feathers, and in flight directs these 5 or 6 ^{outer} primary feathers upward at a 45° angle. This is especially noticeable as the bird sails.  This adult bird was the first to leave the rocks and swim out into the water where it remained some 20' (at edge of rocks) beyond the other 2 birds. The juveniles can be distinguished on the basis of the amount of gray or black dusty on the upper wing coverts and posterior part of neck and head. The juvenile with the darkest upper coverts, as is true in both juveniles, has a faint, washed out pinkish bill (yellowish at base of lower mandible), and similarly colored feet. The head & upper necks seem to have a downy appearance to the feathers. The above bird (darkest coverts) seems to have an injury to right wing causing an incomplete retraction of outer primary feathers when wing is closed. The 3rd bird (juvenile with less dusky on upper wing coverts) has an injured right leg & foot. This bird showed less deformation of wings and was the one using its wings in flight action, spreading the wings to full extent and flopping them for 8 or 9 seconds at about 2 minute intervals, during this time the tail was expanded (fan shape) to fullest extent with oil gland exposed) and in all maneuvers with back toward the sun. The other 2 birds participated in this type of action but not to the degree of the above juvenile. The bird with the injured foot was on a rock (flat) 2 inches above the water. The other 2 were 2' above the water level. These pelicans remained in some position for the period under observation. Temp water 31°F. Air 32°F, air in sun 34°F. Left area at 9:23 A.M. and continued E to main road to N at mileage 33.5. 34.0 Seven bluejays in one group. 34.1 road to left. 34.4 4 slate colored juncos, 35.3 Slough Cr.

bridge. ^{thin} ice patches in bay to E (10% of water surface. no ice formation W of bridge. On extreme W side of bay to W. of bridge noted approx 90 mallards & 30 scaup ducks. on E side of E bay noted 40 mallards. Both groups are confined to shorelines. Left 9:34 and returned to Lawrence. 36.6 main road. Redtail, and some 7 bluejay as noted previously. 2 yellow-shafted flickers. 37.5 sparrow hawk. 37.6 SW entrance of Park. Will keep complete census back to Lawrence. 38.2 redbellied woodpecker. 38.7 2 meadowlarks. 38.8 5 meadowlarks. 1 yellow-shafted flicker. 39.6 4 meadowlark, 4 starling. 40.1 8 Eng. sparrows. 40.5 main highway 24 and north to E, 41.0 redtail on fence post at side of road. 42.6 2 bluejay 44.1 Wellington junction. 44.9 sparrow hawk, 8 starling. 45.0 4 starling, 8 Eng sparrow. 45.6 12 Eng sparrow, bluejay. 4 meadowlarks. 48.0 9 Eng sparrows. 48.4 redtail hawk. 48.8 5 Eng sparrow 49.1 13 starling. 49.5 12 Eng sparrows. 50.0 sparrow hawk. 50.4 60 starling, 10 Eng sparrows. 52.0 marsh hawk. 52.9 8 starling. 53.1 Teepee junction & end of complete census. 9:55 A.M.

Perry Reservoir, Jefferson Co.
Lawrence, Douglas Co., Kansas

Dec. 15, 1969

Enroute to Topeka, Annette P and I stopped to check the pelicans at the Perry Reservoir Dam. At about 5:00 P.M. at 15-20 min before sundown observed the adult and one of the two juveniles (less dusky on upper wing coverts) at E end of



They were both resting on the bank some 4' from water. At the W end of dam noted a male common American goldeneye.

It was diving about 20' out from base of dam. There was a ♀ hooded merganser in bay E of pelicans, otherwise there were no other ducks in the entire lake to N. The 3rd pelican was not in area where observed yesterday.

Lawrence, Douglas Co., Kansas
Dec. 15, 1969

Noted a sharp-shinned hawk on campus and 8 ducks (sp.?) The ducks were flying W over campus at about 400' high.

Perry Reservoir, Jefferson Co., Kansas
Dec. 16, 1969

Checked Perry Reservoir but did not see pelicans. Time. 4:30 P.M. They left either last night or some-time today.

Perry Reservoir, Jefferson Co., Kansas
Dec. 17, 1969

Checked birds at dam and Slough Creek area this P.M.
Left Lawrence 3:15 P.M., mileage 74.4, overcast all day,
temp 30°F, will keep list of kinds of birds between
Lawrence & Perry Res. Starling, Eng Sparrow, water frozen
along side of road. 80.8 redtail on telephone post.
Sparrow hawk, meadowlark, cardinal, tree sparrow,
bluejay. ~~SE~~ end dam 3:44. 95.2 gate at middle of
dam. There are no birds of any kind in water N of dam (3:47).
2 marsh hawks hunted top of dam on S side the full length
to E. Circled the roads N of headquarters (boat ramp and
rock wave breaker area but did not see pelicans. At
98.0 observed a sparrow hawk and a coyote. The coyote
was in the center of the field between the road and the high
rounded knoll to the north. As the car was stopped it left
what ever it was investigating (150' away) and loped up the
slight grade to the road at base of knoll where it stopped, sat
down and watched for 3-4 minutes. The gait was graceful
and effortless with the legs, especially the back legs, held
rather stiff and moving up and down like the action of a
jackrabbit or pogo stick. This bouncing behavior, as
stated above, was effortless and graceful and suggestive of
an intentional act. This coyote was fearless and after
watching the car for 5 minutes finally walked north around
round knoll on east slope. 98.6 main road & now N up
grade. 98.9 marsh hawk. 99.2 now to left. 99.6 redtail
hawk. 00.4 Slough Creek bridge. Approx 150 mallards
along shore on west side of west bay in same position as
previously observed a few days ago. There were no ducks
in bay to E. Left 4:07 P.M. and retraced route to S.
Thin ice only ^{in water} on east exposure of bridge approach, 01.6
main road. 12 tree sparrows. 02.8 SE entrance to Park.
Will keep list of kinds of bird to Lawrence. Starling,
Eng. sparrow, meadowlark, tree sparrow, cardinal. 15.0 redtail
15.6 redtail. 15.6 redtail (100' from previous) and all three
on top telephone poles bordering highway 24, 21.9 ^{home} ~~Fepes~~.
in Lawrence at 3:35 at mileage 21.9.

Perry Reservoir, Jefferson Co., Kansas
Dec. 18, 1969

checked Perry Reservoir area, particularly to ascertain if Dec 16,
was actually the departure date for the 3 American white Pelicans.

