

Ketterson / Nolan Research Group Collection

This document is part of a collection that serves two purposes. First it is a public archive for data and documents resulting from evolutionary, ecological, and behavioral research conducted by the Ketterson-Nolan research group. The focus of the research is an abundant North American songbird, the dark-eyed junco, *Junco hyemalis*, and the primary sources of support have been the National Science Foundation and Indiana University. The research was conducted in collaboration with numerous colleagues and students, and the objective of this site is to preserve not only the published products of the research, but also to document the organization and people that led to the published findings. Second it is a repository for the works of Val Nolan Jr., who studied songbirds in addition to the junco: in particular the prairie warbler, *Dendroica discolor*. This site was originally compiled and organized by Eric Snajdr, Nicole Gerlach, and Ellen Ketterson.

Context Statement

This document was generated as part of a long-term biological research project on a songbird, the dark-eyed junco, conducted by the Ketterson/Nolan research group at Indiana University. For more information, please see IUScholarWorks (<https://scholarworks.iu.edu/dspace/handle/2022/7911>).

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PRAIRIE WARBLER NOTES

1954

BLOOMINGTON, INDIANA

Volume I

Through May 31

Val Nolan Jr.

Dendroica kirtlandii
begins 4/26 -
finishes before one
5th week, after
an *Dendroica*

CHRONOLOGICAL TABLE

Egg 1, 5/2, 37

Pair 30

p. 28	April 20	M30 on territory.
p. 36	21	M30 probably present.
p. 40	22	M30's dawn behavior.
p. 45	23	"
p. 47	23	M30's later behavior.
p. 48	24	M30's dawn behavior.
p. 55	25	M30's dawn behavior toward a female and male newly arrived M31.
p. 65	26	M30 encounters, courts a female.
p. 72, 74	27	30F present; courtship.
p. 76	28	Courtship.
p. 81	29	M30's behavior.
p. 85	30	Courtship.
p. 88	May 1	M30's behavior.
p. 90	2	M30 sings.
p. 93	4	30F begins to build <u>first</u> nest.
p. 97	5	30F builds slowly.
p. 103	6	"
p. 105	7	30F builds slowly, sits in nest 7 minutes.
p. 110	8	Nest incomplete.
p. 117	9	Nest advanced.
p. 120	10	Nest still unlined.
p. 123	11	Nest complete.
p. 127	12	No eggs.
p. 130	13	No eggs.
p. 133	14	Egg 1. 30F on nest at 0620.

✓

Pair 30 - 2

P. 137	May 15	Egg 2. M30 meets M31.
p. 141, 145	16	Egg 3. 30F begins to incubate at 1930, M30 accompanying her to nest.
p. 148	17	Egg 4. Incubation.
p. 150	18	Incubation.
p. 152	19	Eggs warm. M30 fights M33.
p. 155	20	Incubation.
p. 158	21	"
p. 162	22	"
p. 164	23	"
p. 167	24	"
p. 173	25	Nest partly demolished; eggs gone.
p. 177	26	Pre-nesting behavior.
p. 183, 184	27	M30 sings.
p. 185	28	Pre-nesting behavior, possibly copulation.
p. 189, 191	29	Pre-nesting behavior. Possibility that 30F mounts M30.
p. 195	30	Pair together.
p. 198, 201	31	M30 sings. 30F not building.
p. 206, 210	June 2	Pair together. 30F invites copulation. M30 fights M31.
p. 211, 214	3	M30 meets M31.
p. 216, 219	4	M30 sings.
p. 220a	5	"
p. 221	5	30F builds.
p. 223, 224	6	30F abandons fragment. M30 sings.
p. 227, 228	7	M30 sings.
p. 230	8	30F begins <u>second</u> nest.
p. 234	9	Nest progresses.

Pair 30 - 3

p. 237	June 10	Nest complete.
p. 243	11	Egg 1. M30 extends territory.
p. 248	12	Egg 2.
p. 253	14	M30 sings.
p. 256, 257	15	Incubation.
p. 259, 262	16	Incubation. M30 encounters M31.
p. 265	17	30F shades eggs.
p. 268	18	Incubation.
p. 272, 273	19	"
p. 275	20	4 eggs. M30 encroaches on T33.
p. 277	21	Incubation.
p. 281	22	"
p. 284	23	"
p. 286, 289	24	"
p. 291	25	30F on rim; eggs may have hatched. <i>ye</i>
p. 292	26	Nest fails without evidence.
p. 293	26	M30 largely silent.
p. 294, 296	27	M30 sings little, covers T30, meets adjacent males.
p. 297, 298	28	M30 sings.
p. 299	29	30F builds well developed <u>third</u> nest.
p. 305	July 1	No activity at nest.
p. 307	2	"
p. 310	3	"
p. 313	4	30F begins to incubate.
p. 317	5	Incubation.
p. 319	6	"
p. 320	7	"

Pair 30 - 4

p. 323	July 8	Incubation.
p. 326	9	"
p. 328	10	"
p. 330	11	"
p. 332	12	"
p. 333	13	"
p. 335	14	"
p. 336	15	30F on rim.
p. 337	16	"
p. 339	17	"
p. 342	18	"
p. 345	19	30's feed nestlings.
p. 346	20	Nestlings present.
p. 347	21	30's feed nestlings. M30 fights 36's on T30.
p. 349	22	Nestlings present.
p. 352	23	"
p. 354	24	4 young fledge.
p. 364	August 1	30F tends fledglings.
p. 368	7	M30 tends fledglings.
p. 370	11	Both adults tend.

Pair 31

↑ faintly marked
♂ 61

p. 60	April 25	M31 arrives, takes territory from M30.
p. 65, 66	26	M31 expands territory, encounters female.
p. 72, 75	27	M31 sings.
p. 76	28	M31 expands territory.
p. 81	29	M31's behavior before arrival of female.
p. 85	30	M31 sings.
p. 89	May 1	"
p. 90	2	"
p. 97	5	"
p. 105	7	M31 sings. Still no female.
p. 110	8	M 31 sings.
p. 117	9	31F present.
p. 120	10	M31 sings.
p. 126	12	Pair together.
p. 130	13	31F builds day-old nest.
p. 133	14	Nest incomplete.
p. 137	15	Nest lacks lining. M31 meets M30.
p. 141	16	Nest fragment abandoned. M31 sings.
p. 148	17	Pair together.
p. 150	18	31's observed.
p. 152	19	Complete <u>first</u> nest found; no eggs. ✓
p. 155	20	Egg 1.
p. 158, 159	21	Egg 2.
p. 162	22	Egg 3.
p. 164	23	M31 sings. Incubation begins.
p. 169	24	Incubation.
p. 173	25	"
p. 178, 182	26	"

Pair 31 - 2

p. 183, 184	May 27	Incubation.
p. 186	28	"
p. 189	29	"
p. 195	30	"
p. 198, 201	31	"
p. 202	June 1	"
p. 206, 209	2	Incubation. M31 fights M30.
p. 211	3	Breeding. M31 meets M30.
p. 216	4	Breeding.
p. 220	5	4 nestlings.
p. 223	6	"
p. 227	7	Feeding.
p. 230	8	4 nestlings.
p. 234	9	"
p. 238	10	"
p. 242	11	"
p. 247	12	"
p. 249	13	4 young removed, banded.
p. 257	15	M31 sings often.
p. 259, 262	16	M31 sings, tends fledglings, meets M30.
p. 266	17	31's tend young.
p. 268	18	M31 tends young, may court 31F.
p. 273	19	M31 follows 31F.
p. 275	20	31F, young not with M31.
p. 278	21	Pair together.
p. 281	22	M31 courts 31F.
p. 284	23	Only M31 seen.

h. 126/304

for M. 31's fed,
can say no
more 10

Pair 31 - 3

p. 288, 289	June 24	M31 tends young, fights M45. 31F may explore for sites.
p. 291	25	Both 31's tend.
p. 292	26	31F tends.
p. 294, 296	27	31 adults together, once go far south. Both tend.
p. 298	28	Both adults tend.
p. 303	30	Both 31's seen.
p. 305	July 1	Both 31's tend.
p. 308	2	Strange immature with 31Y.
p. 310	3	M31 sings faintly.
p. 313, 314	4	M31 tends, sings faintly.
p. 323	8	M31 tends. 31Y sunbathes. <i>Wedge T</i>
p. 326	9	M31 with young. "
p. 328	10	" "
p. 330	11	" <i>Nal corner</i>
p. 334	13	" <i>SE corner</i>
p. 363	August 1	Both 31's tend second brood of 3 fledglings, 14 days old.

*hatched
ca 7/19*

inc ca 7/16

lay ca 7/5

hatched ca 7/1

Pair 32

p. 30	April 20	M32 on territory.
p. 37	21	M32 present.
p. 45	23	M32 sings.
p. 51	24	"
p. 68, 70	26	"
p. 84	29	"
p. 89	May 1	"
p. 91	2	"
p. 102	6	32F (first observation) builds <u>first</u> nest. <i>begun ca 5/5</i>
p. 106	7	Nest incomplete.
p. 110	8	Nest unlined.
p. 117	9	No development.
p. 120	10	Nest complete. 1 Cowbird egg.
p. 123	11	No change.
p. 127	12	"
p. 131	13	No change at nest. Pair together.
p. 134	14	No change.
p. 138	15	Egg 1.
p. 142	16	Egg 2. 32F on nest at 0930.
p. 148	17	Egg 3. Egg 2 missing. 32F on nest at 1750.
p. 150	18	Egg 4.
p. 152	19	Nest fails; 1 broken egg under it.
p. 156	20	Pair together.
p. 160, 161	21	32F carries material. M32 solicitous.
p. 162	22	M32 sings.
p. 165	23	Pre-building behavior.
p. 170, 171	24	32F builds day-old <u>second</u> nest.

Pair 32 - 2

p. 175	May 25	Nest complete.
p. 181	26	No eggs.
p. 183	27	"
p. 186	28	Egg 1.
p. 190	29	Egg 2.
p. 195, 196	30	Egg 3. M32 fights M33.
p. 199	31	Egg 4; incubation begins. M32 fights M33.
p. 202	June 1	Nest fails, upset by storm.
p. 210	2	32F builds <u>third</u> nest.
p. 212	3	Building.
p. 215	4	Nest lacks final lining.
p. 220	5	Nest being lined.
p. 222	6	Nest complete. ✓
p. 226	7	Egg 1.
p. 230	8	Egg 2. Egg 1 missing.
p. 235	9	Egg 3.
p. 237, 238	10	Eggs 2 and 3 only ones present.
p. 242, 244	11	32F incubates eggs 2 and 3.
p. 250	12	Incubation.
p. 252	14	"
p. 256	15	"
p. 260, 262	16	"
p. 264	17	"
p. 268	18	"
p. 272	19	Nest fails without evidence.
p. 275	20	32F disappears. M32 encroaches on T33.
p. 277, 279	21	M32 sings.

Pair 32 - 3

p. 280, 281	June 22	M32 sings.
p. 284, 285	23	"
p. 286	24	New female appears. Courtship.
p. 288	24	New 32F begins to build <u>first</u> nest.
p. 290	25	Building.
p. 292	26	M32 sings. I do not approach nest.
p. 295	27	Nest complete.
p. 297	28	Egg 1.
p. 300	29	Egg 2.
p. 302	30	Egg 3.
p. 304	July 1	Incubation begins.
p. 307	2	Incubation.
p. 310	3	"
p. 313	4	"
p. 317	5	"
p. 319	6	"
p. 320	7	"
p. 323	8	"
p. 326	9	"
p. 328	10	4 eggs present.
p. 330	11	32F on nest.
p. 332	12	"
p. 333	13	"
p. 335	14	Nestlings present.
p. 336	15	Nest fails without evidence.
p. 337	16	M32 encounters M34 and young 34's on T32, probably meets another PW.
p. 339	17	M32 fights a 34Y. M32 and 34's range over field and orchard.

Pair 32 - 4

p. 341	July 17	Female present; M32 disregards her.
p. 342	18	Only M32 present.
p. 354	24	M32 sings.

Pair 33

p. 50	April 24	M33 on territory.
p. 62	25	M33 sings.
p. 70	26	"
p. 75	27	"
p. 83	29	"
p. 89	May 1	"
p. 98	5	33F first seen. Pair together.
p. 103	6	M33 sings.
p. 106	7	"
p. 111	8	"
p. 116	9	Silence.
p. 124	11	33F pic ks at nest material. 33's encounter other PW's.
p. 131 ⁽¹²⁷⁾	13	33F builds a day-old <u>first</u> nest.
p. 133	14	Building.
p. 139	15	"
p. 142	16	"
p. 152	19	M33 sings, fights a male PW.
p. 160	21	33F has begun to incubate.
p. 162	22	Incubation.
p. 166	23	"
p. 170	24	"
p. 174	25	Nest demolished.
p. 182	26	M33 sings little.
p. 183	27	"
p. 186	28	M33 sings. 33F possibly seen.
p. 190	29	33's present, join other birds mobbing black snake.

Pair 33 - 2

p. 194, 196	May 30	M33 sings. 33F disappears permanently.
p. 199	31	M33 fights M32.
p. 203	June 1	M33 sings, seems to attempt to copulate with a branch.
p. 208	2	M33 sings.
p. 212	3	"
p. 219	4	"
p. 221	5	"
p. 223	6	"
p. 226	7	"
p. 231	8	M33 fights other males.
p. 233	9	M33 sings.
p. 238	10	"
p. 243	11	"
p. 250	12 13	" Silence
p. 252	14	"
p. 256	15	"
p. 259	16	" little, friendly. Aggressive
p. 265	17	M33 sunbathes.
p. 268	18	M33 sings.
p. 272	19	M33 sings, does not challenge M32's encroachment.
p. 275	20	M33 disappears.

Pair 34*will not be
063*

p. 62	April 25	M34 arrives, takes up territory.
p. 70	26	M34 sings infrequently.
p. 84	29	"
p. 103	May 6	34F first seen.
p. 107	7	Beth 34's seen.
p. 111	8	M34 sings.
116 p. 124	9 11	not found "
p. 127	12	Pair together.
p. 139	15	34F flies to M34.
p. 144	16	First nest found, 34F incubating 1 Cowbird and 3 PW eggs.
p. 146	17	Incubation.
p. 151	18	"
p. 153	19	"
p. 156	20	"
p. 160	21	"
p. 162	22	"
p. 164, 165	23	"
p. 169	24	"
p. 173, 175	25	Nest fails. 1 egg has been removed.
p. 181	26	34's present.
p. 186	28	M34 sings on V and X.
p. 190, 193	29	Pair together. M34 fights M35.
p. 194, 197	30	M34 sings. Pair together.
p. 199	31	M34 sings.
p. 208	June 2	M34 fights M35.
p. 213	3	M34 sings often.

*6/29 ca 5/7
279 ca 5/12*

Pair 34 - 2

p. 215, 216	June 4	M34 sings.	
p. 220	5	"	
p. 223, 224	6	<u>Second</u> nest found, 34F incubating.	
p. 226	7	Incubation.	
p. 231	8	4 eggs present.	
p. 235	9	Incubation.	107 5/29
p. 237	10	4 eggs.	inc 6/1
p. 242	11	Incubation.	hatched 1/12
p. 250	13	34F on nest.	
p. 252	14	34F feeds nestlings.	
p. 256	15	Nestlings present.	
p. 260	16	"	
p. 265	17	"	
p. 268	18	M34 feeds nestlings.	
p. 272	19	"	
p. 275	20	4 nestlings present.	
p. 277	21	4 young fledge.	
p. 287	24	M34 sings.	
p. 293	26	34's present.	
p. 300	29	M34 sings.	
p. 304	July 1	M34 tends fledglings.	
p. 313	4	Only M34 seen.	
p. 316	5	M34 tends.	027
p. 327	9	"	11
p. 336	15	"	h
p. 337	16	M34 tends young on T32, fights M32.	150 073
p. 339	17	M34 tends young on T32, T33, T44.	300 071

1. 100 1000
 1000 1000 5

Pair 34 - 3

p. 349, 350	July 22	34F forages on T35. Young 34's move noisily over T34. <i>24/25/26</i>
p. 352	23	Second brood nest with 4 young found. M34 feeds nestlings. First brood young present. <i>24/25/26</i>
p. 354	24	Nestlings present.
p. 356	25	"
p. 357	26	4 young fledge. Cowbird egg with em- bryo found in nest.

7/17 - 1st
 7/16 - 2nd
 7/13 - 3rd
 6/29 - 4th

Pair 35

p. 18	April 18	M35 may be on territory.
p. 31	20	M35 probably present.
p. 37	21	M35 present, on west V.
p. 43	22	M35 claims all V.
p. 46	23	35F arrives.
p. 51	24	M35 on V and X.
p. 62	25	35F explores, nest-shapes, picks up webs.
p. 70	26	35F begins to build.
p. 80	28	Nest fragment abandoned.
p. 84	29	M35 sings, moves around a lot.
p. 100	May 5	<u>First nest</u> (complete) found; 1 Cowbird egg.
p. 103	6	No PW eggs.
p. 106	7	Egg 1.
p. 111, 114	8	Egg 2. 35F on nest at 0745.
p. 116	9	Egg 3.
p. 120	10	Egg 4 probably present; incubation.
p. 124	11	Incubation.
p. 127	12	"
p. 132	13	"
p. 134	14	"
p. 139	15	Incubation. M35 may go into field.
p. 143	16	35F incubates eggs 1 & 2, Cowbird egg. Pair together.
p. 146	17	Incubation.
p. 151	18	"
p. 153	19	"
p. 156	20	"

Pair 35 - 2

p. 160	May 21	Eggs unhatched at 1100.	
p. 162	22	Cowbird egg has hatched.	
p. 164	23	At least 1 PW egg is unhatched.	<i>1st long period after new hatched</i>
p. 169	24	1 Cowbird and 1 PW nestling, 1 egg.	
p. 173, 175	25	1 Cowbird nestling, 1 PW egg.	
p. 180	26	Nest fails without evidence.	
p. 186	28	M35 sings.	
p. 189	29	<u>Second</u> nest being built, lacks lining.	
p. 194, 197	30	Final lining being put in.	
p. 199	31	No eggs.	✓
p. 204	June 1	Egg 1.	
p. 208	2	Egg 2. M35 fights M34.	
p. 213	3	Egg 3. Egg 2 missing. 35F on nest at 1040.	
p. 215, 216	4	35F leaves nest at 0537, returns, lays egg 4, begins full incubation.	
p. 220	5	Eggs warm.	
p. 222	6	Incubation.	
p. 226	7	"	
p. 232	8	Nest fails without evidence.	
p. 235	9	<u>Third</u> nest being built.	
p. 236, 238	10	Building.	
p. 242	11	"	6/13 - 2951
p. 265	17	Old nest fragment found. M35 sings.	
p. 272	19	Nest has failed. 35F builds well developed <u>fourth</u> nest, honeycreeper & sparrow.	
p. 277	21	No activity at nest.	
p. 284	23	"	2951 - 6/22

Pair 35 - 3

p. 287	June 24	35F begins to incubate.
p. 290	25	Incubation.
p. 293	26	"
p. 295	27	"
p. 297	28	"
p. 300	29	Nest fails without evidence.
p. 303	30	35F begins to build <u>fifth</u> nest.
p. 304	July 1	Building.
p. 310	3	Nest complete.
p. 313	4	Egg 1.
p. 316	5	35F on nest at 1200.
p. 319	6	35F on nest at 0800.
p. 320	7	Incubation.
p. 324	8	Nest fails without evidence. M35 sings, gives anger calls.
p. 326, 327	9	M35 sings, gives anger calls.
p. 328	10	M35 sings.
p. 333	13	M35 sings, gives anger calls.
p. 335	14	" "
p. 336	15	M35 sings.
p. 338	16	"
p. 340	17	"
p. 342	18	M35 courts a female.
p. 344	19	"
p. 346	20	M35 sings often.
p. 348	21	M35 courts a female.

Pair 35 - 4

p. 349, 350	July 22	M35 courts 34F as she forages on T35.
p. 352	23	M35 sings.
p. 354	24	M35 sings.

Pair 36

p. 52, 54	April 24	M36 on territory.
p. 84	29	Female probably present.
p. 86, 87	30	36F present. M36 sings, fights M37.
p. 89	May 1	M36 sings.
p. 101	6	Courtship.
p. 108	7	"
p. 116	9	Silence.
p. 120	10	M36 sings.
p. 124	11	36F builds day-old <u>first</u> nest. M36 solicitous.
p. 129	12	Nest incomplete.
p. 132	13	Nest incomplete, M36 in it.
p. 134	14	36F builds.
p. 140	15	Nest lacks final lining.
p. 142, 144	16	M36 probably on II. Nest complete.
p. 146	17	No eggs. M36 reacts to my approach.
p. 151	18	No eggs. ✓
p. 153	19	Egg 1. Nest holds water after rain.
p. 155, 156	20	Egg 2. M36 probably on II.
p. 160	21	Egg 3. 36F on nest at 1110. M36 probably on II.
p. 161	21	36F begins to incubate at 1937.
p. 162	22	Egg 4.
p. 164	23	Incubation.
p. 169, 170	24	Incubation. M36 probably on II.
p. 174	25	Incubation.
p. 178, 180	26	"
p. 183, 184	27	Eggs warm.

Pair 36 - 2

p. 187	May 28	Incubation.
p. 193	29	"
p. 197	30	"
p. 200	31	"
p. 204	June 1	"
p. 208, 209	2	Eggs unhatched at 1800.
p. 211, 213 214	3	3 nestlings and 1 egg at 0820. 36F on nest thereafter.
p. 216	4	Breeding.
p. 220	5	"
p. 222, 224	6	36F breeds 3 young.
p. 226	7	Feeding.
p. 230	8	Nestlings present.
p. 233	9	Nest demolished.
p. 239	10	M36 sings oddly.
p. 240	11	36F builds well developed <u>second</u> nest.
p. 247	12	Nest complete.
p. 256, 257	15	No activity at nest. 9991 ✓
p. 261, 262	16	No activity at nest. M36 may be on II.
p. 264	17	3 eggs present. M36 goes to II.
p. 268	18	36F begins to incubate.
p. 271	19	Incubation. M36 on T37.
p. 276	20	Incubation.
p. 277	21	"
p. 282	22	"
p. 283	23	"
p. 287	24	"

Pair 36 - 3

p. 290	June 25	Incubation.
p. 292	26	"
p. 295	27	"
p. 297	28	"
p. 301	29	36F not at nest. <i>later</i>
p. 302	30	36F breeds 4 young.
p. 304	July 1	Breeding.
p. 307	2	M36 near nest.
p. 309	3	Breeding.
p. 312	4	36F at nest.
p. 315	5	36F feeds.
p. 318	6	"
p. 320	7	"
p. 323	8	Nestlings present.
p. 325	9	3 young removed and banded.
p. 333	13	36F probably feeds fledglings.
p. 347	21	Both 36's tend young on T30.

*at least 11 days
nestling
period*

Pair 37

p. 43	April 22	M37 on territory.
p. 46	23	37F arrives.
p. 52	24	37's' courtship.
p. 63	25	37F begins to build.
p. 69	26	Building.
p. 74	27	"
p. 80	28	Nest complete.
p. 84	29	No eggs.
p. 86, 87	30	No eggs. M37 fights M36, courts 37F.
p. 89	May 1	No eggs.
p. 91	2	Egg 1. ✓
p. 92	3	Egg 2.
p. 94	4	Egg 3.
p. 100	5	Egg 4; incubation.
p. 101	6	Incubation. M37 on T36.
p. 108	7	Incubation.
p. 113	8	Eggs warm.
p. 116	9	Incubation.
p. 120	10	"
p. 125	11	Eggs warm.
p. 129	12	Incubation.
p. 132	13	"
p. 135	14	"
p. 140	15	Eggs warm.
p. 144	16	Incubation.
p. 146	17	37F on nest.
p. 151	18	2-day old nestlings.

13 day
P.H.
be aware many
it can
use
holding on

to 202

Pair 37 - 2

p. 153	May 19	M37 feeds.	
p. 156	20	Nestlings present.	
p. 160	21	4 nestlings.	
p. 162	22	"	
p. 164	23	"	
p. 169	24	"	
p. 174, 175	25	"	
p. 178, 182	26	Both adults feed.	
p. 183, 184	27	Both adults feed. 37F breeds.	
p. 187, 188	28	4 young fledge after 0820.	
p. 209	June 2	Pair together. 37F carries food.	on
p. 226	7	M37 sings.	
p. 230	8	Pair together. 37F carries food.	on
p. 246	12	M37 feeds fledglings.	on
p. 252, 253	14	37's tend young, perhaps court.	on
p. 255	15	37's tend.	on
p. 260	16	Fragments of second brood nest. 37's tend.	on
p. 264	17	37's tend at least 3 young.	on
p. 268	18	37F tends.	on
p. 271	19	37's tend at least 3 young.	on
p. 276	20	M37 tends 2 young.	on
p. 277, 278	21	M37 tends. 37F present.	on
p. 280, 282	22	" "	on
p. 283	23	M37 tends (probably) 4 young.	on
p. 287	24	M37 tends 3 young.	on
p. 290	25	M37 tends on IV-S.	25 1978
p. 292	26	M37 tends. 1 young begs of another.	on

12 days in nest

Pair 37 - 3

p. 295	June 27	M37 sings.	
p. 297	28	M37 and young present.	021
p. 301	29	M37 tends.	021
p. 302	30	M37 sings.	
p. 304, 305	July 1	M37 and young are on II.	7 5 80
p. 307	2	M37 sings on T37 and II.	
p. 309, 310	3	M37 sings on T37, later near young on II, may fight male on T46.	7 5 80
p. 312	4	M37 sings on T37 and II.	
p. 331	11	Male sings on T37.	
p. 344	19	"	
p. 346	20	M37 present.	
p. 348	21	M37 sings, pays little attention to 38's, which are on T37.	
p. 353	23	M37 is molting.	

Pair 38

p. 20	April 18	M38 probably on territory.
p. 31	20	M38 sings.
p. 43	22	"
p. 46	23	M38 present.
p. 52	24	Behavior before arrival of female.
p. 63	25	M38 present.
p. 71	26	M38 sings.
p. 74	27	38F arrives. Courtship.
p. 91	May 2	M38 sings.
p. 92	3	"
p. 100	5	M38 present.
p. 108	7	Long silence.
p. 114	8	<u>First</u> nest found; contains 2 eggs.
p. 115	9	Egg 3.
p. 120	10	Egg 4; incubation.
p. 125	11	Incubation.
p. 129	12	"
p. 135	14	Nest has failed, with 1 egg missing.
p. 140	15	38F builds day-old <u>second</u> nest.
p. 146	17	No activity at nest.
p. 151	18	" ——— Egg 1
p. 153	19	"
p. 156	20	M38 sings.
p. 160	21	38F on nest at 1130. — Inc beg
p. 162	22	Incubation. — 5/23 fails
p. 171	24	Nest has failed without evidence.
p. 175	25	<u>Third</u> nest found, nearly complete.

Pair 38 - 2

p. 180	May 26	38F builds.	✓
p. 193	29	Eggs 1 and 2.	
p. 194	30	38F on nest at 0830.	
p. 200	31	4 eggs warm.	
p. 204	June 1	Nest fails without evidence.	
p. 208, 209	2	M38 sings speradically.	
p. 218	4	Pair together, another male nearby.	
p. 220, 221	5	Pair together.	
p. 224	6	<u>Fourth</u> nest found; contains 1 egg.	
p. 226	7	Egg 2.	
p. 229, 230	8	Egg 3.	
p. 233	9	Egg 4; incubation.	
p. 236	10	Incubation.	
p. 246	12	"	
p. 250	13	Incubation; 4 eggs.	
p. 254	14	"	
p. 255	15	"	
p. 261	16	"	
p. 263	17	"	
p. 271	19	"	
p. 276	20	38F on nest. <i>hatched</i>	
p. 278	21	Nestlings present.	
p. 281	22	"	
p. 284	23	38F on rim.	
p. 288	24	"	
p. 291	25	38F feeds.	

Pair 38 - 3

p. 293	June 26	Nestlings present.	
p. 295	27	M38 feeds.	
p. 297	28	Nestlings present.	
p. 301	29	4 young fledge.	
p. 302	30	38F tends fledglings.	on
p. 306	July 1	"	on
p. 309	3	Beth 38's tend near T46.	on
p. 323	8	M38 tends well south on T46.	10-12
p. 348	21	38F tends young on T37.	200-250
p. 354	24	Beth 38's tend on T37.	250
p. 356	25	M38 tends on T37.	250

Pair 39

p. 20	April 18	M39 on territory.
p. 23	19	M39 fights M40.
p. 31	20	"
p. 38	21	M39 sings.
p. 43	22	"
p. 46	23	"
p. 53	24	"
p. 63	25	"
p. 71	26	Silence. — <i>arrives 4:15</i>
p. 73	27	39F probably present.
p. 87	30	M39 sings.
p. 89	May 1	"
p. 92	3	"
p. 95	4	Nest fragment found.
p. 100	5	No development of nest fragment.
p. 107	7	M39 sings.
p. 112	8	M39 resists M40. 39F present.
p. 119, 121	10	M39 sings.
p. 122, 125	11	39F gathers nest material.
p. 127	12	39F builds day-old <u>first</u> nest.
p. 135	14	Building.
p. 140	15	"
p. 144	16	Nest looks complete.
p. 146	17	No activity at nest.
p. 151	18	"
p. 153	19	"

Pair 39 - 2

p. 156	May 20	No activity at nest.
p. 161	21	Nest has failed, rests on side; probably blown over May 19-20.
p. 188	28	39's seen. Abandoned nest fragment found.
p. 194	30	M39 sings.
p. 200	31	"
p. 209	June 2	"
p. 217	4	"
p. 220a	5	"
p. 222, 224	6	"
p. 225	6	39F followed during inattentive period.
p. 226, 227	7	M39 sings.
p. 229	8	"
p. 233	9	"
p. 245	11	39F builds well developed <u>third</u> nest.
p. 255	15	No activity at nest.
p. 261	16	39F begins to incubate.
p. 263	17	Incubation.
p. 267	18	"
p. 270, 273, 274	19	"
p. 276	20	"
p. 278	21	"
p. 281	22	"
p. 283	23	"
p. 288	24	"
p. 290	25	"
p. 293	26	"

2nd pair later in life

2nd pair later in life

very large

Pair 39 - 3

p. 295	June 27	Incubation. - <i>hatched</i>
p. 297	28	39F on nest.
p. 301	29	M39 feeds nestlings.
p. 302	30	" <i>fail 6/30</i>
p. 304, 305	July 1	Nest fails without evidence. M39 may feed Cowbird fledgling of Pair 41.
p. 307	2	M40 visits T39 without challenge.
p. 309	3	Very long silence. M39 may tend Cowbird.
p. 313	4	Silence.
p. 315	5	(See notes re male PW and Cowbird fledgling.)
p. 322, 324	7	M39 sings often, fights M40.
p. 325	9	M39 sings often.
p. 329	10	"
p. 331	11	"

Pair 40

p. 23	April 19	M40 on territory, fighting M39.
p. 31	20	M40 fights M39. Female may be present.
p. 38	21	M40 sings. Female may be present.
p. 43	22	M40 sings.
p. 46	23	"
p. 53	24	M40 sings, goes onto T39.
p. 63	25	Silence.
p. 71	26	"
p. 73	27	L4OF (first observation) begins to build <u>first nest</u> .
p. 79	28	Building slowly.
p. 87	30	Nest probably complete.
p. 89	May 1	No eggs.
p. 91	2	"
p. 92	3	"
p. 95	4	Egg 1. ✓
p. 100	5	Egg 2. Egg 1 missing.
p. 104	6	Only egg 2 present.
p. 107, 108	7	Egg 3; incubation begun.
p. 112	8	Nest fails without evidence. M40 meets M39.
p. 115	9	Courtship.
p. 120	10	M40 sings.
p. 122	11	L4OF builds day-old <u>second nest</u> .
p. 129	12	Nest advanced.
p. 135	14	Nest looks complete. 5/16-1991
p. 146, 149	17	No activity at nest.

Pair 40 - 2

p. 151	May 18	No activity at nest.
p. 153	19	40F begins to incubate.
p. 156	20	Incubation.
p. 161	21	"
p. 163	22	"
p. 171	24	"
p. 176	25	"
p. 180	26	"
p. 183	27	"
p. 187	28	Nest fails without evidence.
p. 194, 197	30	M40 sings.
p. 200, 201	31	M40 sings, sometimes faintly.
p. 227	June 7	M 40 sings.
p. 229	8	"
p. 233	9	"
p. 246	11	"
p. 250	13	40's present.
p. 255	15	M40 sings.
p. 261	16	"
p. 263	17	40's present.
p. 267	18	M40 probably meets 43's.
p. 270	19	40F builds well developed <u>fourth</u> nest.
p. 283	23	No activity at nest.
p. 287	24	40F begins to incubate.
p. 290	25	Incubation.
p. 293	26	"

058' 6/21

Pair 40 - 3

p. 295	June 27	Incubation.
p. 297	28	"
p. 301	29	"
p. 302	30	"
p. 304	July 1	"
p. 309	3	"
p. 313	4	"
p. 316	5	40F feeds nestlings.
p. 318	6	"
p. 320	7	Nest fails without evidence.
p. 322, 324	8	M40 sings, fights M39.
p. 326	9	M40 sings.
p. 329	10	Long silence.
p. 331	11	Long silence. 40's not seen again.

Pair 41

p. 22	April 19	M41 probably on territory.
p. 44	22	M41 on territory.
p. 53	24	41F present. Courtship.
p. 63	25	M41 sings rarely.
p. 69	26	41F begins to build <u>first</u> nest.
p. 73	27	Nest advanced.
p. 79	28	Nest seems complete.
p. 87	30	No activity at nest.
p. 91	May 2	"
p. 95	4	"
p. 100	5	"
p. 101, 104	6	41F incubates. M41 sings.
p. 107, 109	7	41F not at nest.
p. 112, 114	8	"
p. 115	9	"
p. 119, 121	10	<u>Second</u> nest found, half finished.
p. 122, 125	11	41F builds; no final lining. ✓ ?
p. 129	12	Nest complete.
p. 132	13	Egg 1.
p. 136	14	Egg 2.
p. 140	15	Nest fails without evidence; eggs still present. <i>went to failure</i>
p. 149	17	M41 sings. <i>nest contents same</i>
p. 151	18	"
p. 153	19	"
p. 184	27	Second nest now contains only a Cow-bird egg. <i>and some eggs</i>
p. 187	28	M41 sings.

Pair 41 - 2

p. 189	May 29	M41 sings.
p. 194	30	"
p. 201	31	" - 1 egg
p. 209	June 2	" - 1 egg
p. 218	4	"
p. 220a	5	"
p. 222	6	"
p. 227	7	"
p. 229	8	"
p. 236	10	"
p. 241	11	"
p. 250	13	"
p. 252	14	41's present.
p. 255	15	Probable <u>third</u> nest found, in use.
p. 261	16	41's feed nestlings about 4 days old.
p. 263	17	Feeding.
p. 267	18	Nestlings present.
p. 270, 273, 274	19	Feeding.
p. 276	20	1 Cowbird, at least 1 FW nestling.
p. 278	21	Nestlings present.
p. 280, 282	22	1 Cowbird, 1 FW nestling.
p. 283	23	Young fledged.
p. 287	24	41F seen.
p. 295	27	Possible courtship.
p. 309	July 3	M41 or M39 tends Cowbird. - 5m
p. 313	4	M41 sings.
p. 315	5	41's tend FW fledgling.
p. 318	6	41's present, 41F tending FW. 5m

Pair 41 - 3

p. 325	July 9	Both 41's present, 41F tending PW fledgling.	on
p. 331	11	41F tends PW fledgling.	on

*fair weather, 142*Pair 42

p. 138	May 15	M42 on territory.
p. 142	16	M42 sings.
p. 148	17	"
p. 155	20	"
p. 160	21	"
p. 162	22	42F present. Courtship.
p. 165	23	42F builds day-old <u>first</u> nest.
p. 170	24	Nest advanced.
p. 173	25	No activity at nest.
p. 178	26	"
p. 189, 192	29	No activity at nest. M42 sings.
p. 195	30	42F begins to incubate.
p. 198	31	Incubation.
p. 202	June 1	"
p. 207	2	"
p. 212	3	"
p. 216, 217, 219	4	"
p. 220	5	"
p. 223	6	"
p. 227, 228	7	Nest fails without evidence.
p. 230, 232	8	Pre-nesting behavior.
p. 234	9	Both 42's present.
p. 237, 238	10	M42 sings, engages in building behavior. No female seen.
p. 242, 244	11	Only M42 seen.
p. 247	12	M42 sings.
p. 249	13	42F (?) builds day-old <u>second</u> nest.

Pair 42 - 2

p. 253	June 14	Nest looks complete.
p. 259	16	No activity at nest. - 10745
p. 265	17	"
p. 268	18	"
p. 273	19	42F begins to incubate.
p. 278	21	Incubation.
p. 281	22	"
p. 286	24	"
p. 290	25	"
p. 292	26	"
p. 294	27	"
p. 297, 298	28	Nest fails without evidence.
p. 299, 300	29	M42 sings, sunbathes. 42F disappears.
p. 302	30	M42 sings.
p. 304, 306	July 1	Long silence. 37's use II today and hereafter without challenge.

Pair 43

p. 204	June 1	Nest found; 3 eggs. Empty nest nearby.
p. 209	2	Eggs hatch: 3 nestlings.
p. 214	3	Brooding.
p. 217	4	Nestlings present.
p. 220a	5	2 nestlings remain.
p. 222	6	2 nestlings.
p. 226	7	"
p. 229	8	"
p. 233	9	"
p. 236	10	"
p. 245	12	2 young fledge.
p. 267	18	43's tend fledglings near T40.
p. 295	27	M43 tends 2 young. PW nest found; no activity.
p. 297	28	M43 tends; 43F not seen.
p. 301	29	No activity at nest found June 27; nothing seen hereafter.

229 - 5/15
 299 - 5/19
 400 5/22

Pair 14

p. 162	May 22	M44 on territory.
p. 166	23	M4F present; courtship and pre-building behavior.
p. 170	24	M44 sings regularly.
p. 174	25	"
p. 181	26	"
p. 183	27	"
p. 186	28	"
p. 195, 196	30	M4F begins to build.
p. 199	31	Building.
p. 203	June 1	Nest fragment abandoned.
p. 207	2	M4F begins to build <u>first</u> nest, once sits in it 8-10 minutes.
p. 212	3	Building.
p. 216, 219	4	Nest advanced.
p. 220a, 221	5	Nest incomplete.
p. 223	6	Nest complete.
p. 226	7	No eggs. ✓
p. 231	8	Egg 1.
p. 234	9	Egg 2.
p. 238	10	Egg 3.
p. 243	11	M4F at nest. M44 extends territory to take in M02's land.
p. 247	12	Incubation.
p. 250	13	"
p. 253	14	Nest demolished.
p. 256, 258	15	M44 sings sporadically.
p. 259	16	M4F builds day-old <u>second</u> nest.