Left Lawrence at 3:15³ P.M. at mileage 29.8. Sky clear and wind from N. Temp. 39° F. 33.0 Teepee junction at convergence Highway 24-59. Will ~~keep~~ ^{complete} keep list of birds between here and Perry Reservoir via highway 24. 33.4 5 robins, 24 starlings. water in ditch at side of road 50% in ice. 35.2 redtail 35.6 redtail and probably Harlan hawk (primaries with some banding or marks but tail decidedly black) 36.8 2 redtails circling. 38.7 8 Eng. sparrow, 4 starling, 2 meadowlark. 42.2 Wellhamstown turnoff. 8 Eng. sparrows. 45.1 sparrow hawk. 45.7 Perry turnoff. 46.7 meadowlark, 48.6 SE entrance to park area. 49.3 shrike (loggerhead). 49.6 E end dam. No pelican. 50.6 meadowlark flew N across dam and then turned abruptly and returned to S side of dam. 51.2 W end dam. 13 gulls of about size of ring-billed. They did not dive but glided to surface of the water. They were all flying in loose formation. wind sufficient to create ^{a few} white caps. 52.9 Headquarters on return from dam. 54.4 main road via boat ramp area and now to N. 55.0 now to left. 55.2 yellow-shafted woodpecker. 56.3 Slough Creek bridge. 120 mallards on west side of west bay. no gulls in area. 58.7 13 crows 61.6 2 meadowlarks. 61.8 old train car & top of hill. 62.9 Little Slough Creek bridge. 63.2 now to Left. 64.7 old Osowkie town. 6 cool. 65.3 main road, 2 Eng sparrow. 66.0 3 tree sparrows, mockingbird. 66.2 Entrance Lake Shore Estates, Road too muddy to N so returned. 67.5 main road. (4:55 P.M. seen just touching horizon). 68.3 bridge. 200 ducks including 150 mallards, all moving in to shore from raft position in reservoir. 1 gull flew S over bridge in 15 min. observation. Left 5:07. 68.9 leaving main road and to old Osowkie. 69.3 12 bluewing teal, cardinal. 70.9 Little Slough Creek bridge, water open. 77.5 Slough Creek bridge. no birds between the two Slough Creeks. 79.9 SE entrance to Park. 5:30 P.M. End of Complete Census.

Perry Reservoir, Jefferson Co., Kansas
Dec. 20, 1969

made survey of birds of the Perry Reservoir between dam and Osowkie following west side and return E side. Contacted various points

of park areas on west side, bypassing commercial estate sites on both sides. Commercialization is denying public access to lake in these areas which are substantial segments of the lake shore and perhaps rightly so but to individuals interested in the natural fauna of the lake, research is hindered. Vantage points and lake access should be provided at all segments of the lake, except those areas set aside for inviolate area for protection of mammals & birds that need such protection. An example of protection is provided in the area NE of Ozaukee where ducks congregated in great numbers during the interim of non-hunting but left area when hunters set up blinds and started to hunt. These ducks moved S into large part of reservoir for protection. A point or time will be reached when ducks will find no areas available for rest and feeding when increased hunting harasses these birds in other directions. As suggested above some bays should be held inviolate to shooting, boats and planes or lake side traffic.

Enroute to Perry Reservoir will keep complete list of birds observed along highway 24. Left Lawrence 8:00 A.M., mileage 13.2. Day clear but front moved in at 7:30 and completely covered sky, temp 17° F. Kaw River free of ice and relatively low. 18.3 junction highway 59-24 (Tepee junction) and beginning of complete census. Wind from E. 17.6 starling, water frozen along side of road. 20.8 midland and redtail in tops of trees. 26.4 bluejay. 26.5 5 starling. 27.4 wellington turnoff. 28.6 4 slate-colored juncos. 30.9 Perry turnoff. 31.2 12 starling, sparrow hawk. 33.9 12 meadowlarks, 4 starling. 33.9 SE park entrance at 8:35. 34.9 E end dam. Wind from SE. Temp. 18° F. no ducks or gulls in area N of dam. 36.3 American & golden-eye in same area as observed on a previous day. 36.5 W end of dam. now on road to right. Fox squirrel. 36.6 redtail among trees and flew thru trees to alight in limb among trees rather than low-lying area. 4 tree sparrows. 38.8 stopped and checked on small birds in extensive weed patch in drainage previously modified by Corp of Engineers. Slopes bordering lake deeply eroded (too wide and deep to jump across. Ground below weeds with thin film of mosses and some microtine activity. The area produces 18 Harris sparrows, 5 black-capped chickadees, 120 tree sparrows, leaving to bordering trees at one time, 6 goldfinches, 9 cardinals, 18 juncos, 1 yellow-shafted flicker. One red-bellied woodpecker beyond ~~tree~~ field. Weeds to right beyond drainage area but

55 mallards in bay to N. male mallard and a male baldpate swimming together. 52.1 wind n' waves turnoff, but continuing N. 52.3 Lake Ridge Estates. 52.9 redtail, 33 tree sparrows, 8 juncos. Three Heels turnoff but continuing W. 53.2 Red-bellied woodpecker. 53.5 now to N. 53.8 jog in road. 54.1 now to W. Kansas Grouse Water tank to N.E. now W. Considerable native grass and cut. 54.8 now to N. 55.0 2 tree sparrows, 55.4 Hilldale lots to right. New road continues N but not open as yet, so continued to W. 55.9 sparrow hawk. 56.5 now to N. 56.8 4 Harris sparrows, 10 tree sparrows. 57.3 marsh hawk. 57.7 redtail, sparrow hawk. 58.1 7 starling. 58.6 Indian Ridge Lake lots to right but continuing N. 11 starling. 58.8 marsh hawk 59.1 2 yellow-shafted flickers. 59.8 main road to Ozawie now to right (highway 92). 61.4 8 tree sparrows, 1 yellow-shafted flicker. 61.9 leaving main road and off to right on old original road. Will check ducks S of Ozawie. Good wet-pasture to right. 61.6 off road to S into fields toward lake. 62.9 drainage and barrier to progress. 32 tree sparrows, 12 juncos. 72 meadowlarks in one group flew from one field to another. 2 yellow-shafted flickers. 63.0 now back to old road. 63.2 passing road that leads S from Ozawie. Continuing E. 64 meadowlarks. 63.5 end of road by inundation of reservoir water. Good observation point for near birds. Crow crossing reservoir from W to E. A group of American mergansers to S but because at water level cannot differentiate birds except by gull action above them. Will check these birds from top of bridge. 12:40. 64.0 main road at Ozawie. Will continue N to end of road in Ozawie area. 64.3 Ozawie water tank. 65.3 most northern road in N Ozawie which ends in a private driveway. Good observation point ^{of Paradise area} but must get beyond trees along shoreline. Few mallards, not more than 20 along shoreline E of Ozawie. 66.7 main road now to E toward bridge. 2 roughlegs searched slopes of road approach to bridge from W to E side, finally alighting in trees in old Ozawie. 67.2 bridge (1:00 P.M.). Estimate 3,000 mallards in lake to S and represent the duck population that normally rests in lake N of bridge in Paradise Point area, where today, hunters are set in blinds and ducks are displaced to area S of bridge and elsewhere. Another group of approx. 175 American merganser to S, followed by 10 gulls. There are smaller ducks ²⁰⁰ in area but cannot ascertain species. approx 200 mallard in ²⁰⁰ N.E. part of lake to N at edge of ice that fills in the angle of dam approach to east shore. 20 of the mallards are resting on the ice. 68.2 leaving main road