Pair 44 - 2

p. 265	June 17	Nest looks complete.
p. 272	19	No activity at nest.
p. 277	21	"
p. 281	22	Nest fails without evidence. M44 sings.
		M4F disappears.
	23	No sign of M44.
p. 286, 289	24	No sign of M44.
p. 291	25	A male sings.
p. 292, 293	26	Silence. 44's not seen again.

Pair 45

p. 130	May 13	Pair together on III-III S.
p. 133	14	M45 is chased by Field Sparrow, may explore once.
p. 141	16	M45 may sing.
p. 155	20	A male sings.
p. 164	23	"
p. 170	24	"
p. 173	25	"
p. 202	June 1	"
p. 220	5	"
p. 234	9	"
p. 241, 243	11	"
p. 247	12	Long silence.
p. 250	13	A male sings.
p. 284	23	"
p. 286, 288, 289	24	"
p. 290	25	M45 sings, seems unmated.
p. 292	26	M45 sings.
p. 294	27	M45 seems unmated.
p. 298	28	M45 sings.
p. 303	30	"
p. 305	July 1	"
p. 308	2	M45 sings, chases a FW.
p. 311	3	M45 sings, seems belligerent.
p. 313	4	M45 sings.
p. 330	11	M45 sings on southeast III.

Pair 46

p. 135	May 14	M46 may be on territory.
p. 214	June 3	Pair probably seen.
p. 220a	5	Pair together. 46F may carry food.
p. 223	6	M46 sings.
p. 229	8	"
p. 236, 237	10	"
p. 246	11	Nest found, 46F finishing it.
p. 255, 257	15	No activity at nest.
p. 261	16	"
p. 264	17	46F begins to incubate.
p. 268	18	Incubation.
p. 271	19	"
p. 276	20	"
p. 278	21	"
p. 280	22	"
p. 283	23	"
p. 287	24	"
p. 290	25	"
p. 293	26	"
p. 295	27	"
p. 297	28	46F on nest.
p. 301	29	46F feeds.
p. 302	30	46F at nest.
p. 304, 305	July 1	Nest fails after 0620, without evidence.
p. 307	2	46's not seen.
p. 312	4	Silence. 46's not seen again.

Males 01 and 02MO1

p. 54	April 24	MO1 on territory.
p. 63	25	MO1 sings.
p. 69	26	"
p. 73	27	"
p. 87	30	"
p. 89	May 1	"
p. 91	2	"
p. 101	6	MO1 sings steadily, seems to explore for nest sites.
p. 108	7	MO1 sings.
p. 112	8	MO1 sings, behaves oddly.

MO2

p. 192	May 29	MO2 on territory.
p. 195, 196	30	MO2 sings, explores nest sites, seems unmated.
p. 199	31	MO2 sings, may flutter.
p. 203	June 1	MO2 sings.
p. 207	2	"
p. 212	3	"
p. 219	4	"
p. 223	6	"
p. 227	7	"
p. 231	8	MO2 seems to have disappeared. He prob- ably never was mated.

April 10, 1954

First trip on study area this year. Sun shining through a faint cloud haze. Temperature 65° at 0900. Moderately strong south wind. Present from 0915 to 1045.

IX - Field Sparrow sings, Jay calls. Black cherry and tulip are just beginning to leaf out here.

IIIS - Field Sparrows are numerous, perhaps ten here. At the moment there is little song. Meadowlarks sing and call to the south, and one flies up from III S. Cowbird whistles. Fsp

Some American elms are beginning to put out small leaves. A hickory sapling has large leaf buds. Sassafras leaf buds are swelling. Redbud flower buds show color but have not opened.

III - In the woods to the west, Cardinal, titmouse and Flicker are singing. Two Field Sparrows are in a pursuit and another pair remains together in the low brush. Field Sparrows are singing more; Towhee's song. A Blue-gray Gnatcatcher sings by the little woods. [The ornithology class found the species in Bloomington today for the first time this season.] Fw

III looks as usual except that there are several stakes on it. The vegetation here shows little green except for a couple of escape bush honeysuckles. Unless you look at individual trees most of the vegetation could pass for late winter's. Box elder flowers are blooming on two trees.

Cowbirds are whistling frequently and after five minutes here I hear a Bachman's Sparrow begin to sing rather frequently. Its song varies; probably there is only one on III so far. Field Sparrows are frequent, quite noisy. *Bach*

Meadow - Little change here.

Orchard - One gnatcatcher or perhaps two are calling. A second Bachman's Sparrow is here. Nothing else of note or in any way different from the preceding areas except that the hawthorns are beginning to leaf out a little. *Bach*

II & I - Look and sound like the rest of the fields

IV S - Again I find stakes here, this time in several places.
No indications of purpose.

A Canada Goose flies up, apparently from M 3 & M 17's old hill but possibly from the lake. It is very near me, low, noisy.

IV N - More stakes.

VI - Many stakes, trees notched and blazed. I'm beginning to be pretty alarmed at this and will go in and try to find out what is going on.

1045 - I leave.

Ralph Collins has investigated and found that a golf course is going to be built here this summer. He knows no details

but it seems likely that I'll have to curtail my operations
or move.

April 11, 1954

Cloudy in the early morning after rain yesterday from noon on, in showers. Clearing just before noon for the rest of the day. Temperature 56 at 0830. Present with Jon Rickert and his cousin from 0845 to 0945.

We walked over the entire area except III, VII, VIII. In every warbler field, no matter how remote, there are golf course stakes. Clearly all that will be left will be a few acres on the far northeast, well beyond the area I've studied in the past.

No new developments regarding birds or vegetation. We heard a Purple Finch, saw a flock of some 30 Golden Plover fly over. Hermit Thrush is here. Antennaria is getting ready to bloom soon; flower stems are about one inch high.

0945 - We leave.

[We then began to scout around for a substitute area, driving toward Morgan-Monroe. We found a suitable place of many acres on a road running east from Hindustan. I'll explore it later, get details on ownership, acreage, etc. I haven't decided yet what my plans for the summer will be and can't till I learn when the golf course work will begin.]

April 12, 1954

A sunny day, the temperature 45° at 0600. Present from 0600 to 0730. As I leave home a Sycamore Warbler sings in the yard.

Sheds in the field behind our house - Two pairs of

Song Sparrows sing in this area. Bewick's Wren sings.

A Robin is building a nest.

Robin

VII - Two Bachman's Sparrows sing. Also a Carolina Wren.

Field Sparrows, Towhees, a Brown Thrasher. Little or

nothing is green here except for very small leaves on

black cherries. Tulip poplars have no leaves. One

sassafras has big leaves.

Back

I at 0615 - Many Field Sparrows singing; also a Towhee; little else. A Cowbird flies over.

VI - Many Field Sparrows present, several in pairs. Chickadees and a gnatcatcher sing. A Cowbird gurgles.

FSR

IV-S - Singing are gnatcatchers, chickadees, Cardinals, Towhees; a Louisiana Water-thrush to the southeast in the ravine. Also present are a Brown Creeper, Hermit Thrush, Fox Sparrow, both kinglets.

0730 - I leave.

April 13, 1954

A warm, sunny day; temperature 78° at 1530. Present from 1550 to 1750.

IX - Silent.

Woods - One maple has big flower buds, some leaf buds. A Zebra Swallowtail flies by. Hackberry and ash have flowers. I find a Crow's nest 40' high in the fork of a black walnut. Crow

Rest of area - No developments.

1750 - I leave.

April 14, 1954

A warm day, partly cloudy and threatening to rain all afternoon; west wind; temperature 72° at 1700. Present from 1710 to 1810.

IX - Nothing of note.

IIIS - A Bachman's Sparrow is singing.

III - Singing or calling are Cowbird, Cardinal, Robin, Field Sparrow, Towhee, gnatcatcher, Bachman's Sparrow. A pear tree is in bloom.

II - Several Towhees call. Hairy Woodpecker to the east; Red-belly to the north. Singing are Cardinal, Cowbird, titmouse, chickadee.

I - There is a small cut through some saplings, obviously done today by surveyors. It will not affect Prairie Warblers yet. Present are a gnatcatcher, Towhee, chickadee.

IVS - 50 Crows are together on the ground in the broomsedge and sumac. Also here are gnatcatcher, Chickadee, Cardinal, Towhee, Red-belly, Field Sparrow. A surveyor's line is cut through here too.

IVN - Rabbit. The usual birds. Some 15 to 20 saplings are balled and burlapped in their holes north of the wire. No harm to Prairie Warbler habitat yet. A Louisiana Water-thrush sings in the ravine.

1810 - I leave.

April 15, 1954

Mostly cloudy with the sun coming through at times; steady, moderate south wind; rain last night; temperature 70° at 0830. Present from 0830 to 1100.

Many House Wrens arrived during the night, the first this year. A Red-eyed Vireo sings in the yard; Myrtle Warblers are present and singing.

IX - It is quite green. Cherry leaves are 1" long, Tulip leaves 1" square; redbud flowers are open but still purple. A gnat-catcher is here.

IIIS - A flock of 40 Field and Chipping Sparrows flies up, the latter singing some. A Grasshopper Sparrow sings for the first time to the south. Bachman's Sparrow singing. Fly

III - It's getting green here too, with cherry leafed out, a few box elder; goldenrod is coming up. The flowers of the big maples in the woods make them quite green; they have large leaf buds. Beech has large bronze leaf buds. Field Sparrow and Cowbird are noisy.

II- A dragon fly is out.

At 0910 a Prairie Warbler, the year's first, sings a type-8 song on II-W. I find it and watch it for about 30 minutes, during which it sings type-8's many times from small (15' or so) trees. The bird has no bands but he will be readily distinguishable because several inner rectrices are missing,

giving his tail a scissor-tailed look. In the time I have him in sight he sings like this: 20 times from one tree, then flies on to another tree; 6 songs, then moves a little; 14 songs, then moves a few yards; 15 songs, then I lose him and he falls silent. During all the above song series he is moving a little and feeding in the trees; i.e., he is not at the top and acting like a bird proclaiming territory as will be the case in a few days. The intervals are irregular, some only 15 or so seconds, some as much as 30-40. While he doesn't act like a male on an established territory, he certainly sings more than the usual new arrival and I would not be surprised to have him stay (and if he does it will be definitely ascertainable because^{of} his tail feathers). [This male never appeared again.] He seems to have moved to the edge of the woods on II west. While in sight he never called; he sat rather quietly, jerked his tail very little.

At 0955 he begins to sing again, 5 times in 2 minutes. I find him but he then flies southwest, high over the woods toward and probably close to the 3 big sheds. I look for him without success; he is silent.

A rabbit jumps up on the west edge of I.

II - again - A pair of gnatcatchers are at the northend. Zebra Swallowtail. A water-thrush sings. Black-and-raspberry bushes have 1/2" leaves. The year's first tick.

Orchard - A green tiger beetle (sex-guttata). Tiger Swallow-
tail. Elderberry leaves are 2 1/2" long, hawthorn 3/4".
A bird locust flies up. The spring is certainly an early
one, witness my earliest Prairie Warbler arrival.

I hear and see no more Prairies.

1100 - I leave.

April 16, 1954

Fair but a little cooler, with a mild southwest wind; temperature 50° at 1400. Present from 1415 to 1630.

III - It is a little greener than yesterday, fairly quiet. Singing are a Field Sparrow, Towhee, Bachman's Sparrow (twice), titmouse, and gnatcatcher.

II - A Phoebe is singing; also a Cowbird and Field Sparrow. A Turkey Vulture flies over. A surveyor's line 6' wide on the north part of II will not affect the warblers.

V - Nothing of note.

Orchard - Present are Myrtles, gnatcatchers, chickadees (singing) Towhee (calling), Field Sparrow. There are none of yesterday's conspicuous insects, and song is scant. The 25° temperature drop has slowed animal activity. Prairies are probably here but they are silent.

IV - Complete silence. Two vultures.

VII - A Song Sparrow sings. Rabbit.

1630 - I leave.

April 17, 1954

A sunny morning after a clearing night with a north wind; temperature 44° at 0700. Present from 0700 to 0930 and with Duane Carmony and Don Auster from 1020 to 1150.

IX at 0700 - There are many songs, including a Wood Thrush in the ^(low) woods; also a Bachman's south of IIIS, a thrasher, titmouse, and Flicker.

IIIS - A Bachman's sings. I think I hear the Field Sparrow that sang here last year. There is a Field Sparrow fight between two males; then one flies back to a female with his bill open; she goes to the ground and he follows; there is calling. I scare up a rabbit. Fdr

III - Singing are Field Sparrow, Bachman's Sparrows, Towhee, Cowbird, Cardinal, gnatcatcher. In the woods to the west are Carolina Wren, Red-belly, Wood Thrush, gnatcatcher. Goldfinch and singing Palm Warbler on III. At least 2 male Bachman's here.

0730 - A Prairie Warbler sings 7 soft type-8 steps in the northwest corner. He is feeding in a high cherry, has no bands. Then there are 10 insipid steps, with all indications that they come from the same male. Now at 0740 there are faint and quite irregular songs. The male has faint red marks, moderate black ones. He flies north in the tree row

4/17/54

and I lose him for a few seconds. He then feeds for 15 minutes high in a hackberry, sometimes flycatching. Silent all this time. A gnatcatcher, singing Palm and Myrtle Warblers are near him from time to time in his tree; no attention paid them.

0755 - He flies to a perch 15' high and preens. *for*

0757 - He sings 6 very soft chatter steps like a Palm, then faint type-8, then some chatters, some plaintive or insipid steps, some type-8's; only some of the last are loud. In the 5 minutes from 0757, 16 songs within 15 yards of the place I first found him. After the first 12 of these songs he goes back to 25-30 feet high and feeds. In the next 10 minutes (by 0812), 11 more songs, all type-8's and insipid, 6 of them between 0809 and 0812. Then a skid. 0817 - 6 more faint and assorted songs since the last one. He is feeding. His tail has jerked all the time except when preening and for about 2 minutes following that, when he just sat. He has disregarded a Myrtle and a Ruby-crown near him.

0819 - He preens. In 1 minute he quits and flies at least 50 yards east and onto the south part of the orchard. He has sung 3 times since last noted. I lose him. *for*

0825 - He may be singing in the big trees in the southwest

corner of the orchard.

Orchard - Nothing seen. A rabbit and White-eyed Vireo enroute to V, in the sink hole.

V - Nothing unusual. Two species of grasshopper. Bachman's and Palm Warbler sing.

X - No Prairie Warblers.

II - Only the usual songs; no Prairie.

I-IV road at 0900 - two male Cowbirds display to one female.

Nothing heard on IV.

I - Silence.

VII - Bachman's Sparrow on the ground 5-6' from me. Dragonfly.

VIII - Song Sparrow, White-eyed Vireo sing. Rabbit.

0930 - I leave. One Prairie so far today.

1020 - I return with Carmony and Auster to take habitat photographs.

Orchard - Zebra Swallowtail, Mourning Cloak.

IVS at 1058 - A male Prairie sings 3 skid songs; I can't find him because he quits singing.

IVN - a 1 1/2' racer.

1150 - We leave. Two Prairie Warblers today.

The following is a list of the photos taken:

Amaki

The following is a list of the pictures taken:

1. South end of III, west side, facing north.
2. Same but facing about 20° more toward east.
3. South end of III, dead center, facing due north.
4. Same but facing 20° more toward east.
5. In meadow, facing north to II E.
6. In orchard 20 yards east of fence, facing due east down hill.
7. South end of I E, on the west side, facing north.
8. Center of I south of road, facing north toward east end of old T 8.
9. West end of old T 3, facing along the ridge top.
10. West end of old T 3 near maple grove, facing north to west end of old T 5.
11. East end of old T 3 on the ridge top, facing north across ravine to east part of old T 6.
12. VI, 30 yards north of east-west road, facing north on the west or open side of T 2.

April 18, 1954

A cloudless, windless day; temperature 55° at 0530. There was a migration last night, with the full moon tonight; Black-throated Greens are singing in the yard. Present from 0545 to 0935.

IX - Nothing of importance.

IIIS and III from 0545 to 0615 - No Prairie Warblers. All others singing as usual, including Palm Warblers. At least three Bachman's Sparrows. In northeast corner a Vesper Sparrow sings steadily from a 20' perch overlooking the planted field; acts like a male on territory.

→ Orchard at 0617 - A Prairie Warbler sings in an apple tree in the southeast corner. The songs vary among plain step, insipid step, chatter, type-8; the last is usually abbreviated. Some are sotto voce, all are mingled; irregular but frequent. By 0627 (10 minutes), 41 songs. The variety suggests yesterday's male; he looks the same. Once he sings a double song, composed of a chatter and a step in immediate succession. Once he calls "chick."

10 0632 - 10 songs in last 5 minutes. A gnatcatcher flies into the apple tree and although he calls and thus is identifiable, the warbler hops and then flies at him a few inches; pretty clearly a moderate attack.

(4.8) 24 0637 - 24 more songs, often very frequent, all fairly quiet, varied. Some sound a little like a Black-throated Green;

all are some sort of step. They tend to be insipid with
a rise at the end. He feeds constantly, always moving.
He is still in the same apple tree, hasn't once left it.
This isn't typical of territorial behavior but it suggests
he will remain.

13 0642 - 13 more songs with a 2-minute break during the last
5 minutes.

(4.5 min) 24 112 0647 - 24 more songs of same volume as before, all insipid
steps. At the end of this five-minute interval (i.e., at
0647), he begins to call "chick"; the calls become harsh
and rattling almost like a fighting male's. During this
he hops quickly along in the same tree, not singing. Calls
are frequent, about one per second. I see nothing to stim-
ulate this. (This male has a back with moderate red streaks.)

0652 - He leaves the 20' apple tree, goes 20 yards north,
then 50 more to the hawthorn and apple thicket. I don't
see him, but hear a low rasping or chatter step.

0655 - He moves to the edge between the orchard and meadow,
singing. His song has speeded up almost to a skid. He is
45' high in a hackberry within five yards of where the male
was yesterday. His chatter is loud.

0700 - He flies very quickly 25 or so yards north; I lose
him a minute. (Did he fly in pursuit?) Then he sings from

an apple east of the south end of the meadow; a quieter song. His songs are fewer since he left the apple tree I first found him in. He pays no attention to a White-eyed Vireo which seems to notice him.

0707 - He sings after five minutes' silence; I lost him while note-taking.

0710 - I leave the vicinity. He sings once, probably from the east where I found him. [I can't be sure if this male remained.]

Rest of the orchard is silent. A 4 1/2' racer is near the meadow gate. *Ngew*

0715 - The same male is singing in the trees between the meadow and III. Two songs.

II - from 0715 to 0725 - Silence. Nor do I hear any songs on VII or I.

X - Silence.

V - On the east end at 0739 a Prairie sings seven buzz-steps. I go to search, see a second male Prairie Warbler (unbanded) fly into a tree and call once. Then the singer flies up silently and the one seen flies away and I lose him. The singer starts west through the locusts, presumably following the other. He is silent, then sings on old T 12 and T 16. After seven songs he flies high toward the south,

turns and lands in the white pines. He then goes to the sink hole, sings three times. All the above lasted about four minutes, with silence falling at 0743. It is now 0750 ; I've been writing.