and moving S thru old Ozaukee. 2 bluewing and 2 loon at
 edge of lake. 70.3 200 starting in one group. 70.6 Little Slough
 Creek, water open. 71.4 2 titmice. 71.7 top of hill. 72.2
 now to W to Lakewood Hells, and Longview area. 73.9 Lakewood
 Hells but to S. 74.2 northern shrike. 2 bluejay. 74.5
 main circuit road to W but continuing S to boat ramp. 75.4
 upper bay to right. Approx 60 godwits & 10 baldpate. and one
 marsh hawk. Ducks feeding in characteristic up-end mannerism.
 75.6 Longview Point. Reddish sedimentation out to 10 feet beyond
 bank. Raft of approx 1500 mallard to SW in main lake. 75.8
 2 godwits along shore. 15 mallards left protective Cove, also 2
 godwits. 76.5 now road leaves shoreline and gains ridge to
 E. 2 redtails in trees 1/2 way up and among inner trees instead
 of bordering trees. 77.8 end of farthest loop to N and now
 back to main road. 78.3 back to circuit road. 78.7 end of
 major circuit road & now to N. 79.6 entrance Lakewood Hells.
 and now to E. 81.2 main road, now to S. 17 tree sparrows,
 4 cardinals, 10 Eng sparrow all at farmhouse. 81.9 small
 loggerhead shrike. 83.0 8 tree sparrows, 1 redbellied woodpecker.
 83.5 now to Slough Creek area. Redtail. 85.0 2 meadowlarks.
 85.6 new road of Slough Creek area. 86.1 26 juncos. 86.7
 redtail hawk 86.8 dropping off ridge to right. 87.2
 Gap Point. Continued S along shore to barrier at drainage
 and then returned. At Gap Point observed approx
 950 American mergansers of birds observed earlier today
 from W side of lake and additions to the ⁽²²²⁾ flock since
 that time. Of this group of mergansers there were
 72 gulls associated including mainly ring-bills of
 which 40% were birds of the year. Also 2 first year
 Herring gulls. The Herring gulls actively feed among
 mergansers and moved about but seldom flew ^{higher than} over
 3 or 4 feet above the mergansers whereas the ring-billed
 gulls circled overhead up to 40 feet. Directly north were
 approx. 300 mallards. ^{2 redtails at point.} Returned to ridge and made
 loop to boat ramp on E side ridge. Only birds observed
 at ramp were 3 pied-billed grebes. On land were 45 tree
 sparrows, 19 juncos, 2 blue jays, and 1 downy woodpecker.
 Returned to main loop road, then back to main road leading
 S to dam area. 94.3 Slough Creek bridge. (3:36 P.M.).
 95.5 main road at "Y" and now S. 96.2 now to right on
 Perry area circuit. 97.7 8 mallards. 97.7 headquarters.
 Wind from SE. 97.9 sparrow hawk. 98.6 SE entrance to Park.
 Temp 28°F.

Will keep list of birds between here and Lawrence. Sparrow hawk (99.7), blue jay, starling, Eng sparrow, 1 flock approx. 300 sparrows, robin, meadowlark, yellow-shafted flicker, tree sparrow. 14.1 junction 40-59-24 at Teepee junction and end of census. 4:05 P.M. 17.8 home at 4:13.

Summary: (Perry Reservoir only)

American goldeneye (1)
fox squirrel 1-1 = (2)
redtail 1-1-1-1-1-1-1-2-1-1-2 = (13)
tree sparrows 4-180-8-4-80-120-33-2-10-8-32-17-8-45 = (551)
Harris sparrow 18-9-4 = (31)
black-capped chickadee 5-8 = (13)
goldfinch 66-18 = (84)
cardinal 9-4-8-5-4 = (30)
slate-colored junco 18-20-28-15-8-12-26-19 = (146)
yellow-shafted flicker 1-1-1-2-1-2 = (8)
red-bellied woodpecker 1-1-1 = (3)
ring-billed gull 8-24-10 = (42)
ducks 2-6-8-17-7-13-10-10-30-20 = (123)
mallards 2-490-400-700-40-4-300-61-120-150-18-55-1-
8-20-3000-200-1500-15-300 = (7374)
gadwall 3-60-2-2 = (67)
pied-billed grebe 1-3-3-3-2-3 = (15)
American merganser 222-18-3-175-738 = (1156)
Crows 15-2-1 = (18)
marsh hawk 2-1-1-1-1 = (6)
downy woodpecker 1-2-1 = (3)
blue-wing teal 4-2 = (6)
bobwhites (10)
starling 19-7-11-20 = (57)
green-wing teal 27-20 = (47)
Coot 15-2 = (17)
boldpate 1-1-10 = (12)
sparrow hawk 1-1-1 = (3)
meadowlarks 72-6-2 = (80)
rough-legged hawk (2)
titmice (2)
northern shrike (1)
blue jays 2-2 = (4)
Eng sparrow (10)
loggerhead shrike (1)

herring gull (2)

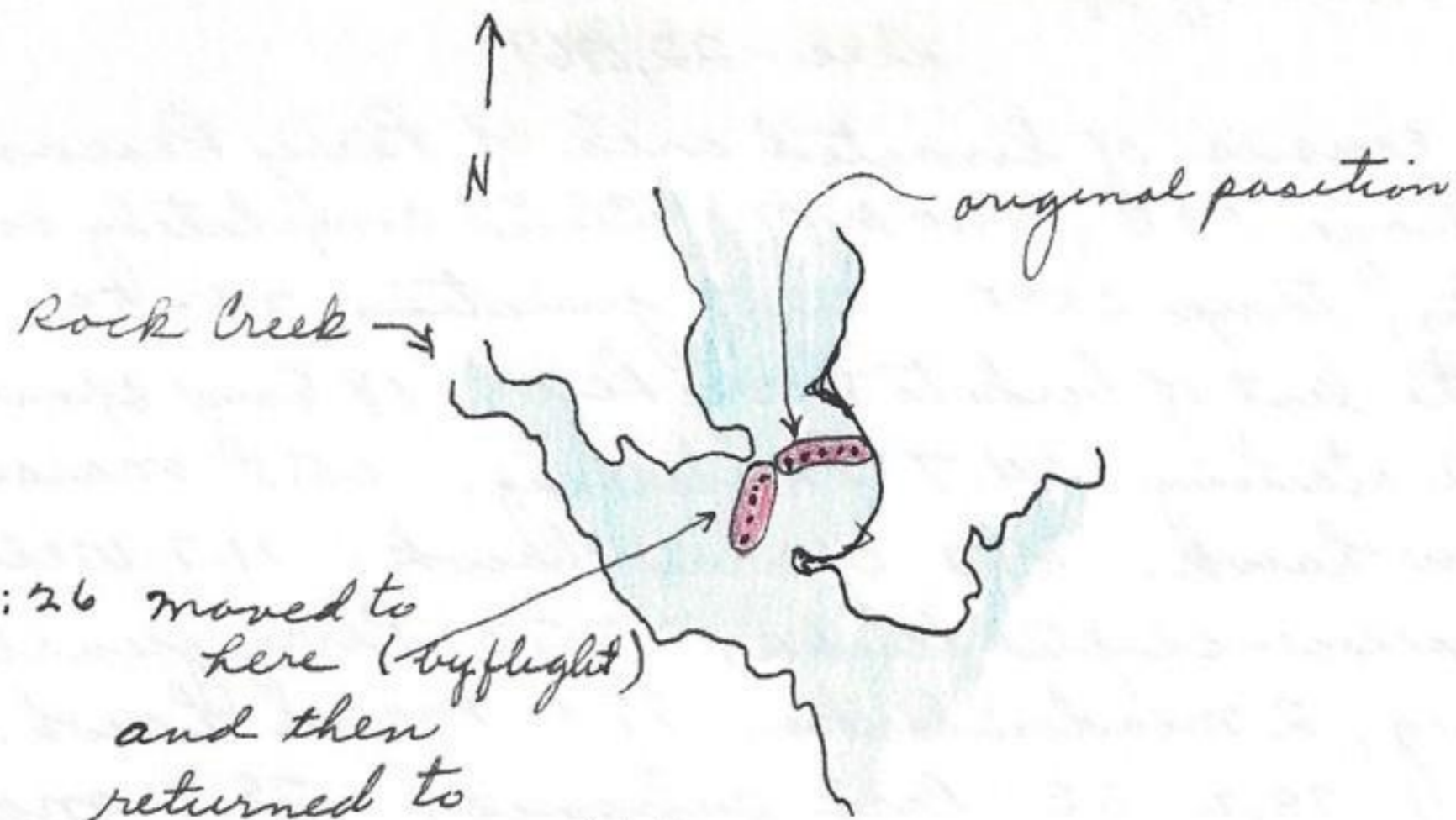
Total species = 35

" number = 9932

Perry Reservoir, Jefferson Co., Kansas

Dec. 22, 1969

made census of limited area of Perry Reservoir. Left Lawrence at mileage 59.6, 8:10 A.M. Cloud completely overcast of uniform density, temp 25°F. 62.5 junction 24-59. will keep complete list of birds to Perry Res. 18 Eng sparrows, 4 starling. 64.3 2 starling 64.7 22 starling, 65.5 marsh hawk. 68.1 sparrow hawk. 69.2 sparrow hawk, 71.7 Willeomstaen turnoff. 72.5 yellow-shafted flicker. 75.3 Perry junction. 76.4 3 starling, 2 meadowlarks. 77.1 marsh hawk. 77.7 sparrow hawk. 78.2 SE Park entrance. 78.8 marsh hawk. 79.1 E end dam. water open and wind from S. As the wind drops down on lee side it fans out, sometimes blowing counter to direction of wind. This area receives less wind than beyond but is an area of irregular wind, ^{and to that extent may be a limiting factor in bird distribution.} 80.7 west end dam. Harlan hawk searched S exposure of dam and then circled S over lowlands. This hawk has a dark tail, as well as dark body. 8:4.8 A.M. 82.5 headquarters. 83.7 sparrow hawk hovering. 84.0 main road from Perry area circuit and now to N. 84.6 road to left. 85.8 Slough Creek bridge first time mallards have not been on west shore of west bay, because of wind. no ducks or gulls. 87.3 leaving main road to Slough Creek area. 8 tree sparrows, redtail. 87.7 9 starling. 87.9 15 Eng sparrows, ^{4 cardinals, 8 chickadees} 88.5 90 tree sparrow, 28 juncos and 18 Harris sparrows, at drainage crossing. One song sparrow and a downy associated. These birds were moving up over road as they moved up drainage. 88.7 3 dogs chasing a coyote which was about 200' ahead. 89.1 redbellied woodpecker and now to left on Slough Creek circuit. 5 mallards flew over ridge. 89.9 to left to boat ramp. 90.2 boat ramp. no ducks but good wove action. 28 tree sparrow + 15 juncos here. 2 blue jays. 90.5 main circuit road and now to right. 91.2 main circuit road to Gap Point (left). 91.7 dropping down off ridge. 92.1 Gap Point, approx. 400 mallards in protected bay to N. Continued S along lake to barrier. on west side 8 mallards but nothing beyond. 92.9 back to Gap Point. will check bird activity to 12:00 o'clock. A group of merganser formed a continuous raft from a point 1/2 way across lake to NW to a point at N end of bay at point where old road enters lake and 3/4 distance N from Gap Point. will make census according to numbers



at 10:26 moved to here (by flight) and then returned to original position by swimming which required 1 hour and 34 minutes,

and sex. These birds are moving progressively E into bay (census from posterior end of raft to anterior end). ♂ ♀ ♂ (recorder for some reason did not register voice as this group was counted one by one so can only estimate numbers as sex proportions) would estimate there were 750 mergansers (American) of a sex ratio of 40% female and 60% male. Another group arrived from N of approx 600 birds making total numbers of 2 separate groups as 1350 birds. If 10% were added as representing birds missed by diving birds at the time of census, would bring total to 1500. Made some observations of general nature of action of herds in bay to N of Gap Point. The raft of mergansers appeared to be continuous with some suggestion of segmentation. One female merganser at ramp and remained while all other ducks had left area. 12 ring-billed gulls were associated with merganser (group in bay to N) and were on peripheral edge and moving E along with flock. 10 mergansers (8 ♀ 2 ♂) from E to W about 200 out from shore at Gap Point, at 9:45. 9:55 5 ring-billed gulls arrived and flew E along full length of raft. Can see two promontories to N on right shore but cannot see Ozaukee ridge beyond because of fog or hazy atmosphere. 10:03 ♂ + ♀ merganser flew W. 10:09 ♂ + ♀ mallard flew E. ring-billed gull flew E. 10:14 gull flew to E. 10:15 ring-billed to E. 2 ♂ 2 ♀ merganser to E. Adult gull to E. 10:20 second yellow-shafted flicker from W side of lake to E side. The birds being recorded are local birds flying by S shore at approx. 200' out from shore (not others in main lake or bay). Although wind is from S, a small log is moving E along shore 20' out. 10:26 airplane flew by and caused entire raft of mergansers to move out into center of lake to W where they reformed a linear raft. As high waves were active in center of lake, the mergansers moved east again into bay to E. Gulls followed mergansers. 10:27 single ♂ to W. The mergansers showed increase action of small groups now flying by my observation point from E to W. 10:28 1 ♂ + ♀ females fly W. 6 ♀ and 1 male flew W. 10:30 2 males to W. 10:31 9 females to W. 10:33 4 ♂ 2 ♀ mergansers to W. 10:35 5 ♂ + 9 ♀ mergansers to W. 11 ♂ 5 ♀ mergansers flew to W. 10:32 4 ♂ mergansers to W. Mergansers are now moving E

and there is increased activity, there being 26 gulls associated with raft, including 2 first year Herring gulls, 1 first year glaucous gull, 40% juvenile and 60% adult ring-billed gulls. There is definitely a size difference between the smaller ring-billed gulls and the larger Herring and glaucous gull. The glaucous gull is considerably lighter and uniformly light dusky with primary feathers only slightly lighter than wings & back. The dark Herring gulls have dark tails like upper wings & back. Both Herring & glaucous keep low over water as they move along while ring-bills circle high and up to 20-30 feet. The dark Herring gulls also seem to have slightly lighter heads in certain lights.