0751 - The singer flies to the top of the sink hole trees from the woods to the northwest. His song is a typical buzz-step, without melody. His back is fairly heavily streaked; no bands.

0756 - He leaves the sink hole and flies high and with a kind of buoyant, bouncing flight northeast and over M 23's old clearing or over X. I lose him behind the woods. I go toward the north part of V to see if this was an exploratory flight and if he will return.

0759 - He's back, singing from where I first heard him. He then flies southeast to the locusts at the southeast edge of T 12, T 23. He is singing from one to three times from a perch, then flying. The two high exploratory flights are important information.

0805 - He's been silent three minutes and I leave. This male is almost sure to take territory on part of V.

[Possibly this male became M 35.]

I see two fence lizards and in the woods a chipmunk.

I - from 0815 to 0825 - Silent.

VII - Silent during the above period.

IVS - At 0824, one fairly faint skid. Another at 0827, but just across the road on I. Then 10 minutes' silence and I go onto the center of IV.

IVN at 0842 - A male sings type-8's on old T 6 and T 22. He is plainly marked, without visible red. He feeds within seven feet of the ground and on it, singing loud and regularly. No bands; not the male of April 15.

0852 - He has sung 33 songs, loud and very regular. He moves a lot, always staying low.

0900 - He has gone higher, staying on T 22 but now moving east to its edge or beyond. Great regularity in song, a seven-note type-8. He is back on the center of T 22 at 0901.

0902 - 34 songs in the last ten minutes (cf. 33 in ten minutes before that). I leave him still singing regularly, acting fully territorial. At 0912, he's still singing just as before. [This became M 39.]

100
48
Old T 3 - heard at 0857 - A skid singer begins a typical song on the east end of Old T 3, singing some eight or nine times. At 0902 he's been silent for two minutes. I don't look for him. [This probably became M 38.]

VI -- Silence during 10 minutes.

VII -- Silence.

VIII at 0927 -- A skid singer with a high wiry song,
on old T 15. No bands. Moves a good deal but
stays on old T 15. I'd guess he is on territory.

[This male did not stay here.]

0935 -- I leave. There are six males present and
singing today, four of them apparently on
territory.

April 19, 1954

Perfectly clear, with a strong southwest wind; temperature 70° at 0830. The night was slightly overcast with some wind. A Yellow-throat came into the yard during the night. Present from 0830 to 1215 and with Jon Rickert and Pierre Ferverda from 1715 to 1830.

VIII - Silent during 15 minutes here.

VII at 0845 - A Sycamore Warbler sings in the woods to the south; also a Carolina Wren. In 15 minutes, no Prairie Warblers.

I - During seven minutes on I and more within earshot, no Prairie Warblers. Black-throated Green on northwest end.

VI - In 15 minutes, no Prairie Warblers. A 4 1/2 foot racer seen. *Snake*

Old T 24 at 0922 - There is a skid singer north of the road at the fence line. I find him; in four minutes, 20 well-spaced songs, all from 20' up in a 40' cherry. He sits quietly while singing, then flies north into the field. His back has thick but not bright red streaks. He acts like a male on territory, but disappears or falls silent. [Probably the male that became M 41 on April 24.]


Singing are Bachman's Sparrow, Bob-white, Field Sparrow, Cowbird, Yellow-throat, Towhee, Flicker, Goldfinch, Blue-gray Gnatcatcher. A Cardinal is present.

IVN at 0935 - Tree transplanting is going on here.

0938 - Two males are singing insipid steps at the north end of old T 6. The first I see has a heavily streaked back, therefore is not the male that was here yesterday [M 39]. As I turn to look for the second, which is 25 yards away, he begins to sing type-8's and the first sings a skid. They each sang perhaps three or four steps prior to this switch in songs. I find the second male, the one that was here yesterday, and begin to watch him. He flies to the southwest corner of old T 6 and a little beyond to a big apple tree by the sumac thicket. There he sings 21 songs in 7 1/2 minutes, sitting 10-20' high and moving back eastward in two flights. At 0850 he flies northeast toward the spot where the new male [M 40] (the first seen today) was; the latter is not singing. I hear a faint skid, a type-8, one "check." Two Prairie Warblers then fly up to about 30 or 40 feet high and there follows a long, circling pursuit with one about eight yards behind the other. They make two circles about 40 yards in diameter, silently flying in a buoyant fashion with their wings beating in full amplitude but a little less frequently than usual, and a little irregularly like a Goldfinch's flight. Then

they land near me, 10 yards apart. One sings a step with high notes followed by buzzes, like a Golden-wing. Each has its wings extended very slightly, perhaps $1/8$ - $1/4$ " from the body. The body is slightly rigid, a few degrees nearer horizontal than usual. The bills are closed; no calling. Then begins a series of pursuits that lasts 52 minutes. I am quite sure the roles of pursuer and pursued vary from time to time. This all occurs in complete silence, is unlike anything I've seen in the species but does resemble a similar ritual in the House Wren and the Indigo Bunting. Most of the time the birds are about 30 feet high, separated by 6-10 yards. Sometimes they fly just above the ground. Generally the flight is in a circle, of which I'm in nearly the center. When they are low there is much twisting and turning around and through the trees. The flight is always the light bouncing sort. They land every 10 seconds or so and perch for five to 10 seconds, then resume flight. There is no set route. When perching the wings are barely extended off the body. Occasionally one approaches the other to within two feet, sometimes doing so when the other is perching, sometimes when flying. More usually, the flight begins with the two perching, one taking off away from the other and being followed.

While this is going on I hear a twittering noise and



a Sparrow Hawk dives to the ground about 25 yards from the warblers, goes up to a stub 25' high and in the ravine on T 6, eats a rodent. I don't know if the warblers made the noise. While the hawk eats, the Prairie Warblers sing one or two times, resume their pursuit. They pay no attention to a Broadwinged Hawk flying over the valley, if they see it. At 1005 the pursuit stops. Yesterday's male [M 39] sings on the far east end of old T 6, the second ravine. pud

While I look (without luck) for the remains of the rodent and write this, yesterday's male sings regularly and loud at 12-15 second intervals. Call this male, clearly on territory, M 39. The other male involved is M 40. (My numbering is based on the probable number of territories present, beginning with IIIS; this year's first male to arrive on III will be M 30.)

1030 - There is a pursuit toward the north from the center of the spot just involved, i.e., near the big cedar. It is short but conducted exactly as before. Then M 39 sings to the south, to which he returned without my seeing him. M 40 is north of the wire and probably of the road. At 1044 M 39 is 35' high in a maple by the wire, singing loud regular type-8's at 10-13-second intervals. The territory line here is probably an east-west one, with M 40 largely

in the fields north of the road. He is unbanded.
It's too bad I couldn't tell which was the most frequent pursuer; the performance seemed almost a game.

1045 - I leave T 39 and T 40. M 39 is singing on the south part of his territory. (I see a five foot racer.)
M 39 moves onto the center of T 5, sings near the sink hole and the big black cherry north of it. In three minutes he goes back east again.

IVS - at 1055 - A Prairie Warbler sings just north of the road, a high, wiry skid. He sits quietly 30' high in a black cherry. In the first five minutes he sings 21 songs and then continues at the same rate. There is little red in his back; unbanded. At 1105 he flies north into a locust tree and sings as before, at the same height. I leave him. [Probably not the male I later called M 38, which had a red back.]

II - A skid song comes from the north end as I pass. I'll search for him later.

X - Silent.

V at 1115 - Rabbit. By 1130 I've heard no sure Prairie Warbler, one song possibly.

II and Orchard from 1130 to 1200 - Silence.

III at 1200 - Silence.

IIIS - Silence.

1215 - I leave. My failure to hear any Prairie Warblers on the areas visited late in the morning seems due to inadequate time spent.

1715 - I return with Rickert and Ferverda. It has been partly cloudy for two hours.

VII - No warblers. Rabbit.

I - Silence.

IV - Silence.

X - Silence.

V - Dogwood is almost blooming. Hermit Thrush.

Enclosed clearing - Water-thrush, Hairy Woodpecker. Turtle eggshells, probably this year's. [?].
ms - fresh looking

Orchard - Bachman's Sparrow, Field Sparrow, titmouse, chickadee singing; Pileated calls in the woods south of the sheds.

III at 1822 - Towhee, Bachman's and Field Sparrows, Cardinal, thrasher all sing here.

1830 - We leave. En route home we see a junco. Yellow Warbler came in today.

There were at least five male Prairie Warblers on the study area, probably more that were silent as I passed them.

April 20, 1954

A sunny day with a few light clouds, a mild south wind; temperature 62° at 0630. Present from 0640 to 1155.

VIII - Two or three Wood Thrushes are singing. No Prairies.

Woods - Black-throated Green.

III - Goldfinches are very noisy; there are the usual singers; also White-eyed Vireo, Bluebird. The trees are about one-half green, with hawthorn, cherry, box elder, tulip in leaf and maples the same or nearly so. Goldenrod is two inches high. Some elm is leafed out, the big ones mostly not. Hickory, probably pignut, in bud only. Shagbark (some on III) with big buds, some in early leaf. Sassafras with big buds, some open and flowers out. The big woods is too green to see through, the maples and beeches light green. Redbud has just hit its peak. Raspberry and blackberry in early leaf.

0659 - Three skid songs near the little woods on III; then silence.

0703 - Song again. I find a male on the center of III toward the east. Medium marks with red streaks blurred into a smudge. Song a short typical skid, high and thin at the end. He sings 10 times from high in a cherry of M 19's last year.

There is a skid to the north. A male flies to my singer's tree. They sit 10 feet apart, silently and without posturing. The newcomer flies a few feet closer. Each hops a few inches and there is a chase. It begins without a dive or pursuit by the first singer; I don't know which started it. They fly high and in leisurely flight, straight to the north tree row. My male returns about 25 yards onto III, sits with wings slightly away from his body. The other sits in the tree row, sings once. My male goes back to the tree row; they sit silently 30 feet high, 15-20 yards apart. My male turns, flies back to III, sings from high in a cherry, very regularly and loud.

*See reply
newcomer
acts
like a
but
sings
later*

0715. I begin a song count: 20 in five minutes during which he moves after two minutes, going south by short flights from one high perch to another, without feeding. In the next five minutes, 17 songs while he still moves occasionally to the south

20
17

0725 - He is in southeast corner of III. I take time to write.

0732 - He is still singing in the above spot, about every 12-15 seconds. As he perches and sings he looks around and cocks his head. A female Marsh Hawk flies over low, going north 40 yards west; the Prairie Warbler is silent but perhaps by coincidence. The same when a Sparrow Hawk

*perched
perched*

flies west along the III - III S tree row. He begins to sing very quickly afterward; seems unlikely he was alarmed.

0736 - He moves north, staying high and singing loud and frequently.

0740 - He is 20 yards south of the sassafras thicket in the northeast corner. He watches two Goldfinches which fly into his tree, disregards a gnatcatcher. Disregards a Broad-wing and a Sparrow Hawk passing over. Like other males which sing like this, he doesn't bob his tail but sits quietly. When such males fly to a new perch they may bob their tails once or twice just after landing.

Calliope
tail long

0745 - I leave III; the male has sung steadily since I arrived. [He became M 30.]

II - A male sings a typical skid on the northeast part. He moves southeast toward the orchard, singing high and regularly; 20 songs in five minutes. (M 30 is also audible.) He goes into orchard. In an apple tree he drops at a Field Sparrow which flies a few feet and is then disregarded. The Prairie Warbler then flies fast and low straight north, perhaps beyond the orchard, falls silent. (Is he the male which M 30 chased?)

Orchard - Silent till 0805 when I leave it.

II - Silent till 0816, when a male begins to skid on the center.

He is typically marked, back streaked. Sings 20 times in five minutes, stays 20 feet or so high; no feeding. He then begins to feed, singing at the same rate. He moves into the northwest corner of the orchard. He seems clearly on territory. [He became M 32, moved his territory to the field east of II when a female arrived.]

V - at 0830 - There is a type - 8 at 0831, then silence till 0839, then a loud type-8. Then two more such songs, each a minute apart. The singer is well-marked, with back streaks; he feeds low in the locusts. Eight songs in a total of 18 minutes. This male may be the same as the one first seen here, the other day. [Is he M 35?] I can't tell his status; nothing suggests he is on territory. I leave V.

Woods to I - Ironwood leaves are one inch long. Water-thrush on IIN. Prairie Warbler sings four skids on II N.

I - Silent as I pass by.

IVS - Nothing at the south end as I sit for ten minutes. Blue-bird sings, probably nesting in a dead tree. A gnatcatcher builds a nearly complete nest, 13 feet high in a vertical *Gnate* ~~Sassafras~~ fork; no concealment. It calls before going to the nest. (A male sings skids ^{on} old T 3 when I go to IV N; ~~with~~ 21 songs in five minutes.)

IVN at 0920 - M 39 sings on the west part of his territory, stops after 10 songs without my seeing him. A male sings on old T 3 [M 38] and now two males sing on IV N, insipid steps

to the east. I find M 39 and yesterday's other male, M 40, engaging in another sham battle. Today it takes the form of a continuous series of east-west chases, to the south of the cedar and west of the stub the Sparrow Hawk was in yesterday. That is, it looks as though M 40 has moved onto the east half of old T 22 and M 39 is yielding toward the west (whereas the division yesterday was an east-west line with a south (M 39) and a north (M 40) territory. The birds sing irregularly but frequently, do not call. 3mg M 40's song is an insipid step or a step ending in a rasp. M 39's is insipid or a type-8. I first see M 39 fly west and M 40 follow and land 12 yards from him; M 40 spreads his tail, M 39 his wings a little. They then begin the see-saw east-west flights, the pursuer usually about five feet behind. The pursued lands on his side of an imaginary line, the pursuer then flies back and is immediately chased. This goes on for ten minutes right by me. The flight is slow, bouncing; wing beats are irregular, less frequent, normal amplitude. Unlike yesterday, M 40's flight is occasionally reduced in speed to the sort used in courting a female. Despite careful watching I can't be sure if when very slow the beats are shallow and rapid. Much of the back and tail are exposed. I'm inclined to say the slow flight is a glide with full infrequent beats, wings spread to soar between beats. The beats tend to come in little spurts.

The pursuit ends; M 40 goes east, is silent. M 39 sings frequent type-8's, feeds low. His rate is 20 songs in five minutes.

Old T 3 - The male sang 20 minutes here, but is silent when I come on.

IV N again - M 39 has been singing, and now, at 0957 I hear the insipid steps that seem to accompany the ritualized pursuit (important fact, if true).

Twice I see three males, one female Cowbird on IV.

M 39 and M 40, are both singing at 1002, the latter skids.

17
15
34/8
1005-1010 - M 39 sings 17 times. M 40 to the east sings less frequently, alternating skids and step-buzzes. M 39 sings 14 songs in the next three minutes; the 15th song breaks off short and I find M 39 and M 40 in the same tree. The display this time involves less flight. Earlier they were covering 30 yards; this time there are two or three short flights but most of the time they sit in the same or adjacent trees about 15' apart and hop upward and generally change position. Once M 39 flies ten yards away to the ground and feeds; both catch food, or seem to, during the period. Suddenly there is a pursuit, which for the first time causes dry, rattling fight notes. Also, M 39 gives "tsu" and "chick" calls. They had each sung, M 40, a step seven times and M 39 a step three times and type-8's twice. It is just possible a third Prairie Warbler was here during the noisy fight; I saw something.

M 39 flies west quickly and sings regularly for 25 minutes. I follow M 40. He hops about on old T 6, so he clearly has taken it over since yesterday. Songs are frequent, irregular. Oddly, he flies like a male in the presence of a female but without so much exaggeration. I follow for 25 minutes and see no sign of a female except for one pass he makes at something that flies up and disappears. He displays in flight afterwards; this all occurs at the beginning of the 25 minutes. I think the flight is less exaggerated as time passes. He feeds low, sings all the time.

I think I now have the flight analyzed: When the male moves from a high to a low spot he glides with the wings beat once or twice and the rest of the time spread. The rest of the flights are with rapid shallow beats; the primaries presumably are not in action since there is little propulsion.

Can't see for 42 min
1050 - I go on after M 40 for eight more minutes and see no female. He sings three times a minute, feeds all the time, still seems to glide a little. M 39 sings steadily to the west.

I forget to note the following: a). When males face off in a tree their tails jerk more. b) M 40 "zoomed" me twice during the pursuit. c) M 40 caught a large brown moth and it got away. He caught it, took it to the ground, beat it on a limb, ate it. *feeding*

A hypothesis to explain M 40's method of flight: If a third Prairie Warbler is or was here it's an unresponsive

male or female. Otherwise M 40 is simply highly stimulated, which is perhaps most likely.

1100 - I leave IV N.

Old T 24 - Silence.

VI - Silence during 5 minutes.

VII - Silence.

VIII - Silence.

Woods - Nashville, Palm sing.

1155 - I leave.

A Catbird is present in our yard for the first time.

April 21, 1954

Clear after a bright night; no wind; temperature 62° at 0500. Present with Carmony from 0515 to 0930.

III - At 0523 a male sings at the south end; after six songs he

beg → goes north calling "chick" and "tsu" about five times in flight; flight is high and fast. On the north end he sings seven songs high in a cherry, goes to a 20-foot elm, chases a Goldfinch and then a Field Sparrow which had been sitting near him for 20 seconds and which he surely had identified as not a Prairie Warbler.

10
16
14/5 F
20
0528 - He begins to sing while feeding fairly low. After ten songs he goes 15 feet up in a little cherry, then 25 feet up in another. In the five minutes after 0528, 16 songs, most of the time feeding.

20/5 N
32
7
0533-38 - He sings 20 times while sitting 30' high; songs quiet. (I see a Fox Squirrel.) The Prairie Warbler drops on a gnatcatcher which turns and flies down 20 feet; the warbler about two feet behind and above. One minute later he repeats this; clearly he knows the bird is not a Prairie Warbler and is just being belligerent. (A Pileated flies east over III.) All his chases so far today are directed against birds in the same tree with him.

0546 - He flies west and I lose. Silent.

(18 Blue Jays fly north silently, 100 feet high the long axis of the flock north-south and about 20 yards long. There are two males and two female Cowbirds in a tree. I see a Song Sparrow in a thicket in the northwest corner, silent. In the woods are a Red-eyed Vireo; two or three Nashvilles, one Black-throated Green sing.)

0700 - We leave III after silence since 0546, a very interesting fact. Is there a male on territory?

Orchard - Silent.

II at 0715 - Now silent, but a male sang here at 0530. Four males, one female Cowbirds.

V at 0730 - Yesterday's type-8 singer sings frequently, e.g., 25 times in five minutes with a slight lag at the end of the period. Some silences are one to one and a half minutes long. He moves frequently over the west 2/3 of V to the woods, going north and south too. He is on territory, is unmated. [He definitely became M 35.]

I may also hear a second male here, but only briefly.

II - We hear the male [M 32] to the south and find him singing frequent skids from 30 feet up, sitting quietly. Poorly

marked; the male I found here yesterday. He is surely unmated.

(0755 - Six Blue Jays fly north at 200'.)

VII- Silent.

I- Silent.

IVS - The gnatcatcher is still building.

0815 - We sit to listen. M 39 and M 40 sing from yesterday's territories, the former singing constant type-8's at 10 - 12 seconds, the latter infrequent and irregular skids.