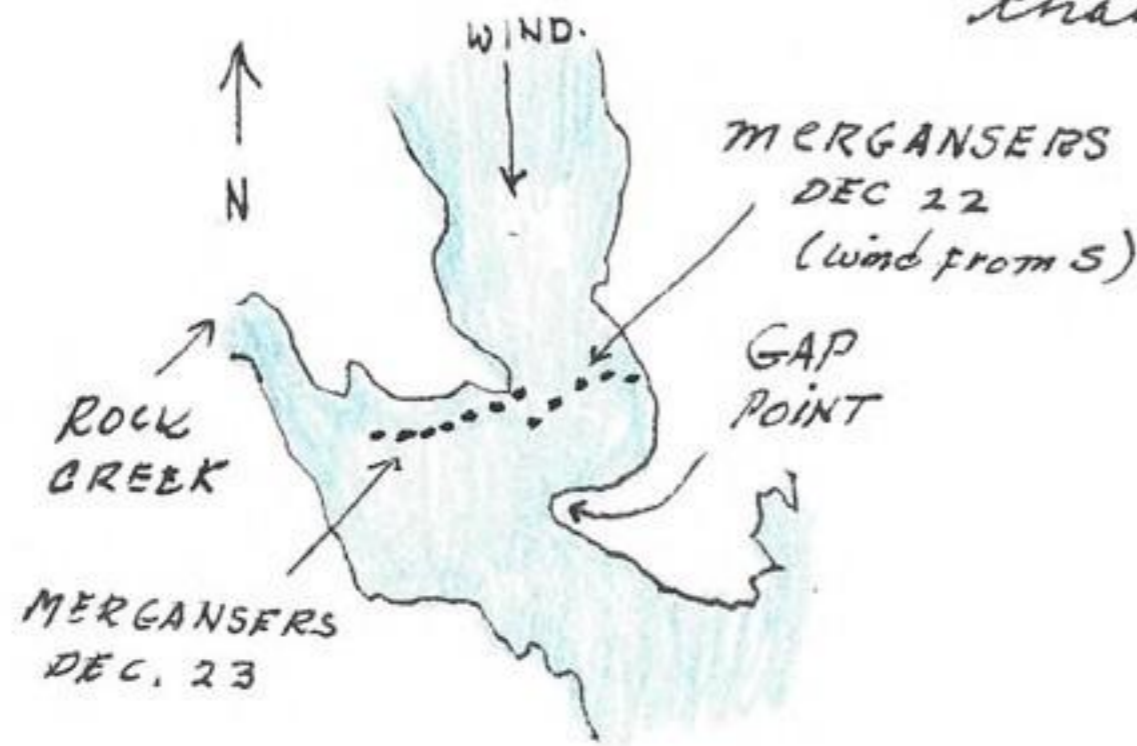
10:40 10 ♂ 8 ♀ mergansers flew W. 10:41 11 ♀ and 7 ♂ mergansers flew W. Main raft moving back into original position in bay. 11:00 6 ♂ 2 ♀ mergansers to W. 11:01 ♀ merganser to W. 11:03 3 ♀ mergansers to W. 32 gulls now among raft of mergansers. 11:10 1 ♂ 4 ♀ mergansers to W. Gulls are now flying and circling up to 100-150' and appear to be increasing in numbers, the increase in ring-bills, 11:20 10 ♀ and 5 ♂ mergansers into bay. ^{front advancing} Raft of mergansers are now at a point about 200' east of a line from my observation point to the county road that runs into the lake on N side of bay. Gulls have increased to 68 individuals as merganser seem to be increasing feeding activity. The increase has been in ring-bills. Some mergansers at posterior end of raft now flying to front of raft but this action is very limited. 11:23 ring-bill passed to W. 11:27 5 ♂ 3 ♀ mergansers to E. 11:30 2 gulls to W. 11:35 2 mallards to E. 11:42 Group of about 300 mergansers from N and alighted in middle of lake to W. (not part of raft under observation). 11:50 2 ♀ to E. 11:54 gull to W. 11:55 gull to E. 11:58 mergansers now all within area of bay having taken approx 1 1/2 hrs to swim into their location in bay. The front of raft has reached ^{east} shore of ~~east~~ ^{bay} and were actively feeding. Gulls active and it appears that their behavior of circling 150' above mergansers was to attract other gulls.

12:00 left Gap Point and returned to dam area, following usual route to SE entrance of Park. No ducks or gulls at Slough Creek bridge. Entrance 12:15. Kinds of birds between Perry Reservoir & Lawrence were: 3 sparrow hawks, 4 redtails, tree sparrow, meadowlark, starling, Eng sparrow, cardinal.

Perry Reservoir, Jefferson Co., Kansas
 Dec 23, 1969

made census of birds in Perry Reservoir area at the dam and at Slough Creek Area. Annette P and I made trip. The objective today was to ascertain numbers of American mergansers and sex ratios. Mileage at home 34.1, 10:05, Temp. 18°F. Sky clearing from general fog and now 10% in clouds. Snowed last night to 1 inch. ~~Water~~ Kaw River open below and above dam. Will keep complete list of birds between Lawrence and Perry Reservoir. 38.9 junction 24-59 at Teele junction and beginning of census, 39.1 15 starling water frozen along side of road, 41.3 approx. 50 starling in on flock, 46.2 2 starling, 50.5 Perry turnoff. I am surprised that with snow on the ground, that there were not more (or even 1) meadowlark on sides of the road. 51.1 approx 150 Eng sparrows in on flock which is unusual for this area, 51.9 yellow shafted woodpecker. 53.1 8 tree sparrows. 53.4 SE entrance Park area. Wind from NNE. 54.3 E end dam. Brown sedimentation out to 1/10 mile to north in the SE part of reservoir but drops off rather abruptly to W along dam. Considerable heavy wave action in lake. 55.2 outlet gates. 2 ring-billed gulls flying W. There are no other birds in lake N of dam that can be seen with 20x binoculars. This has been the general rule this autumn and winter. 56.2 headquarters and now to Perry area circuit. 57.3 bluejay, 57.7 main road. 2 redtails in dead tree at old farm house area. Both birds facing sun. 12 tree sparrows, 58.3 15 tree sparrows, 58.4 now to left, 59.6 Slough Creek bridge. no ducks or gulls, 61.0 now to left toward Slough Creek area. 62.3 ^{crossing} drainage to Slough Creek area. 63.0 Crow, 63.4 brink of ridge and now down hill to Gap Point. 42 tree sparrows at ridge-forest contact. 63.9 Gap Point at boat ramp. The name Gap Point given to this area because of an erosional divide between bay to N & drainage to S. This bay should have been classified as involute because of needs of birds for protection from S woods. Ducks shift across from here to protective lee of N side of mouth of