0828 - A male [probably the later M 38] flies to the top of the T₃ hill calling "check" every one or two seconds. He then goes south to the old T 8 line. Silent till he returns quickly to the ridge top and sings two or three type 8's. He then goes slowly north to T 39 and sings regularly there. Note this may possibly have been M 39.

T 40 at 0835 - He sings irregularly part of the time, e.g., 10 songs in three and a half minutes at 16-24 second intervals. Later he sings more frequently: 15-16-18. He flies as yesterday for part of the time; no sign of a female during 20 minutes. Once he breaks into insipid steps three or four times; M 39 is way over on his own territory at this time and there is no contact. We leave the territory at 0855.

A Rough Green Snake is here.

Old T 24 - Silence.

VI - Silence.

I - Silence.

VII - Silence. Ash trees have two-inch leaves.

III - Chipping Sparrow near the big white pine. Silence.

0930 - We leave. There were perhaps five males on territory today.

In our yard today are at least one male Prairie Warbler, possibly two; Palm, Blue-winged (S), and Yellow Warblers. I heard the Prairie at 1000 singing chatter steps and then insipid ones. The song was irregular, frequent (I'd think) for a migrant; it sang on an average of one or two times a minute all day, sometimes three or four times a minute. I'm pretty sure this came from one male and not from many passing through in succession. I watched it for 30 minutes.

April 22, 1954

Partly cloudy in the morning with dark rain clouds covering most of the sky; a light shower fell sometime before 0330; mild south wind. temperature 63° at 0430. Present from 0445 to 0915.

VIII- Complete Silence.

IX - Complete Silence. Light shower at 0455.

III - At 0500 the usual male, M 30, begins to sing skid songs near the north end. He is sitting quietly 30' up in a cherry. In the first five minutes, 18 songs. 18

0505 - 0510 - He spends most of time feeding in blackberries, sings only eight times. 8

0510 - 0515 - Most of the time he perches 20' up in the center of a 30' cherry, sings quietly 16 times. He changes position once in five minutes. Disregards two tumbling, fighting male Goldfinches. 16

0515-0520 - He works south to the little woods, singing regularly. Then sits quietly, 20' high in a cherry. Sings 19 times. 19

0520 - 0525 - He spends three minutes high in a tree, then goes to the ground. A gnatcatcher flies into a tree 15 yards away and M 30 goes to him, landing five feet from him. The gnatcatcher flies and the Prairie Warbler immediately pursues in a twisting four-yard flight. He then perches high and begins

to sing again. 16 songs in this five minutes.

16

0525 - 0530 - One major position change, to the south end of III, east side, where he sits 35' up singing loud skids without moving much. 17 songs.

17

74

0530 - 0535 - He moves into the southeast corner, where he feeds, sings, fly catches. He calls "chick" and "check" three or four times, then suddenly takes off on a high (40') flight to the north; goes probably to the north end of III or beyond. I'll go find him. He sings 11 songs in five minutes.

11

I hear one or two skids at the north end but can't find the singer. Then there are two or three faint and rather tentative type-8's and a chatter with no melody at all, off to the east in the southwest part of the orchard. Finally I find M 30 singing; in his tree are two Palms; one flies and M 30 chases, although must recognize it. Then there is a faint type-8 in the tree row to the north. M 30 flies in that general direction with a light bouncing flight; he stops short of the tree row. The song comes again, still not loud. M 30 now flies to the spot where the song is, out of my sight. Next, between 0545-0550 I see two males sitting 12' apart, 15' up in a sassafras thicket; for a minute they sit somewhat horizontally and quietly, then each bobs its tail rapidly. Silence. One flies about 2' and the other follows. This is repeated. I lose sight.

Palm

4/22/54

In a minute M 30 sings a little north of the tree row, at the south edge of the meadow. He flies northeast to the west edge of the orchard, returning in one minute and singing from all perches he stops on. The type-8 singer is gone. The male with the toneless buzz-step is in the southwest part of the orchard.

6
44/10
perched
10
7
0602-0612 - At 0602, M 30 perches high on the north end of VII, sings 22 times in five minutes with one position change 22 to the top of a 35' cherry. In the next five minutes, 22 22 songs; after 15 of these songs he goes north to the tree row. In the last ten minutes with 44 songs, about 25 were from one high cherry.

perched
4
fed
1
0602 - 0617 - For one minute he is silent in the tree row and so sings fewer songs in the interval.

perched
5
0617 - 0622 - Sings 24 songs, 15 or so from the same high perch in his usual high cherry. 24.

I sit to take notes. At 0631, M 30 is still singing frequently and regularly from his cherry, without moving 40 about or feeding. At least 40 songs in the series so far 7 - then seven more. 71

Meanwhile a Prairie Warbler flies into M 30's tree from the north, lands 20' below him, evidently without M 30's noticing the arrival. The new bird hops through the tree, flies away due south to the tree row, i.e., over 100 yards away. M 30 does not take off and follow, but I can't see

him when I look back to his perch. M 30 sings in ten seconds from 50 yards to the south, then from the south tree row. I find him there, perched 35-40' up, singing and looking around; he moves to several trees. The other bird, which on a glance seemed a female, is out of sight. In three minutes M 30 takes off on a long high flight to the northeast corner of III and begins to sing there, then moves gradually to the south.

At 0700, M 30 has been silent 10 minutes; I'm looking for him at the south end of III.

(A Blue Jay migration took place between 0600 and 0700: Two, two more, one flew over about 30 yards apart, 100-150 feet high. They were silent, flew slowly and steadily.)

(Other things on III: 5-7 Nashvilles along the edges, about 10 singing Palms on the area. Red-headed Woodpecker over. Two White-throated Sparrows, the year's first. Found rabbit fur, bird remains, the latter at least two weeks old.)

M 30 never once went to the west side of III today.

0715 - I leave the area; M 30 is still silent.

Orchard - The male Vesper Sparrow sings about every 12 seconds from the exact perch I saw a few days ago. Phoebe sings. Box turtle, year's first. Swamp Sparrow. Ruby-crown sings.

I heard a Prairie Warbler song here off and on for an hour earlier. Now silent. Note that a migrant sang all day in our yard yesterday. Can hear a male singing on V or perhaps at the sink hole.

II - Silent.

V at 0750 - The sun shines through an overcast; it cleared at 0700. White-throat sings.

The male here [M 35] sings about 20 songs per five minutes, covers all of V and the sink hole, flies far and frequently. Clearly claims the whole area; song and long flights mean no female. One flight is about 60 yards long at 3-4' height, a little slow, not exaggerated.

II - No songs as I sit for ten minutes on the north end.

VII - Silence.

I at 0818 - A male sings two faint type - 8's, switches to one Golden-wing, then 20 high skids; this takes nine minutes. Moves to IV S, all the way to M 3's ridge. A very plain male, probably on territory [became M 37].

T 39 and T 40 - Both males sing their usual songs, M 39, 24 in five minutes, M 40 about the same.

Old T 3 male - I'll call this male M 38. He sings irregularly.

Five female, four male Cowbirds here, courting most of the time. Chipping Sparrow sings on IV S & N.

T 40 - No female. Songs loud, regular, frequent; the rate as described above.

T 39 - No female. Note that there are no signs of fighting with M 40 any more. A Field Sparrow flies at M 39, which yields.

(0901 - Nine Blue Jays fly silently into a 45' cherry and a tree beside it at the wire. After resting 40 seconds they fly on. Only noise is one jay-like, faint croak.)

Old T 24 - A male with red streaks and a hoarse skid sings frequently, seems to be on territory. [By April 24 this bird was mated. He is M 41.]

VI - Silence.

I - A male [M 37] sings a skid.

VII - Men working. Silence.

0915 - I leave. There are eight males evidently on territory today. Saw three turtles.

April 23, 1954

A rainy morning after rain at night; perhaps a slight east wind; temperature 56° at 0530. Rain begins at 0600, lasts one hour; thereafter foggy with a misty rain till 0800. Present from 0545 to 0915.

T 30 - M 30 sings on the north end, in the little woods that projects south. Sings steadily, stays for about five-minute periods on 20-35' perches sitting quietly. Occasionally goes into the blackberries to the east. Beginning at 0600 I time his songs for five minute intervals, skipping every other five minutes (0600-05, 0610-15, 0620-25, etc.):

107
13
0600
Ch. 1000
0930

17, 16, 19, 20, 18. Twice he flies at other birds and chases them, the first time five or six yards, the second a few feet. The first could have been a Prairie Warbler, but very likely was a Blue-wing, which sings here today. The second is a female Yellow-throat. M 30 always stays at the north end. At 0705 I leave his territory. yfz

Orchard - Silent.

II - A male sings and feeds actively; two songs are type-8 and chatter (like a Palm). The songs alternate and often a pair follows each other closely. Songs are faint, unassertive. This sort of singing and rapid following of two songs, then phrases, seems typical of migrants. [But this almost surely became M 32].

Song of 8
frags

V - M 35 sings infrequently and I find him with a female. He flutters from high to lower perches, his wings bent and beating in a shallow arc. 9

A Chat (the first) sings. An American Egret flies over. Chat

I - The male here (from now on M 37) has a female. They are in a pursuit as I arrive, then pay each other no attention. He sings irregularly but rather often; she's silent. They stay at least 15 yards apart. She crosses to I west; he does not follow. In a few minutes, though, she comes back and he's with her. She is the male-est looking female I've seen, with heavy side streaks, red streaks on her back; almost as well-marked as he, except for the less sharply defined yellow and black around the eye. Male's song is a skid. 9

A red fox runs past.

T 38 - The male here (M 38) covers old T 17 exactly. Might his type-8 have been picked up from M 40? Unmated.

T 39 - Songs loud, regular, frequent. No female.

T 40 - Songs frequent, fairly regular. He goes east beyond M 22's old territory.

Old T 24 - Silence.

VI - Silence

VII - Silence. A loud power saw is working here.

T 30 - M 30 is still singing; as I leave he sings once from the south end. Most songs on this visit are from ~~high~~ trees in the north tree row. Sings 18 times in five minutes but was active on the ground for about one minute of this and sings less there.

0915 - I leave. Three turtles today. Nashvilles everywhere.

A Cerulean sings in our yard.

April 24, 1954

A cloudy morning with a little south wind; temperature 57° at 0430. Present from 0445 to 1130.

IIIS - A male is here today, a poorly marked bird with a slightly hoarse skid, not shrill at the end. There is a chase but I can't see the participants.

III - M 30 sings from the center, then from north high in the usual cherries.

0501-0506 - Sings 22 songs while moving about in the same tree. A Blue-wing sings from a low perch 15 yards away.

0506-0509 - M 30 sings 14 songs, flies down and I lose him behind trees. One song. Silence till 0514 1/2. Then begins and sings nine times till 0516.

0516 - I sit at the meadow to write notes, while M 30 sings in the north tree row. A male sings a type-8 in the orchard, another a chatter on II.

0518¹/₂-0525 - He sings 33 times from high, moving little at first, then going to high tree on III S. The male seen earlier doesn't appear; presumably he was non-territorial.

0525-0539 1/2 - Sings from south tree row 41 songs, flies north. I miscount songs till 0542 and must omit them.

0542-0545 - Sings nine songs. As he flies into south tree row, gives a "check" call. There sings 20 times till 0550, moves a little north. To 0552 3/4, 13 songs.

0552 3/4 to 0600 - Sings 31 songs. Little position changing or feeding. High most of the time. Then flies north to his regular cherry tree post.

0600 to 0603 1/2 - From cherry, 18 songs. Then to northeast corner where the type-8 song is frequent; after three or four minutes it stops. Meanwhile M 30 is in big tree in northeast corner, singing 35 times between 0603 1/2 -0611. Then he flies to his usual cherry, perches 35 or 40' up.

0611-0619 1/2 - Without any position change in the cherry, he sings 44 times. His only motions are occasionally to turn around. Then he flies downward and to the west, perhaps to chase something. Then goes south and sings.

0623-0626 1/2 - Sings 12 times with two or three "checks" between first few songs. Preens self vigorously 25' up, shaking his tail hard laterally afterwards. Then flies north.

0626 1/2 - 0629 - Sings five scattered songs at the north end, then falls silent till 0655. I can't find him at this time.

0655-0708 - He sings twice in mid-territory, flies to

13 the top of a hickory by the south hackberry (30' up) and
sings 65 songs without changing perch (longest series I've
14 ever heard). Then goes north and sings. At 0730 while I
write he is still singing. Singer
65
120

What causes the silent periods I've seen every morning? Does the male go back to sleep?

On III this morning: Vesper Sparrow as usual, two singing thrashers, Wood Thrush and Pileated to the west. Many Goldfinches, one male and one female together. Yellow Warbler passed through. Blue-wing, Black-throated Green, Ruby-crown sing at north end. A Downy is in the field. Poison ivy leaves are 3/4" long. Virginia creeper is either not quite out or just unfolding.

Orchard and meadow at 0730 - From the meadow I hear M 30 in the tree row, a type-8 to the northeast (V?), another to the southeast. The male heard earlier on II is quiet. One of the above type-8 singers is in the southwest corner of the orchard, well-marked and with a brightly streaked back. He seems clearly on territory, has sung loud and constantly for over two hours. [I don't know whether this is the north male which became M 33 or the south male which left by April 27.]

0740 - There is a second type-8 singer on the north part of the orchard. He has a faintly-marked back. I

I follow him for 12 minutes and he goes east, seeming to cover all of old T 27 except the brushy field. The south type-8 singer moves east too and they both sing. The dividing line seems to be about at the stream. There is no fight though the north bird seems to be drawn toward the south song. [This north male became M 33 on April 29. The south male disappeared by April 27.]

II - Meanwhile the chatter-singer begins on the southeast corner of II, singing about 30 yards from the north type-8. This II male sings medium-loud, a frequent hoarse, short chattering skid often interspersed with a type-8. He chases a Gold finch. His song is irregular, comes in bursts of five or ten followed by several minutes' silence. He moves a lot, feeds, never perches high. From now on I'll call him M 32.

V - from 0815-0910 - M 35 sings frequently, irregularly, in bursts with one to five-minute rests. He covers the whole area to the southeast locusts. I see no female, can't be sure he ever flutters. He moves east and west too much to let me catch him; the locusts running north-south obscure my view. Once he flies past with a warbler preceding him; I see only the silhouette. Songs sometimes 12 seconds apart, nearly all type-8, a few Golden-wing.

0850 - He flies on to X, falls silent and still is when

I leave at 0910.

A Scarlet Tanager sings frequently.

VII at 0917 - A type-8 singer has come in here. His song is quite ringing, loud, regular, faster than most of this type. Occasionally he chatter-skids, so I wonder if he is the II male, until I see his bright back. Most of the time he sits quietly and sings from a high perch. He responds immediately to my squeaking. [This male became M 36.]

T 37 - Two males sing skids but one is in the woods north of VII and presumably is a migrant. M 37 sings an infrequent loud skid, once or twice softens it. Sits silent and motionless much of the time. Finally I see him flutter before and away from 37 F, which flies high into the tree as he leaves it. She then flies in the direction he went.

0940 - I leave this area.

T 38 at 0940 - M 38 sings loud type -8's during 15-20 minutes, regularly at 12-15 seconds. Distinct, wide, medium-bright back streaks. Sings back and forth with M 39 and M 40. Once he attacks a gnatcatcher which calls loudly, and chases him a few feet, then a few more. Most of the time he sits and sings. Clearly no female.

0945 - Sun comes out and skies clear.

T 40 - M 40 is unmated, sings loud and regularly. I follow for 10 minutes, while he feeds actively, sings every 15 seconds, goes well east. He responds to squeaks.

North of the road - A male sings three or four faint steps beyond T 40. Then three or four buzz steps. Back medium. He also sings a hoarse skid. There is still another male, chatter skid, off to the northeast.

A Red-tail and a Broad-wing soar high to the east of T 40.

T 39 - As I stand on the north end listening to M 39's loud, regular type - 8's (at nine and ten second intervals), M 40 flies across the north end of T 39, stops, sings one song, returns to T 40 and sings regularly. M 39 goes on singing without moving.

Old T 24 - This male sings one hoarse skid and I see him flutter up to a 15' tree top. Then he dives on a female; there is a three-second close pursuit and he sings at the end. I watch him; no bands or other distinctive marks. His territory goes south of the road, is almost identical with T 24. Later I find the pair south of the power line. He has sung 57 times in 25 minutes, some songs abbreviated. He sits on the wire for ten seconds. I'll number this male M 41.

VI at 1050 - A male has come in here. He sings fast, five- or six-note type-8's and a rapid skid of the same quality. Back fairly red. Responds to squeaks. His song is irregular, very loud; interval: 22-25-30-26-15-41. He moves a good deal; can't tell if on territory. [This male stayed till May 8, left without having a female; I called him M 01.]

VII - (M 36) is singing.

VIII - No Prairie Warbler.

IX - A male is singing, but so irregularly I'd guess he's a migrant.

1130 - I leave. There seem to be 11 or maybe 12 males on territory today.

In the afternoon Carmony and I went to the warbler area at Morgan-Monroe. There are about 15 pairs there, but I have my doubts about using it - too dense and pine-covered to work. Kentucky Warbler, both tanagers are present.

April 25, 1954

A clear windless day; temperature 64° at 0445. Present from 0450 to 1230.

0559
17
6
15
6
T 30 - At 0459, M 30 is singing. After 17 songs, at 0502 he goes to the top of a cherry, then flies south. By 0504½ he has sung six times; he flies north to the top of the cherry.

0505-0508 - Perched in the cherry top, 15 songs. Then he flies east to the tree row, goes 40' up in an elm near the northeast corner. An orchard male sings steps nearby; Vesper Sparrow sings. M 30 sings six times to 0511, then flies all the way south on III.

37
37/50
7/10
40
5
126
0512 - He begins to sing from 40' up in a hickory near the hackberry, perches quietly until 0517. Sings 37 times with one position change of 1'. He feeds once. Then he goes straight north to his cherry top, sings 40 songs there until 0528; sitting within 3" of top. Disregards a Goldfinch singing in the tree. He then goes to the elm tree mentioned above, sings five songs until 0529½, returns to the cherry top.

37/27
N 37 (50)
P. 1000
Sing song
100
0529½-0537 - Without moving, 37 songs. Then goes 30 yards north to tip of the northern-most cherry in the row of four.

0538 - He is singing in the top. A female Prairie Warbler

12
flies in from the south, lights 6' high on an outer
branch of the second cherry from the north, 20' from
M 30's tree, 30' below him. He doesn't see her. I am
between the two trees. He sings on. She perches for
60 seconds, her body nearly horizontal, her ^{tail} bill bobbing
slightly and infrequently. She seems to listen. After
60 seconds, she flies into M 30's tree, 25' high. He
sings on; she is among leaves on an outer branch, and I
doubt if he sees her. No movement. After 20 seconds she
hops up three feet toward him. He sings. In 20 seconds
he drops at her and she leaves her perch. They are out
of my sight for two seconds or less behind a limb. They
then reappear, falling and fluttering in flight, probably
touching each other. She lands on a limb 15' high and he
flutters beneath her, his body nearly vertical and his
head toward her (like treading water); his motion lasts
two or three seconds. He flutters into a little tree 15-20'
away, immediately sings. She sits silent; the entire per-
formance just described took place in silence. He now
sings and continues to do so from a one-foot high perch,
looking around alertly. She flies to the ground and to
blackberry bushes, hops around feeding. He flies away
from her a few feet; she doesn't follow. He still sings,
12 times until 0545, i.e., since they first flew together.

ca 0541
7
did she
drop down
again?
my 12.

12

6545

At 0545 he swoops on her, chases her a few feet. She lands on a weed stem at the ground and he does too. He takes her rectrices in his bill and pulls and hangs on for three or four seconds. It even looks as if he might have pulled one out; can't be sure. He flutters away and sings, looks very alert. I lose her and follow him. During the swoop and pursuit just mentioned there were a few "twittering" high notes, so faint I wouldn't have heard them if I hadn't been very close.

21

34

13

(13)

Having lost her, I go with him. He flies to a dead stub in the north tree row, about 25' high, sings. Perches there a few minutes, goes east to the tree row, returns to the cherry top. By 0550 he has sung 21 loud regular songs. In the next six and a half minutes, 34 more. Haven't seen the female. He flies at 0556 $\frac{1}{2}$ to the top of the 45' persimmon in the north row, sings 15 times to 0559 $\frac{3}{4}$. He then drops into the projecting woods, sings, moves south.

0604

0604. He finds the female in the north center of III, pursues her for 20 yards in a low twisting, circling flight that lasts about two seconds. She evades him, heads south toward the southwest corner (I see she has red in her back, heavily marked for a female. Is this a different female from the one first seen?) M 30 flies along after her, not fluttering. He stays near her, as

his song's position shows; by 0607 $\frac{1}{2}$ he has sung 23 songs since last count.

The female disappears in the southwest corner of III, into the woods. I go to M 30.

0609 $\frac{1}{2}$ - M 30 heads north. By 0602 $\frac{1}{2}$, 21 more songs. A Prairie Warbler, presumably the female, flies high in the air, then drops into the sassafras trees at the north end. I lose her. He goes to the big elm, sings, then to the tree row. By 0615, 10 songs.

0616 $1\frac{1}{4}$ - Seven songs. Now flies to the big cherry top. Stays one minutes (five songs), moves south to a cherry two trees away. By 0617 $\frac{1}{2}$, two more songs; then to the little woods, where he sings 11 times to 0620. Then to the south central part of III; four songs to 0621 $\frac{1}{2}$. Then back to the top of the hickory near the hackberry. There he sings 12 times.

0624 - To the cherry. A male sings a few buzzing steps in the southwest corner of III. M 30 flies toward that corner, perches 10' high in south center, sings. The new songs stop. M 30 flies east, then to the usual hickory.

0630 $\frac{1}{2}$ - He flies quite high to the big elm in the north-east tree row. I quit timing songs at this point. He

has been moving about all over the field all the time, never staying on a perch more than a minute or two. Presumably he is looking for the female, or his behaviour is connected with her arrival. His songs are as frequent as ever.

In one and a half minutes he goes to big cherry. In ^{minute} one/to the hickory top, staying six minutes there, singing constantly. Then south to mid-III at 0641. I then lose him at the southeast edge of III. A new female has been singing here for a minute or two and I see a chase (Prairie Warblers?) at the edge of the woods. The new song is odd, twanging like a Horned Lark's. Sometimes its a step, others a skid; quality stays the same.

0650 - M 30 flies northeast to the cherry and stays three minutes.

0700 - He goes far southwest. 0701 - He returns and I see a second Prairie Warbler near him. No behavior to indicate it's a female. Instead M 30 sings loud from the hickory.

0707 - To the cherry, then the persimmon.

0712 - To the hickory.

0719 - Leaves the hickory; to the cherry. To 0722 1/4, 18 songs. Note his longer stays on perches; presumably

4/25/54

the female stimulus is waning. At 0722 1/4, he goes to the hickory, waits one and a half minutes and returns to the cherry.

0737 - To the elm. He has paid no attention to a Sparrow Hawk sitting 60 yards away, 20' up in an elm.

0740 - I begin to write notes; he sings in the cherry.

0750 - He falls silent till 0805, then sings in the cherry.

The male with the Horned Lark song is singing in the southwest corner of III and M 30 pays no attention to him. The new male may then have gained a territory here while I've been present, and with only the mildest fighting. He may have been the bird pursued in the southwest corner when I was there.

0811 - While M 30 sings in the top of the cherry, a male Prairie Warbler flies in low. Silence. M 30 sings. New male begins to hop higher and higher, till finally he is only 3-5' below M 30. M 30 then attacks and there is a three-second pursuit in and out of the tree. Silent. The new arrival lights on the cherry, silent. M 30 lights out of sight but I think lower, sings loud and regularly. The arrival doesn't posture unless he shakes his feathers a little. He sits completely unmolested in M 30's cherry tree for one minutes, then flies south. In a minute he sings

no did jump 9
2-8

4/25/54

there. M 30 flies toward that part of the field, but not into it. Newcomer sings frequently 60 yards from the hackberry and due west, so he's got a good slice of territory.

I inspect the new male; his face is poorly marked, back moderately. His song is as described, with an occasional last note stuck on as though by great effort after the song seems over. At 0850 both males sing. I'll call the new one M 31.

Importance of things seen today: Excellent for behavior of arriving female, male's reaction, and female's reaction to him. (which apparently is to drop). Note she never followed him. This suggests her drive was too low to let her continue proper sequence of actions and she left territory. His drive is high but he can't hold her if she won't follow. The new male showed how a territory is established. Note he too flew to M 30's tree and was attacked. He didn't drop, nor did he react as a male on territory would, by fighting back, by voice, etc. Thus he seems to elicit no reaction from the territorial male. All this is extremely good for the problems of sex and species recognition and behavior of the partners or males on these occasions.

0855 - M 30 sings in the hickory, the new male in III S and in the southwest corner of III. Note M 30 never really has used the west side of III at all and at the south end was always on the east side or east edge of III S. So this

isn't a case of crowding him out yet.

The year's first Yellow-throated Vireo.

Orchard at 0900 - The south male is singing regularly, as he has

all morning; type - 8's and also a very harsh half-step, half-skid. The north male [M 33] sings loud type-8's every 10 seconds. He flies rather slowly but I see no female.

Later he sings at the sink hole.

T-32 - The male here has a well-marked face, a red, smudged back.

Sings type-8's, ascending step, occasional chatter. Skid was commonest yesterday. Interval is 10-12 seconds.

V at 0930 - There are two males today; both sing a song of three to five high thin steps, then three to five buzzes. This may be fight-connected.

The newcomer is to the west and I'll call him M 34, the male that has been here M 35. M 34 is well marked. One of his songs is five very loud harsh buzz steps, the first two ascending, the last three falling off.

I work on M 35 because several of his songs are fragmentary. Soon I find a female obviously exploring for nest sights. She goes to two or three locusts, sits and turns in the leafiest forks for ten seconds at a time. She is never above four to five feet, usually lower. Goes to ground, pokes at weed stems but takes no fiber. Gathers spider webs,

flies east of the trees she's been exploring. M 35 follows. She's in a little cherry; no sign of nest there. He flutters away from her. She flies away. No nest.

M 34 sings more and more regularly. At 1020 both have been silent 10 minutes. M 34 is well-marked, red-backed, sounds a great deal like M 2.

T 37 at 1100 - M 37 is singing east of the old T 8, then in a big cherry near the road. I go and watch him. 37 F is there; she gathers nest material in an apparently aimless way for five minutes, takes it to the creeper-covered elm where 1 F built her first nest. There is a collection of soft material, not just a trace but a loose beginning, started today I've no doubt. While I write she goes again; two trips in 15 minutes. M 37 has been silent for ten minutes.

VI - The male is singing loud, frequent type-8's. He is well-marked in all respects. I'll call him M 01 [designation originally was M 42, changed when he left.]

T 38 - Silence for five minutes, then loud frequent type-8's.

M 38 doesn't act as if mated.

T 39 - In 15 minutes, loud, frequent, regular song.

T 40 - No time to check but long silence suggests he is mated.

T 41 - M 41 sings only five or six times in 25 minutes. Mated of course.

VII [T 36] - Silence. Where is the male? I don't really search.

VIII - Silence.

IX - Silence.

1230 - I leave. There is a male Prairie Warbler in our yard, so the migration is still on (as today showed). His song is irregular, weak, sometimes frequent.

There was a Blue Jay migration this morning.:

0550 - 12 - one calls "thief."

0555 - 23 - loose flock, 100' or so high.

0627 - 5 - three singles and two together.

0658 - 3

0710 - 17 and 14 right behind - one "thief."

0746 - 6 or 7 drop into projecting woods.

April 26, 1954

A clear day with a south breeze; temperature 64° at 0530. Daylight time begins today and will be used hereafter. Present from 0540 to 0745 and from 1720 to 1915 daylight time.

III S - A male sings frequent chatter steps and high insipid ones on the east end. Faintly marked. M 31 (the male of yesterday), comes to the south end of III and sings.

T 31 - See above and below

20 T 30 - M 30 is singing at my arrival, 20 songs in the first five minutes, most of them from the cherry.

ma 9
16 0556 - He moves 30 yards south, then southeast to the northeast corner of the little woods. He perches high and sings, 16 times to 0600. Then south to edge of territory, back to center by 0604 $\frac{1}{2}$, to top of cherry at 0605. 36 (4.5) In eight minutes to 0612 $\frac{1}{2}$, 36 songs at top of cherry. Then east to feed for one-half minute in a little elm.

2 2 (4.6) 0613 - To top of north cherry; 28 songs to 0619 $\frac{1}{2}$. Drops to a thicket where a Nashville sings; I see nothing. In one minute begins to sing, four in one minute. Then flies south into or beyond the woods. 4

104 M 31 has moved north on III to a line running east and west and as far as the north edge of the woods.

4 0624 - M 30 returns north; four songs in one minute, half way to the cherry.

33 1/2 N

33 (5.0)

5

7

22

8

3

27 1/2 N

27

3

13

13.9

33 1/2 N 15

5

0625 - To the cherry top; 33 songs in six and a half minutes; then east 20 yards to a little elm. Sings five songs; in two minutes (0633 $\frac{1}{2}$) returns to the cherry and sings at its top. After seven songs till 0635, M 30 goes south to the woods. In a tree top there he sings 22 times till 0641 $\frac{1}{2}$. Song rate seems slowed by his interest in something beneath him toward which he hops and keeps looking. He then goes north a few yards, sings eight times to 0643, goes north again 20 yards. Here he sings three times until a male Indigo chases him.

0644 - He flies north to the cherry top, sings 27 songs till 0649, goes 20 yards east to a little elm. In one minute he returns 10 yards west, sings three times, goes to his cherry at 0650 $\frac{1}{2}$.

[Blue Jay migration: three at 0634, then 15 and 7 at 0651. The 7 were 250' high.]

0657 - Having sung 33 songs in the big cherry, flies a few feet south to another cherry top. Sings five times to 0658. I quit counting songs after having done so for one hour.

0658 - M 31 sings on what seems southwest corner of T 30. M 30 flies that way. I go and see a female sitting quietly. A male flies up to a tree five feet from her. They sit quietly bobbing their tails. He flies to her tree (six feet high, she two feet up in it), then hops above her and

chases her 40-50 yards south; they fly silently; she twists and turns. Just then M 30 sings on the northeast part of T 30, so it's M 31 with a female I've been seeing. [This may be the female that later this morning came to M 30. She seemed unprepared to mate with M 30 and left. This is borne out by the fact that M 31 did not have a female again till May 9.]

M 31 sings northeast of the little woods. M 30 flies toward him but stops 40 yards away and lets him sing. (Is the reason there are more fights after the female's arrive that they get off the territories? Why then fight after the females learn territories, are incubating?)

0705 - M 30 is singing in his cherry top. I follow him from perch to perch.

0714 - As I stand near the cherries a female flies into the south one and begins to eat. M 30 sings in another though I can't see him. For two minutes she feeds quietly along in the cherry about 10' and then higher, paying no evident attention to the male or his songs and unseen by him (I'm sure). Then she flies a few yards west and I lose sight of her. The male has just flown north to the tree row. At 0717 the two come flying back toward me, male in close pursuit. They flutter to the ground and he sings (or perhaps she goes to a limb that is nearly

on the ground) about 10 yards from me. Both are then silent. He grabs a tail feather and pulls steadily and vigorously at it, tugging for perhaps five to seven seconds. He then flutters a few feet away, toward me, sits with his body tense and horizontal, bill open about 3/16-inch. She moves low out of sight. He flies a few yards away from her, sits about one foot high and catches and eats an adult insect or larva. Sings. He then flies perhaps 10 yards, still away from her. She doesn't follow, is out of my sight. He then moves north toward the tree row, then at 0720 to the tree row. At 0722 he goes to the top of the big persimmon and sings loud and regularly as he has since she disappeared. At 0725 he's still there, has sung 28 times since the encounter on the ground at 0717.

(Eight jays pass over, calling, the first flock that calls.)

0730 - M 30 has sung 24 more songs, still from the persimmon. As I leave he goes south to the cherry top.

VII - Silence.

Woods - Kentucky, Nashville, Myrtle, Black-throated Green sing.

Orchard - The south male is silent so far as I could tell from

III. He's probably mated.

T 32 - M 32 sings hoarse toneless buzz north of the meadow.

VIII - Silent

0745 - I leave.

1720 - I return. The temperature is 84°.

T 41 - M 41 is singing. At 1727 a female flies into an apple tree with nest material and I see the nest, about 10-11 5/12/54 feet high on an outer branch, well concealed. It was begun today and consists of a loose foundation of down. M 41 goes silently to the nest tree just as she hops out of the nest and goes higher in the tree. There is no pursuit or contact, or even much pause. He flies out and she in 20 seconds goes 55-70 yards north into the field.

T 01 - at 1732 - The male, M 01, sings five or six type-8's on the center, falls silent for five minutes. Probably mated [error - he never was].

T 37 - 37 F is gathering broom sedge down in flight as I arrive. The nest is well along, very bulky and full-sized from the outside. I do not inspect it. It is built in the outer leafy part of a little elm which is pulled over to the horizontal by a creeper; the nest is among the creeper, 5/12/54 well concealed. M 37 is singing type-8's at the I-IV tree row. He suddenly flies down at 37 F while she gathers material two feet high in a little dogwood; she has a white 89 web around her bill. She stands her ground, turns to face him as he lands two or three inches from her. They square off as if about to fight. It lasts only a second or two, but I think the male opens his bill and both extend their

wings slightly. He flies off silently; she soon goes to the nest.

I see a four-foot racer.

VII [T 36] - at 1750 - Silent for five minutes.

T 32 - There is an irregular, infrequent type-8 as I pass.

T 34 at 1800 - M 34 is singing irregularly, infrequently.

T 35 - M 35 sings faint steps and skids. I go to his spot and at 1813 see the female carry nest material to a little locust fork in the southeast corner of V. The nest is three feet or less high, very loose, more shapeless than usual. Begun today.

T 34 - M 34 sings only twice in ten minutes, one faint; must be mated. He may have fluttered slightly once. A Grested Flycatcher sings.

Orchard at 1830 - The north male [M 33] has been singing type 8's at the sink hole but now is silent. At 1837 he sings from the north edge of the orchard, at 1840 from the sink hole. His flight is normal.

Meanwhile the south male may have sung. I pass him by; he's probably mated since I didn't hear him this morning. If he's here tomorrow he can almost be assumed to be mated. [He had left.]

T 30 - M 30 sings at the north end in the center as I pass.

71
4/26/54

T 38 - M 38 sings regularly.

T 39 and T 40 - Both silent, probably have females.

1915 - I leave.

April 27, 1954

A cloudy morning with a mild south wind; temperature 68° at 0600. Present from 0615 to 0710 and from 1615 to 1900.

IIIS - Silence.

T 31 - M 31 sings.

T 30 - M 30 sings from high trees, acts unmated. I begin to watch.

2
8
0623 - He flies to a cherry top, in 1 1/4 minutes leaves and goes 50 yards south, sings twice, flies back toward the cherry and into it at 0626. A Nashville Warbler flies into the tree and away without any reaction from M 30.

30
0634 - Has sung some 30 songs (exact number forgotten in ensuing action). At this time a female flies past me, and I find her feeding about 22 yards from his song tree. She calls "chick" about one time per one or two seconds, feeds nervously. He continues to sing. I follow her with some difficulty as she moves 30-40 yards, always staying low and calling. I can tell by the location of his song that he is following too, perhaps 30 yards away and high. After two minutes of this I watch her in blackberries and he swoops down at her; I can't tell if his flight already gives some indication that he has recognized a female but I don't think so. There is a two-second fast and close pursuit and she abruptly lights six feet high in a red-bud

8
0636

12 near me. He grabs her tail feathers and flutters below while pulling them for four to five seconds. He lets go and she darts a foot at him; he glides 10 yards away to the ground, wings beating in a shallow arc and also slowly, at least the primaries. He then moves on another short flight and begins singing again. She flies toward him. By 0639 he has sung 12 times since he began again. At 0641 she again flies toward him.

7 0642 - Seven more songs by this time. He stays low and they both move about in small trees, so I have a hard time seeing them. She now flies to where he is crouched in a leafy tree fork two feet high (a good nest site) and there is physical contact for one second. He flutters out and she sits quietly and silently (for the first time since her arrival) in the fork, crouching down. I can't help thinking this is related to later nest site searching behavior. He sings nearby (about 15 feet high). She moves a few inches after one minute, then again sits very quietly for at least one minute, then begins to call again.

7 0643-47 - Male sings seven times. His songs come in spurts now, with the regular interval between when he is singing.

10647 0647 - I am following her. He flies into a tree above her and in a few seconds chases her out of sight. Two songs to 0648, then silence for a minute or so, then perhaps five more songs. I find them together, she still calling,

in a clump of little trees and vines. He turns and glides 10 yards away from her, then 35 more. She doesn't follow. M 31 is now singing quite near. I lose both M 30 and the female.

5
89
0650 - M 30 is at the little projecting woods, sings five songs from a high perch. Goes west to the big woods at ³¹0652. Silent for one minute. M ~~30~~³¹ is singing. For two or three minutes M 30 flies quickly back and forth near the projecting woods, a few of his songs being very high and of one-half volume. He then flies to a little ~~sassa-~~fras at the edge of the projecting woods, sits 20 feet high and begins to sing. At 0710 he leaves this perch for the first time, going 10 feet south. He had sung 78 songs since the last count at 0653, perhaps 60 of them from this perch without any movement; regular and loud. Possibly he first saw the female from here. I think it may be she is the female of M 31 [probably error]. In any event she seems to have left T 30 [error].

0710 - Rain begins and I leave. Males are singing on their territories.

1645 - I return. It is sunny after showers during the morning, which was 60% sunny; strong and steady west-northwest wind; temperature 78° at 1630. I flush a Woodcock near T 01.

T 41 - Silence. No Prairie Warbler near the nest, which is now nearly full-sized although not quite built up on the outside.

T 01 - M 01 sings type-8's at a distance.

T 39 at 1653 - M 39 sings type-8's. He flies as though a female is present, sings in spurts of four to five, moves and is silent for a minute or so.

T 40 at 1705 - There is a faint skid, then three or four more of less than full volume. M 40 flies to a 20' perch, preens for seven minutes singing occasional faint type-8's that are so faint and uncharacteristic that for a time I don't recognize their source. This is on the center of the territory; then he flies to its west edge.

In 10-15 minutes he returns, sings eight to ten songs from 20' up, leaves. In a minute I notice a nest in a little elm directly under the song perch; it is just a beginning, started today, Height five and a half feet. A female comes as I write. The male sings loud, 40 yards from the nest. Evidently he did find a female on April 25, as I then suspected. When I leave the territory at

1737, 40 F has made two trips in three minutes.