Rock Creek according to direction of wind - to east bay when wind is from S and W bay (mouth Rock Creek) when wind is from N. On S side of Gap Point are 15 mallards. There are no birds to N but across reservoir to W are approx 1100 American mergansers and 58 gulls. The distance and high waves made it impracticable to make detailed census of this merganser population. They were first located by gull action and were on lee side of a peninsula that runs out into lake. These birds



will move out into rough water when disturbed but will always move back into protected bays. Waves from N about 3' feet high and eroding bank of old pond, now at water level. No bird action in this bay to N.


Roughly on ridge to east and ^{and 1 red-breasted nuthatch.} right of boat ramp.

one yellow-bellied sapsucker in trees to right of boat ramp.
 Left area 11:20 65.9 now across ridge to E at boat ramp.
 15 mallards at mouth of bay. 5 crows and 2 bluejay were.
 66.5 redtail. 67.0 redbellied woodpecker and 2 redtails. 67.0 blue jay. 72.4 SE entrance Park & end of census. Will keep record of kinds of birds or unusual occurrences between Perry Reservoir and Lawrence. 74.4 Between 8 and 12 thousand starling in general area (1/3 x 2 miles area). They were moving in a general S direction with different groups feeding at cattlepens. Some flocks passing by at approx 100 per second for 1 to 1 1/2 minutes. Others completely covering trees or ground. This is one of the largest aggregates of birds noted so far. As far as I could ascertain, these birds were all ^{starling} starling. On return trip noted 1 sparrow hawk, 1 redtail, 2 meadowlarks, 1 mockingbird, starlings, Eng sparrows, northern shrike, tree sparrows, slate-colored juncos,

Lawrence, Douglas Co., Kansas
 Dec 24, 1969

This morning at about 7:00 A.M., with lamp on at side of bed and general lighting on ceiling observed fundic image. This consisted of a clear impression of black arteries and white background and occurred regularly and at will for approx 1 sec when eyes were repeatedly opened. No image after 1 second or with eyes closed. The

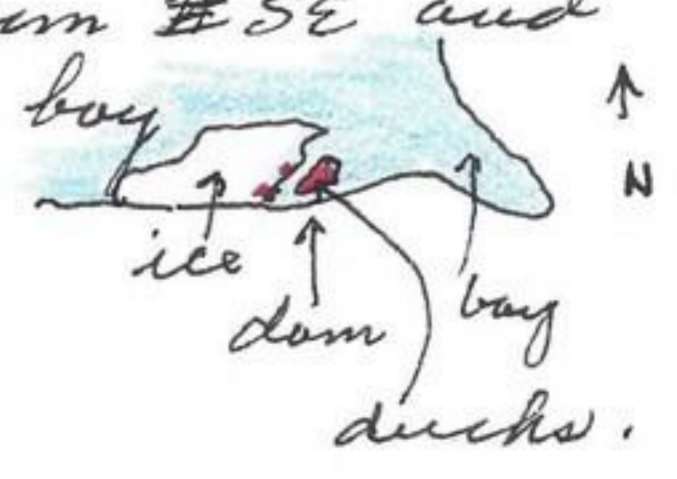
238
 retinal image was characteristically patterned with optic disc and converging arteries on macula fovea. This image differed from regular artificially imposed back lighting of retina in that the arteries were black & background white instead of the usual red arteries and red background and of lesser duration (less than 1 second hold). The lamp was too bright and if cause should not have effected left eye but both eyes produced same retinal image. At one time the arteries produced present segments.