T 38 - M 38 sings type-8's. I watch for five minutes and he flies at a female and pursues her 20 yards till she goes to the ground. Without landing he passes over her, breaking in to a flutter as he drives her to the ground. He flies with small infrequent wing beats. All this is in silence. Having passed seven to nine yards beyond her, he lights two feet high and sits stiffly with his bill $1/4$ inch open for ten to 15 seconds. Then he flutters again, flying low. His back is slightly arched in flight. In a minute she flies indirectly at him and he flutters on. I see her ten feet up in an apple tree (no bands, of course). I judge she arrived today.

T 37 - 1755 - One or two faint steps. I sit to watch the nest and determined its stage. It is well concealed by growing leaves. In two minutes 37 F comes with soft lining material; this is consistent with its external appearance.

VII [T 36] at 1802 - Antennaria is beginning to reach the down stage. Silence.

T 30 - M 30 and M 31 to the south are both singing, possibly a male on III S also. M 30 sings rather faintly as I come up and he suddenly flies toward a berry tangle. When he gets within ten yards of it he glides a little and there are the sounds of a fight, the sudden loud sharp calls

that get closer and closer together, lower, hoarser, till they run in a continuous series. At the patch I find a female calling and bobbing her tail, ten yards away. Male sings perhaps 20 yards away. I follow the female, which moves south, calling. A male flies to her when she's 50-60 yards from where I first saw her. He sits horizontally, perhaps with his crown feathers erected a little (the wind?), about three feet from her. She moves and he flies at her and chases her north on a very long rapid pursuit of over 50 yards, eight seconds. They drop and he flutters away from her a few seconds thereafter. He then sings. Meanwhile M 31 is singing on territory, so there seems no doubt that M 30 has a mate, probably this morning's female. Note her repeated calling.

T 31 - M 31 sings quite regularly.

Rabbit on III; another west of the meadow.

Orchard - The south male is silent - is he gone? [Yes.] The north male sings one or two times at a distance. I'll call the north male M 33 from now on.

T 32 - Silent.

T 01 - Silent. It has become cloudy, cool, windy, beginning at 1830.

T 41 - One song at 1855.

1900 - I leave

April 28, 1954

A gray raw day with a steady strong north wind; temperature 50° at 0600. Present from 0615 to 0730 and from 1630 to 1815.

T 31 at 0615 - M 31 sings. See below under T 30.

T 30 at 0619 - M 30 sings once.

0627-0628 - M 30 sings three times, once from each of three perches as he moves quickly over the center of his territory.

0629 - 0631 - Three songs from one perch, then a glide out of sight, three more songs. I assume the female is here.

M 31 comes almost all the way north on III on the west side without a challenge.

0633 - M 30 sings twice, then flies to a three-foot apple tree and seems to explore it, i.e., like a female he sits quietly in the leafiest parts. Sings twice there.

0635 - He goes 40 yards away, sings once.

0636 - 0637 - While moving about in long flights, three songs. Then flutters low into small trees.

0637 - 0638 - Silence after three more songs.

0640 - One song, 3/4 volume.

4 06411-06421 - Moves about in tree tops in projecting woods, sings four songs.

1 0643 - One song, then south toward the little woods.

5 06451 - Back at the projecting woods, sings five times to 0648. Then glides down toward the ground 20 yards away. I don't see a female.

6 38 0648 - 0652 - Sings 14 songs, 9 from the high cherry perch; not quite full volume. Flies to the projecting woods, gliding slightly as he loses elevation. Sings twice there, flies 30 yards south toward M 31. Probably calls two or three times.

6 06541 - Returns to the woods, sings six times to 06561.

06561 - I watch M 30 at the little projecting woods as he sits quietly at the edge.

1 0659 - He sings once, then glides a little, low into the berry and brush area just a few yards east of it. He drops into the three-foot apple he crouched in earlier and for one-half minute sits down in a leafy crotch. He hops out of it and back in again three or four times, spending about two and a half minutes in the tree, most of the time motionless in the little fork. Acts as though picking a nest site. Silent. Then he hops on into nearby low cover.

5/8 He sings five very faint steps about one-half-three-quarter length, so low I can't be sure at first he is singing.

0703 - He darts several yards and female flies up and away. He follows in close pursuit 15 yards or so and she lands four and a half feet upon an outer limb in a projecting woods tree. He grabs her tail with his bill, hangs fluttering and pulling beneath her for five seconds, lets go and sings once, flutters a short distance away. I decide to watch her. She sits quietly for two minutes while bobbing her tail a little but otherwise doing nothing and keeping silent. I stay with her.

1
14 Meanwhile the male sings again at 0708 $\frac{1}{2}$; she sings a total of 14 times between 0708 $\frac{1}{2}$ and 0717.

32 faint
19 0705 -20 - After two minutes she moves to the ground about five yards from where he grabbed her, hops silently along for five minutes. No gathering of material; her movements aren't sluggish but aren't quick either. She then hops up into a little apple tree about three feet high and sits quietly in the same spot for six minutes; moves a little and sits for two or three minutes. No response to male song. Moving a little, she takes a perch two and a half feet high, sits for ten minutes (to 0725) without sound or much motion, her feathers

79
4/28/54

puffed out in a ball (back feathers sticking out and up over her upper tail coverts). Her eyes drop shut for a few seconds from time to time and are often only half open. It is cold and windy.

0717-25 - M 30 is silent till 0726, when I leave that territory. M31 has sung a good deal, more than M 30.

In the woods between IIIS and IX a male sings, so they are still moving.

0730 - I leave.

1630 - I return. It has just begun to shine a little through the overcast.

T 41 - A Cooper's Hawk soars overhead. M 41 sings twice to the west of the nest in the ten minutes I'm here. The nest looks complete from outside; no Prairie Warblers near it.

T 40 - The nest has advanced to the point where it is shaped, but the walls aren't quite of full height and are very thin. Progress is clearly slower than it would be in midsummer. M 40 silent during ten minutes.

T 39 - Silence during ten minutes.

T 38 - Silent while I'm on IV N and VI.

T 01 from 1650 to 1715 - Silence.

T 37 - The nest is complete. Silence for seven minutes.

T 34 and T 35 - Silence for 20 minutes, to 1750. The nest of 35 F is a fragment, will never be completed. It is a loose shapeless mass, equal in bulk to a nest worked on for one-half to two-thirds of a day. Probably it would never have been completed, and today's weather is not the factor; I say this from its appearance. E.g., it hardly looks advanced over the day before yesterday, and yesterday was fair and warm.

I decide to leave. Except for M 41's two songs I've heard nothing in one and a quarter hours.

1815 - I leave.

April 29, 1954

Completely cloudy with light rain off and on all morning; a little sun through clouds at 1400; mild south wind; temperature 66° at 1400. Present from 1415 to 1830.

T 31 - M 31 sings on IIIS at 1420, in three minutes returns to III. I follow till 1500. He sings 9/10 of the time moving over the whole territory but 1/10 singing from a perch, e.g., 28 times from a 20-foot cherry. Usually he is not at the top but is near it. Never behaves as though he has a female; possibly she has left. His territory goes north almost to the projecting woods (40 yards south of it), in general is west of the road except at the center south. Once M 31 disregards a soaring, loudly calling Sparrow Hawk, sings twice while the hawk calls.

T 30 at 1500 - M 30 sings six times from 1504 to 1506½.

1509 - One song on the center of the territory.

1511½-1513 - Moves 30 yards south and sings once.

1513½ - 1516½ - Sings four times. I follow M 31 all the way east to south of the little woods. He is silent while on T 30; I lose him and he returns to T 31 and sings.

1519 - M 30 sings nine times till 1522, 25 feet high. Songs are faint thin skids. Drops to ground out of sight.

1523 - 1526 - Sings eight from the little woods and just north of it. Flies far north to projecting woods, sings

7
7 (43)
as soon as he lands. To 1527 $\frac{1}{2}$, seven songs. Then east 50 yards at 1527 $\frac{1}{2}$. Sings seven from 25-foot perch; at 1530 makes a long flight north to tree row.

Towhee
I find a Towhee's nest on the ground, slightly domed, female incubating three eggs. I found it empty five days ago, so eggs are fresh. Vesper Sparrow sings on his territory.

2
5
8
1535 $\frac{1}{2}$ - M 30 returns to center of territory, sings two, goes west and continues song. Sings five more to 1538, several faint or fragmentary. Calls two or three times. Then east to his cherry top and begins loud songs, eight to 1540. Drops to east.

4
1542 $\frac{1}{2}$ - Begins to sing near the east fence row, four to 1543 $\frac{1}{2}$. He's moving about toward the south.

4
1544 - Sings four in next one and a quarter minutes, moving; drops to ground and then up.

18
1545 $\frac{1}{2}$ to 1551 - Sings 18, eight while moving toward projecting woods, 10 from it. Then drops.

2
1552 - Sings two in next minute. Moves. Silent one minute.

21
(64)
1554 to 1600 - Sings 21, last 15 from cherry top. He continues to sing from there and I count till the series is over; it is 18. I quit on M 30.

20 May 1954

Summary of M 30's behavior: Though mated he sings frequently, rather irregularly; moves a good deal but sings about three long series in one hour. Tends to stay on mid-territory but covers territory in the hour. Never see him pursue a female or flutter. Much like unmated male except for fewer series, greater movement, a few faint songs. Note that M 31 acts the same way today. Females not building yet.

IIIS - I probably heard male here or on southeast corner of III; listen for ten minutes at 1600 but don't hear now.

S Orchard from 1615 to 1635 - A male sings here for the first time in four days, a toneless chatter, half step, half skid. A characteristic is a halt or catch in it. Back has four rows, outer two fainter, the pair on each side slightly divided. For 25 minutes almost constant song; mostly he stays high; long series, 14 second intervals. I'd guess unmated. Probably not the type-8 male originally here.

T 33- M 33, the north male, sings type-8's for five minutes, falls silent. All males seem to be acting the same today; probably stages of cycle the same.

1710 - M 33 begins loud regular songs from a big elm on the north edge of the orchard. See below.

T 32 - A male chatters here steadily for 30 minutes, quits about 1710. He then goes into the field to the east and sings, returns to II. Then to sink hole and sings. Another male (M 33?) is there at the same time.

T 34 at 1715 - M 34 sings only about five times in 40 minutes.

T 35 - M 35 sings most of the 40 minutes, a step song with high, thin initial notes, buzzes at the end. He moves so much I'd say 35 F is not building.

T 37 - The nest is still empty. M 37 sings four or five insipid six-note steps. The notes ascend, then stop as though the song is broken off.

VII [T 36] at 1800 - The male sings his usual quick type-8's, irregularly. He flies as though a female is here; every flight is like this. He seems to explore for nest sites, going twice in three minutes to one leafy crotch two feet high. I'll call him M 36.

1800 - It clears completely.

VIII W - I hear one hoarse skid at 1825, then three more. The male responds to squeaking; feeds low along the fence row, goes south.

1830 - I leave. There is an Orchard Oriole in our yard today.

April 30, 1954

A heavy wet mist after a night clear at 2200; mild south wind; temperature 63° at 0600. Present from 0625 to 0930.

IIIS - There is a male here with a buzzing half skid.

T 31 - M 31 perches high and for five minutes sings every ten seconds.

15
1
10
1
5
T 30 at 0637 - M 30 sings from the top of a little cherry, 15 times without moving till 0640 1/4. Then south, then east. Sings at 0641. Then flies to a 30 foot perch in an elm top, stays to 0644, sings 10. Flies north 30 yards, sings at top of cherry branch. Disregards a singing Palm in the tree. Blue-wing sings. M 30 moves at 0646 after six songs.

43
0647 - M 30 pursues 30F on mid-T 30. They fly 15 yards, she lights on a limb, and he overshoots her. I follow her as she flies high from tree to tree, then low; sits quietly three minutes, goes south toward singing M 31, nearly to him. This takes ten minutes. Between 0647 and 0700 M 30 has sung 43 (possibly small error).

Is the female I watched 31 F? Note that M 30 when she dropped to the ground simply flew on, treating her almost as though a different species.

3
20
0700 - M 30 sings three times in one minute, quits, flies south. At 0701 he begins to sing from 30 feet up on dead tip of a cherry; 20 songs in next five minutes. He then

flies down and makes a pass at a tree where a small bird is, flies by it and to the ground to the north. One song, out of sight. In one minute I hear a female calling "chick" near the ground, lose sight of her.

0709 - M 30 begins again, three songs in one minute, silent.

0716 - Begins song on mid-territory, three or four in one minute, silent. Black and White Warbler here.

0724 - M 30 sings from top of a 20-foot cherry, nine to 0726, moves 40 yards south, begins again. Sings four to 0727, moves 40 yards northeast, one song, silent.

0732 - Sings to north, 19 songs to 0737. I quit counting after one hour. He moves about a good deal, once flutters down a little toward a grape thicket. No female is there.

The territory is full of Goldfinches, Palms, Blue-wings, others. I leave it.

T 36 at 0745 - M 36 sings type-8's.

T 37 - The nest is empty. M 37 sings faint high skids, then loud ones.

A female Pileated lands four feet up in a tree 30 yards from me.

T 01 from 0753 to 0803 - M 01 sings loud type-8's at 10-second intervals, regularly and constantly. He is north of the wires, most of the time low and feeding.

T 41 - Can't see nest well enough to comment. M 41 sings loud twice from near by.

T 40 - The nest is complete or nearly so. Faint buzz-steps once or twice.

T 39 at 0815 - M 39 sings type-8's on the northwest corner. I follow for 40 minutes; songs irregular but frequent. He concentrates on the northwest corner, to and beyond the road.

Least Flycatcher

T 38 - Three males, one female Cowbird.

Cowb

T 37 -T 36 - The two males are fighting on the south end of I, the female of each (so M 36 had one yesterday) calling regularly, unexcitedly near its mate. M 37 then turns, chases 37 F to the ground, pulls her tail feathers. Note this act during a fight, after the nest is complete. M 36 flies up to the two 37's and their display ceases.

819

Olive-backed Thrush, Ovenbird sing in the woods.

0930 - I leave.

May 1, 1954

Cloudy in the morning with a little sun; heavy rain last night, again today at 1330, then cloudy; temperature 72° at 1430. Present with Carmony from 1500 to 1730.

IIIS - Silent.

Good p.m.
long note

T 31 - Carmony goes to work here while I go on.

T 30 at 1512 - Silence. I see a four-foot racer six and a half feet up in a grape-elm tangle.

small stroke

1524 - M 30 begins to sing at the east edge of the territory. Sings three in one minute; to cherry top and ten songs in three and a half minutes.

3
10

1529 - He drops to low growth; two songs, to cherry top in one minute. From 1530 to 1535 1/4, 19 songs. Then to another cherry top, on to projecting woods. Sings five to 1537 3/4. Then to north tree row; silent.

2
8 (28)
11
5 (39)

1545 - Begins to sing in a 30-foot elm on mid-territory; three songs, the second abbreviated; to cherry top at 1546. Sings three in a little under a minute, leaves but I miss seeing him.

3
3

Yesterday's Towhee nest is empty.

same
Towhee

1610 - Begins to sing in projecting woods; two songs in one minute; to cherry top. There he sings five times to 1612 and I quit counting after one hour. (This series

2
5
29
13

of songs went on to 17).

Humming bird flies by.

Ca 270
(50)
T 31 - Carmony says M 31 has never quit singing, mostly from high perches. He counted a series of 50, then 10 more in a nearby tree; all this in 12 minutes.

Twice today Field Sparrows have been carrying food.

F-P
food carrying

Orchard - South male which was here April 29 is silent.

T 33 - M 33 sings toneless steps, type-8's from the sink hole.

T 32 - M 32 sings chatter and high step-buzz.

T 36 - M 36 sings type-8's, regularly and frequently.

T 37 - The nest is empty. M 37 sings two skids.

N

T 38 - Silent.

T 40 - Silent. Nest empty.

N

Field Sparrow nest, female incubating four eggs, broomsedge.

F-P
4

T 39 - M 39 sings insipid steps at the north end of the territory, sometimes north of the road.

T 01 - M 01 sings.

VIII - Silent.

1730 - We leave. It began to sprinkle a little at 1630.

May 2, 1954

Rain and very cloudy till 1330; threat of rain then ceases and strong west wind begins; a little sunlight through overcast; temperature 74° at 1445. Present from 1500 to 1700.

IIIS - Silent.

T 31 - M 31 singing frequently, regularly. P m song now

T 30 at 1515 - Silence, all birds. The wind is gusty, not violent.

1525-1528 - Only sounds are one Field Sparrow song at a distance, two possible Field Sparrow calls, one possible Cowbird whistle. At 1530, dead silence; M 31 has been silent ten minutes.

1535 - M 30 sings one skid in the projecting woods.

1537 - From the north tree row he begins rapid, sometimes frequent, always faint insipid steps; after eight of these, changes to two very short skids, then to two insipid steps. Silent at 1538 1/2.

1545 - There is no point in staying here. The song rate is due not so much to the stage in the cycle as to the weather, and what songs there are may be inaudible.

T 31 - M 31 sings a few at 1545.

1600 - I leave III.

91
5/2/54

T 32 - M 32 sings frequently and for a few minutes regularly on center of IIE. He is low, within five feet of the ground.

T 37 at 1610 - There is one egg today, spotted at the wreath but not elsewhere. I mark it. Silence. N

T 36 - Silence.

T 38 - M 38 sings four skids north of the road, possibly near the waterfall. He then moves to the ridge and sings high skids (usual song is type-8).

Field Sparrow nest, broom sedge, female incubating four eggs. N

T 40 - No eggs. M 40 sings once. N

T 39 - Silence.

T 41 - Silence. Nest looks all right.

T 01 - M 01 sings irregular frequent type - 8's.

VIII - Silence.

1700 - I leave.

May 3, 1954

Cloudy cold morning after a hard rain during the night;
 strong^{west} wind; clears at 1200 but there are always clouds and very
 strong gusts of wind; temperature never reaches 50°; is 48° at
 1200 and 1430. Present from 1445 to 1700.

IIIS - Silent.

T 31 - Silent.

T 30 at 1457 - Silent. There are no songs at all on III; this is
 partly due perhaps to the fact that the wind makes the few
 sung inaudible.

1530 - I've walked T 30 for over 30 minutes. Can recall
 only Towhee, Cardinal songs. Nor are birds to be seen. A
 few Field Sparrows flush from underfoot, drop like Bachman's.
 Sunshine about 10%. Fsp B

1557 - I leave III. Conditions as just described. Searched
 for nests without luck.

O. wind T 34- T 35 from 1600 to 1625 - Silence and no sign of a nest.

T 37 - The second egg is here. N

T 38 - Hear one or two insipid and faint steps at the south end.

T 40 - No eggs. Silent. N

T 39 - M 39 sings three or four songs near the pines.

1700 - I leave.

May 4, 1954

Cold, most sunny, with a steady southwest wind; temperature below 40° last night, 49° at 1530. Present from 1545 to 1815.

IIIS - Silence.

T 30 at 1600 - Silence at arrival; other birds quiet too; two Field Sparrow songs. Wet

Ideas: 1) Since it's sunny today and there seems to be little activity, apparently cold weather alone will slow or stop courtship and pre-nesting behavior. Wet, cloudy, but warm weather had the same effect last year. (Of course we've just had wet weather.) [But see below.]

2) Since nests are begun and sometimes abandoned even after completed, and since the period between building and laying is irregular, it must be that copulation occurs after nests are begun (or even completed), or that weather conditions affect the development and deposition of a fertilized egg. copulation

1630 - The field is still silent. M 30 has made no sound either.