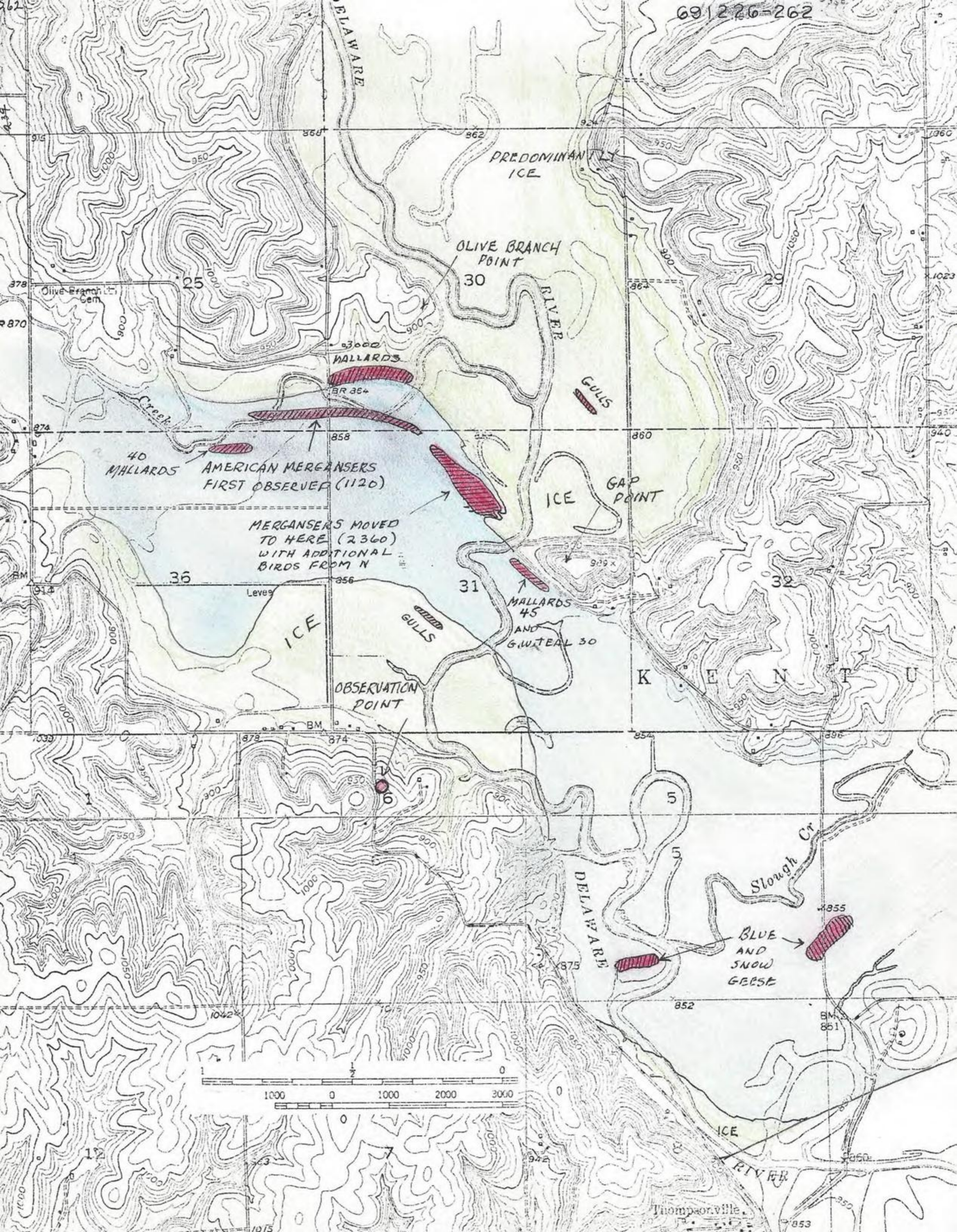


at a later time, and under same lighting conditions I could not reproduce the same retinal image.

Perry Reservoir, Jefferson Co., Kansas
 Dec. 26, 1969

made survey of birds in reservoir at Rock Creek - Gap Point area. (see map), especially as concerns the American merganser. Left Lawrence at 10:05, mileage 92.2, temp. 22°F. Sky clear to E and N but clouds (80% coverage) moving in from W. Wind from E. Kaw River open both above and below with some ice at edges. 96.0 junction highway 57 and 24. Will keep complete records to Reservoir. 96.5 sparrow hawk. 97.3 sparrow hawk, water frozen along side of road. 97.6 redtail hawk on top of pole. 98.7 redtail on pole. 60.4 yellow-shafted woodpecker. 01.1 Harlan hawk on top pole. Hawks so far have had backs to sun. Snow only in protected areas and slopes. Frost on vegetation, especially low grasses. 04.1 meadowlark. 05.0 Williams town, 2 horned larks. 08.4 redtail. 08.5 Perry turnoff; now to N. 08.6 blue-jay. 09.1 mockingbird. 09.2 meadowlark. 10.6 marsh hawk. 10.8 15 starling, bluejay. 11.4 loggerhead shrike. 11.5 SE entrance to Park, now to W. 12.5 E end of dam. Lake clear of ice except mass from headquarters bay (N.W) to a point 1/10 mi to W along dam and 1/10 mile northward. Wind from SE and water ruffled but no waves. In the open water of bay between the dam and the extension of the ice mass were: 1 male pintail, 49 green-winged teal, 3 ring-necked ducks and one ♀ teal larger than the green-winged teal and nearest to a ~~crane~~ teal in coloration. 13.0 3 mallards and 3 green-winged teal along edge of water at dam. 13.1 3 green-winged teal.





DELAWARE

PREDOMINANTLY ICE

OLIVE BRANCH POINT

30

MALLARDS

BR 36+

GULLS

40 MALLARDS

AMERICAN MERGANSERS FIRST OBSERVED (1120)

ICE

GAP POINT

MERGANSERS MOVED TO HERE (2360) WITH ADDITIONAL BIRDS FROM N

36

Levee

ICE

GULLS

31

MALLARDS 45

AND G.W. TEAL 30

OBSERVATION POINT

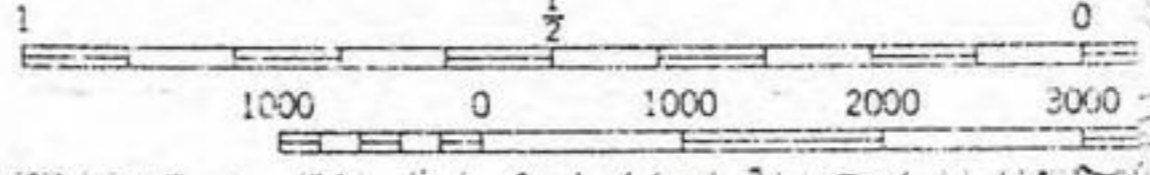
K E N T U

6

DELAWARE

Slough Cr

BLUE AND SNOW GESE



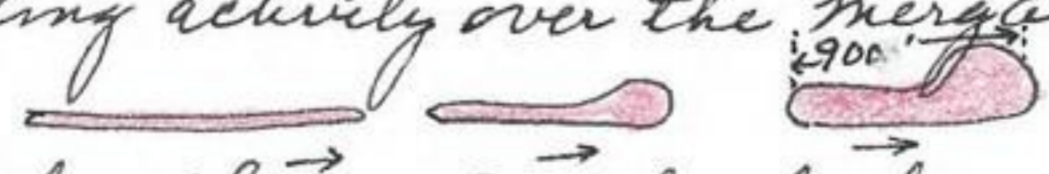
ICE

DELAWARE RIVER

Thompsonville

The female percentage (this group could include ♂ juveniles of the year if they, the ♂ juveniles are similar to the females) is 54% whereas the male (adult plumage) percentage is 46% of the population. On a count of males only (548) on a second count after raft had moved into close quarters, the percentage was 49 which is 3% off the first count and shows an error introduced in counting or difference of birds as to surface or submerged individuals at the time the count is made.

At a time, after increase of raft from birds arriving from the north part of reservoir or at least beyond the area of the original group of birds, another count was made of individuals of the composite group which was 2146 birds. ^{at most Compact formation} At the beginning of this count the sun was shining from the west and males were easily differentiated from females, but at this time a cloud mass or front pushed in from the west and the males become indistinguishable from the females because of the decrease in light and contrast. (20x binoculars). This factor of contrast is also true for white gulls. Like the male mergansers, when sun shines on these birds the white is in contrast like a white light which is turned off when the sun is obscured by a thick cloud. It is my judgement that a 10% factor is represented in mergansers which are submerged at time of count, so to the figure 2146 should be added 214 birds to make a total of 2360 birds in this wintering flock of American mergansers. Actually this number does not take into account other birds in other parts of the reservoir. Because of the hunting pressure in the Azawkie area I am of the opinion that most of the mergansers, ^{however} are in the Rock Creek - Gap Point area.

It is the behaviourism of the merganser to swim into a bay or localized area and as the linear raft compacts at the forward movement, they disperse and start feeding. At this time the gulls are at their maximum feeding activity over the mergansers. The feeding pattern shifts thus:  with the raft formation spreading laterally. As the feeding ends the width of the raft is constricted again for forward movement. Noted several gulls actually make contact with mergansers which caused the merganser to dive, splash or tread water forward for 5 or 6 feet. At one time during maximum feeding activity there were 64 gulls (3 Herring, 1 Glaucous and 60 Ring-billed) feeding over and with mergansers, 62 on edge of ice, 18 on ice in middle of Gap Point Bay and 24 circulating in lake at distant points or a total of 168.

at 11:15 approx 600 snow and blue geese arrived from the north

circled the Slough Creek drainage and finally alighted in lake approx. 1/2 mi n of outlet gates. The percentages were approx. 60% snaws and 40% blues. At 11:25 a plane flew over and geese left, circled lake area and returned to exactly same area as before where they remained for rest of period of observation. Under usual light and flight pattern the impression is that there are more blue geese than snaws but when the flock turns in the sky and the backs of the geese are exposed the percentage changes definitely to a greater number of snaws. One receives the same impression in estimating ^{sex} numbers of american merganser. When the sun is shining the impression is that there is a greater number of males in the population than there are females.

At a point south of the peninsula that ends in Olive Branch Point were approx 3000 mallards resting on the edge of the ice. They remained there during the entire period of observation. With a 20x binocular, it is difficult to identify some ducks and as today was one of estimating and counting american mergansers (all figures by actual count), did not give critical attention to other birds that might have been part of small group aggregates. A 60x telescope is needed for this purpose.

Left above area at 12:30 and continued n along lake via road. Clouds moving in from w and could bring rain or snow. 16.6 red bellied woodpecker. Snow on n exposure and on road on n exposure. 17.2 head drainage. Temp. 26°F. Ice in bays. 18.2 opposite trailer area. Road too muddy to get to top of hill so returned via same route as followed. 18.3 farthest point on road. 19.6 flock 6 cardinals, 90 tree sparrows, 40 junco, downy, yellow-shafted flicker. Continued S along road but ended census at 19.6 mileage at 12:55 P.M. Road almost impassable because of soft mud in low drainages. Although temp 26°F the roads in certain areas are muddy. Ozaukee is about the only area one can use with trailer. All other areas except near Lock Creek bridge are impassable in winter. Connecting roads should be completed by next year.

Summary of birds in Perry Res. area:

American merganser 2369	Mallard 45-3-18-3000-40	blue geese 240
pintail 1-	redtail 1-	snow geese 360
greenwing teal 49-3-3-8-30	Herring gull 3	tree sparrow 80-90
ring-billed ^{necked} duck 3	glaucous 1	slate c. junco 40-40
Cinnamon teal ? 1	ring-billed gull 168	Harris sp. 13
yellow-shafted flicker 1	downy woodpecker 1-1	bluejays 4-
		red bellied woodpecker 1
		cardinal 6-12-
		chickadees B.C. 5

Perry Reservoir, Jefferson Co., Kansas

Dec. 27, 1969

Annette P and I made trip to Ozawie, thence back to Oskaloosa, thence S to Highway 24, thence to Perry Dam and return to Lawrence. Trip from 10:00 AM to 2:00 P.M.

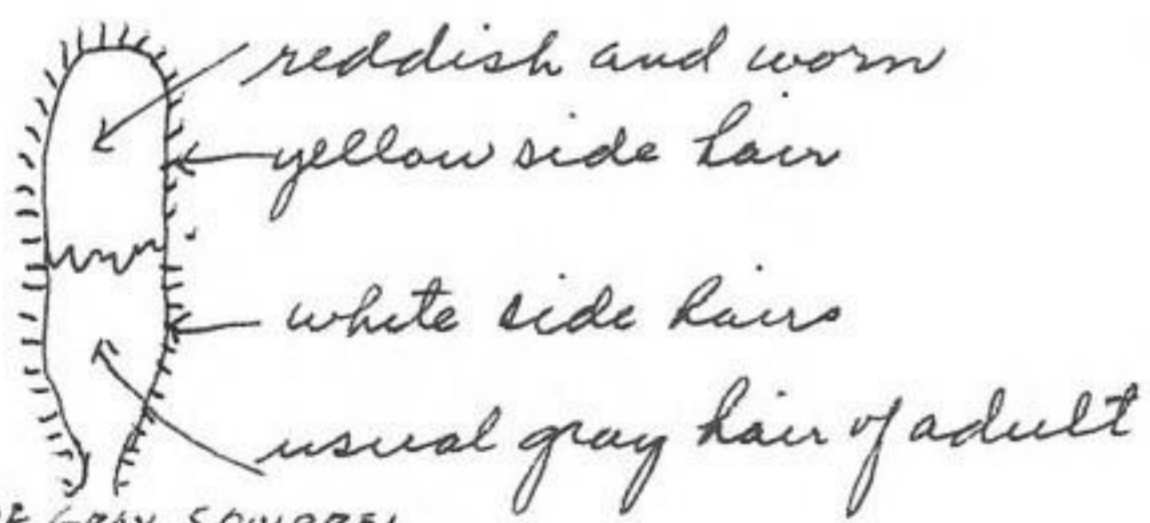
In morning roads a solid sheet of ice and navigation hazardous! Vegetation covered with ice. At Ozawie the entire reservoir was frozen and did not see a single duck or gull. On approach to Ozawie from E in Park area noted a kingfisher and a redheaded woodpecker. At Perry dam noted 35 green-winged teal, ♂ + ♀ goldpate in same identical area as observed the previous day. (E end dam). There was no ice today in this area.

at W end of dam (1/2 way between outlet gate and W. end dam) noted 4 godwits feeding at edge of water. Could not see as far N as Rock Creek or Gap Point ~~had~~ because of fog but in main reservoir N of dam up to those points there were no ducks or gulls. Water open. I would have expected many ducks here because of the frozen water in upper reservoir at Ozawie. Marsh bank at headquarters. Census selective.

Lawrence, Douglas Co., Kansas

Dec 27, 1969

At 1620 Tenn. noted young gray squirrel to have similar tails correlated to pelage change. At this stage these



TAIL OF GRAY SQUIRREL.

squirrels could be confused with young fox squirrels, because tail (at least out area) is reddish. Body gray with reddish hair on back & sides behind front legs. Behaviourism is one

of the best ways to differentiate the two species. The gray is the more aggressive and will displace and chase the large fox squirrel, but at the same time will tolerate its own species.

At bird feeder the bird community averages:

- 10 - 20 starling, 8 cardinals, 25 Eng. sparrows, 1 downy,
 - 1 hairy, 1 yellow-bellied sapsucker, ^{1 red-bellied woodpecker} 5 slate-colored juncos,
 - 1 red-bellied nuthatch, 2 blue jays.
- The nuthatch feeds on suet for approx 8 seconds and then leaves to return as if not to disclose food resource any longer than possible. The yellow-bellied sapsucker is interested more in holes pecked in the tree than suet which is readily available.

ADDENDA - MISC. NOTES 1969

Added 690302-2 to journal.