Might the cold cause birds to leave or shift territories?

1638 - A male and female Prairie Warbler fly up from near me. I follow for five minutes; they are silent.

94
5/4/54

She moves along low, usually three feet or less from the ground; he always follows but never darts at her. She never flies away from him, so often they are within one foot or even three inches of each other in a tree or bush, never sitting longer than a few seconds. I soon lose sight; they cover ground rapidly. The female may have pulled at spider webs or loose fibers several times.

I then find the beginning of a nest, three feet high in an American elm. I am pretty sure it was not there yesterday; it could easily be assembled in a few hours. Not enough of it to tell if it will be abortive.

5 - birds?

1705 - I leave III.

T 32 - Silent. I search for nests for 30 minutes without finding anything.

T 37 - Silence. There are three eggs which I measure:

N

1. 15.7 x 13.1 mm. Wreath is of separate purplish and chocolate spots.
2. 15.9 x 12.7 mm. Like #1.
3. 16.3 x 12.3 mm. Blotch on the end instead of a wreath. A few light spots elsewhere.

egg sketch

T 36 - Silence.

T 38 - Silence.

T 40 - M 40 sings five or six quick skids, higher than usual;

95
5/4/54

the first songs today.

There is an egg in the nest, 16.7 x 11.9 mm. It is marked with many small and faint brown spots, coalescing to form a light wreath with purplish undertones. The whole egg is spotted.

N
egg
done

T 39 - I find the nest, a well-shaped cup with the shell surprisingly formed for the slight mass. No pad of fiber, but a thin cup. Could have been built in one day in summer I'd guess. It is three feet high in an American elm. I'd possibly have seen it before on May 3, unless it was begun only yesterday; it might have been begun yesterday. (But it is right where M 39 was spending all his time on April 30 and May 1.)

T 41 - 41 F is not on the nest. M 41 sings one high skid.

N

In attempting to assess the effects of the weather on nesting and pre-nesting behavior, the following facts seem true:

under

1) The male's song is greatly inhibited (this might be as the result of wind).

Imp

2) The female will lay eggs after a night of temperature in the 30's, and this includes the first egg of a set.

3) The female will begin a structure (which I cannot yet say will become a complete nest) in cool weather of the sort prevailing during the last two days.

4) If it is true that fertilization occurs shortly before laying, copulation will take place in cool weather.

5) Thus, it seems only song is rather uniformly and decisively affected by cool weather, and it may be possible to conclude only that cool temperature raises the threshold for various significant events in the cycle. Or it may be that temperature has no effect (even early in the season), and that all of the things seen today began after the rain stopped and the cool weather began, i.e., about 44 hours ago. Today's observations thus offer only hints for further exploration.

1815 - I leave.

May 5, 1954

Generally sunny (except from 0630 to 0800) after a predominantly clear night; strong southwest wind; temperature 55° at 1300, weather moderating. Present from 1300 to 1815.

IIIS - Silent.

T 31 - M 31 singing at arrival. Sings for five minutes in a restricted spot, staying low. Falls silent for ten minutes, begins to sing at the same place. I search without luck for a female or a nest. By 1415, M 31 has sung for six of the 70 minutes I've been within earshot of him. some song note

Cardinal nest 18" high in a grape-maple tangle which is two and a half feet high; female on two eggs. Card 2

Gnatcatchers are beginning a nest 18 feet up in a walnut fork concealed by creeper. Both adults build. Gnat

T 30 at 1415 - Silent. The nest looks no farther along than yesterday, may have been abandoned. I begin to walk the territory and listen for M 30.

1427 - 1429 1/4 - Sings 12 type-8's at 3/4 volume, from projecting woods. Drops 40 yards to east, falls silent one minute. Sings three type-8's in two minutes. good note long

1432 1/2 - 1435 - While moving over center of territory five type-8's.

32 ins
1447-1456 - Sings 32 insipid steps, not quite full volume, from projecting woods. Then flies to tree row.

6 ins
1457 - 1459 - Sings six more insipids from the tree row. Most singing has centered on the nest so I've watched to see if 30 F visits it; have seen nothing.

1508 - 30 F is at the nest, so it is still active; note the slow progress.

20 ft
38 ins
58
Today's weather is considerable warmer in the sun than have been the two previous days, but the wind is equally strong and gusty. Bird song, except Prairie Warblers!, is almost absent. This suggests that wind and not temperature is the main factor in the slight amount of song.

1515 - I leave T 30. M 30 has been silent since 1459.

South Orchard - The south male is silent.

Field Sparrow nest on ground among grass, female on four eggs.

T 33 - I find a female Prairie Warbler at the north fence line near a big elm where M 33 was singing recently. She is very nervous, apparently because of me, calling frequently and bobbing her tail and seeming reluctant to leave the spot. Her call is a "tsep"; this probably is the best

579-
prob
1st
Wdg
Call
Hear

rendition of the note I've sometimes called "check."
Just as I see her and squeak, the male flies up to me,
landing in the tree with the female and spreading his
wings a little. He leaves in 15 seconds. Note he doesn't
follow the female or otherwise court her, acting as though
they are well along in the nesting cycle. She flies a
good distance and I lose her. There seem to be no good
nest sites near the spot where they were, though M 33
sings here four or five times for ten minutes after she
goes.

At 1645 I find her on the east end of the ridge and
follow her for ten minutes, losing her when a Palm Warbler
distracts me. Just before, a Cooper's Hawk swooped down
the valley and the female seems to have quit her foraging
after this. She perched tensely for thirty seconds after
the hawk passed. During the ten minutes, she fed and
called nervously as before, and since I was not near her
this is presumably her natural behavior today. The male
was near her at first but left soon.

1545 - 1700
6.7

Long -
Palm
Warbler
1

1700 - I must leave the territory without having any clear
idea of the situation. The male has sung some six or
seven times.

T 32 - Silence, though I heard one or two songs in the southeast
part earlier.

T 35 - Search till 1730 and find the nest. It is about five feet high, placed against the upright trunk of a seven foot maple. It contains one Cowbird egg, 20.4 x. 16.8 mm. N
The nest is lined with several feathers, is 40 yards east of the foxes' den, is moderately to poorly concealed. It seems safe from the complete development of this nest to say that 35 F built it immediately after giving up the fragment she first worked on.

M 35 completely silent.

T 34 - Silence.

T 37 - Egg four is here, 16.5 x 12.3 mm, marked like egg three N
with a wreath on the large end and not quite a solid blotch of color. Eggs feel slightly warm, so incubation may have begun - she returns to the nest as I write. 430

There are two extremely faint songs just before she returns.

T 38 - M 38 is active over the east end of the ridge, silent.

T 40 - The first egg is gone. Egg two is there, 16.6 x 12 mm. N

There are one or two songs. This nest is well concealed.

T 39 - Silence. Possibly the nest has been a little worked on since I last saw it.

T 41 - 41 F is not on the nest. M 41 sings twice.

T 01 - Silence.

T 36 - Silence.

1815 - I leave.

May 6, 1954

Sunny and cool after a clear night; mild southwest wind; temperature 45° at 0700. Present from 0715 to 1115.

T 41 - Male sings frequently for three minutes east of nest, north of road. Female not on nest. See below. N

T 01 from 0720 to 0750 - Male sings type-8's constantly at 12-

second intervals around the wire, moving fairly often, seldom perching high, never giving any sign that there is a female. Two or three times he seems to explore leafy nest sites. I'd say there is no female. *leafy*
B

Blue-headed Vireo here.

T 37 - Female on nest. Regarding male, see below under T 36. Y

T 36 from 0755 to 0825 - M 36 is singing type-8's at my arrival, and I soon see a female near him. I follow her for 20 minutes. She calls "chick" and "chep" and "tsep" frequently, moves along near the ground most of the time but never gathers nest material. M 36 sings frequently and stays near her but above in the trees. She acts as though there is no nest. Two events: 1) A strange and poorly marked male flies up about four inches below her as she sits motionless for 30 seconds in a leafy fork three feet above the ground. She immediately quits calling but doesn't show any aggressive response (unless she opens her bill, NTB)

which I can't see). The male moves toward her, she flies and he pursues her. M 36 instantly joins and the three twist and turn in flight out of sight. A few seconds later M 36 begins to sing and one minute later M 37 begins songs, at first insipid steps and then skids. 2) The female resumes moving about; five minutes later M 36 dives on her and they drop to the ground and rustle in the brush and he immediately sings one full loud song and in two seconds another loud but abbreviated song. 51 10 4

I can follow the female at will because of her call. M 36 still sings. I noted yesterday re 33F and today regarding this female that the call sometimes has a kissing *♀ call* sound, or the quality of a Rose-breasted Grosbeak's call.

20
20
20
T 32 from 0830 to 0915 - Silence for 20 minutes, then a song from the northwest corner of the orchard. I find the male, watch him sing and suddenly begin sotto voce songs. He flies out east over the blackberry field, slowing down at a spot and turning a right angle there. A female appears nearby when I go there and I follow her. Once she flies to a spot in the blackberries where the male sits and he flutters away and sings once in the air. She goes east in the field and I remain where I found her. At 0905 I see the nest, a loose tangle that in good weather could be built in a day or less. It is two and three quarters feet high in a blackberry. The male sings irregularly and infrequently, with little spurts

of loud song, from the field and near it on the edges.

This pair I'll call the 32's.

At the sink hole is a type-8 singer, and far east is M 33. Sinkhole male is unknown for the moment.

T 34 and T 35. Both males are singing irregular toneless half-step-half skids. On T 35 the nest still has only one Cowbird egg. M 34 sings in the end of the pines. I see 34 F for the first time. I soon lose her but don't doubt she is building.

T 33 - M 33 sings loud and regularly from the elm by the field, going to the sinkhole occasionally. In 15 minutes in the field I can't find 33 F.

Baltimore Oriole here.

South Orchard - A very lightly marked male with pronounced back streaks appears near a hawthorn tangle but I can't follow. In 15 minutes I hear no song.

T 30 at 1013 - After 25 minutes I have heard no songs except perhaps 10 from M 31. The nest is built up a little since yesterday, so that it now consists of a shaped hammock or foundation; still quite rudimentary. The female has not come to it since I arrived.

1041 - M 30 begins song in the big cherry. Sings 11 skids to 1044 $\frac{1}{2}$, flies far southeast toward the tree row. I leave the territory after only half an hour of counting songs. The wind came up about one hour ago and is now quite

gusty from the south. The sky has clouded over within the last five minutes. There have been almost no bird songs since I came to III.

T 38 - Silent as I pass.

T 40 - M 40 sings three times. The nest still contains only egg 2.

See a one and a half foot hog-nosed snake.

*Snake
hog*

T 39 - Nest is undeveloped since yesterday.

T 41 - The female is incubating. M 41 is singing frequently.

4

1115 - I leave.

May 7, 1954

Cool, damp, and cloudy after a cloudy and occasionally rainy afternoon and night on May 6; little wind; temperature 51° at 0630. Present from 0645 to 0915 and from 1215 to 1415.

T 31 - M 31 is singing every eight seconds from a cherry tree.

He certainly acts unmated. I watch him 30 minutes, to 0720; he sings without a break. I also examine all suitable trees near him, seeing nothing. I conclude there is no female. See below after T 30.

T 30 at 0721 - M 30 sings at the south end, 16 skids in the next four minutes. At 0725 he goes south to the hackberry, falls silent. He hasn't come this far south for days; is the nest abandoned?

0727 - Sings four faint songs, probably near the south tree row.

0729 - 0734 - Sings 18 near mid-territory.

0734 1/2 - 1741 1/2 - Sings 24, 16 of them well over on the south part of the orchard. This tends to confirm my thought that no male has territory there.

M 30 is silent. The nest is undeveloped. Note that M 30 is singing more frequently and ranging out much farther than usual, the song despite the unfavorable weather. Correlate this with his nest cycle.

0747 1/2 - 0752 1/2 - From one perch in the projecting woods, 22 songs; three are abbreviated, all loud. Then

moves 20 yards north, sings three, quickly falls silent.

0757 - To my surprise 30 F goes to the nest, shapes it. It is sodden and scanty, but she sits in it for seven minutes, to 0804.

0803 1/2 - M 30 begins song from high in a cherry. In five minutes, 20 loud songs.

0807 - 30 F returns to the nest for 20 seconds. Can male behavior be correlated with the stages of nesting, as I've always thought? Note her extremely slow building.

T 31 - I can't be sure, but would judge M 31 has not sung regularly during the last 50 minutes.

0810 - I leave III.

T 32 - M 32 is singing irregularly in the field. Nest looks developed, probably far toward completion. I can't be sure what its stage was yesterday, so the rate of building is unknown.

T 33 - M 33 is singing at the sink hole, then from the big elm on the edge of the orchard. Later I spend 15 minutes on the territory without hearing him.

T 35 - M 35 sings a high step with a Golden-wing's buzz at the end. The nest has its first Prairie Warbler egg (that I've found). It is 14.7 x 11.8 mm., a small pointed

egg with a broad wreath and a moderate amount of spots ¹⁹⁵
of the usual variety of light through very dark browns.
The spots are of average size, a few toward the small
end, off the wreath.

T 34 - M 34 sings. I watch 34 F call and feed on the ground near
the pines, go into the pines. No effort to find the nest
I feel sure is there.

VIII - Field Sparrow nest in broom sedge, female on four ^{F 5}
eggs. ₄

0915 - I leave.

1220 - I return. The day is still cool, with a north-
west breeze, a little sun shining when I arrive; temper-
ature 55°.

T 41 - Silence. 41 F is not on the nest. See end.

T 39 - Nest shows little if any progress since I found it. M 39
sings very irregularly, apparently stimulated by M 40's
songs.

T 40 - Egg 3 (and 2) present. The two eggs feel warm so I re-
tire to watch and see if the nest is being incubated. ^N
M 40 sings a range of songs from a high insipid step,
the same song ending in a buzz, type-8, and his dry
skids. Songs are irregular.

1245 - The songs draw nearer the nest. 40 F with one "chep" flies to the tree, sees me, retires five yards, quickly goes to the nest and incubates. Male is silent, though I don't try for cause and effect here. N

This is, then, a 3-egg set, the first egg gone (but not replaced by a Cowbird).

T 38 for 30 minutes - Silence the entire period. I examine all good nest sites without seeing anything.

Towhee nest with three eggs and also two Cowbird eggs from different females; in broom sedge; female incubating. Towhee 3+2

T 37 - Female incubating. P

T 36 - I watch the pair for ten minutes without seeing signs of building. 36 F calls, sitting high most of the time on the west side of the territory. M 36 sings in the west tree line. Once he pursues 36 F and chases her to the ground. 879

There may be a strange male coming onto this territory at times.

T 01 - Field Sparrow nest in broom sedge, female incubating. A red fox trots by. FSP

M 01 sings very regularly near the wire, acting unmated.

A four-foot racer is tightly coiled on the ground.
When touched it quickly disappears down a small hole in
the ground.

T 41 - Female not incubating; male singing frequently, irregularly. N

1415 - I leave.

May 8, 1954

After a clear late afternoon yesterday, it is gray, cool, occasionally misting today; wind from the northwest; temperature 43° at 0600. Present from 0640 to 0820 and from 1400 to 1745.

0640
ca 1500
T 31 - M 31 is singing frequently at my arrival and I spend one-half hour following him around on the west side of the field in the small area where he spends by far most of his time. He never quits singing, and I think is unmated.

A strange male sings in the southeast part of III and I watch him for five minutes. His song is a normal skid but with no high thin notes in it. He sings weakly, sometimes sotto voce, and his apparent attention to the place where M 31 is singing across the field suggests that he is a stranger and inhibited from asserting himself by the loud songs nearby. Note that males thus seem still to be moving either in from the south or about in the area.

N 13
edge of field
ST?

T 30 - One or two songs while I am in other parts of the field. I spend only ten minutes on the territory. The nest is still quite flimsy; it has assumed full shape but its walls are not quite high enough and it has no bulk at all.

T 32 - This nest is bulky and very neatly made of broom sedge;

a soft and beautifully symmetrical structure, still unlined. The male sings irregularly but without many long pauses, always now from the field or from the northwest edge of the orchard.

T 33 - M 33 sings four or five times in ten or 15 minutes but I never see the female. As usual M 33 is at the north edge of the woods, where the only suitable nest sites seem to be blackberries.

T 35 at 0745 - 35 F is on the nest so I don't try to measure the eggs just laid. Male singing irregularly. Y

T 34 - M 34 is singing more frequently than I've ever heard him, usually from the south end of the pines. I spend one-half hour going through part of the pines without finding the nest. I'm sure must be here. No sign of 34 F.

Field Sparrow nest, four feet high in a five and a half' red pine, the first Field Sparrow nest off the ground this year. It contains one Cowbird egg and three Field Sparrow eggs. F 80 3+1 10+12 gik

0820 - I leave.

1400 - I return. The day is still cool (53°) windy, and very changeable, with the sun out perhaps 50%. During the morning it showered a little. Birds are singing hardly at all.

T 41 - The male sings infrequently and the female is not at the nest. I can't decide if incubation has begun and the nest failed, or whether I saw her on the nest before she'd laid a full set. N

T 40 - The nest has been emptied without any trace of the predator. The male sings irregularly and moves well onto T 39. In 20 seconds he comes flying quickly back with M 39 chasing him, one or both males making a twittering note. As soon as he gets on his territory, M 40 stops and M 39 goes away. Both sing a high insipid step ending in a buzz. 0707

T 39 - 39 F is in the apple where 22 F built her successful nest, and I follow her. She feeds, pays no attention to nest sites, calls "check" frequently but irregularly from time to time. M 39 sings reasonably near her and seems to move along in the trees as she covers the territory near the ground. I follow her for 15 minutes and see no sign of building. She goes well west into the maple planting, and I give up pursuit when I'm sure that it's unlikely she'll build much. Her first nest looks unchanged, still a thin shell. See also under T 40. 0107

T 01 - After five minutes M 01 sings from the walnut planting north of the wire, his usual location. I watch for 15 minutes, see nothing to indicate he's mated except his irregular (frequent) song. Finally he moves southeast

near the point where T 17 was last year. I think M 38 may have met him here. M 01 now goes along near the ground, moves very rapidly and rather jerkily, thrusting his bill out toward objects I can't see. It almost looks as if he's going through feeding motions without any food objects. I have only glimpses during this period so I'm not sure.

Towhee nest in broom sedge, female incubating three Towhee and one Cowbird egg.

T 37 - Eggs warm though female is not present.

T 36 for 10 minutes - Silence. The wind has come up a little.

There must be the beginning of a nest here but I am always so sure the birds will lead me to it that I never make a systematic search.

III from 1515 to 1700 - I collect plants over the whole field and of course listen for songs. M 31 sings four or five times, M 30 not all that I hear. Other birds are nearly silent. I then begin a careful search for other birds' nests, trying to find Cowbird eggs. I cover the south fifth of the field, find only a Cardinal nest in the southeast tree row. It contains nothing, but under it is a Cardinal egg with a small puncture. Note that its location indicates there are two Cardinal pairs on the south end of III, the other on the west side.

114
5/8/54

T 35 - I go to measure the new egg of 35 F. It is marked like first but with more small blackish spots and scrolls, and is 14.6 x 11.7 mm; it too is a small pointed egg. N
egg done

T 38 - Passing through the territory I hear M 38 sing on the center of the ridge, go to see him. I immediately find the nest, seven feet high in an Americal elm and built between two major upright leaders. It contains two eggs, as nearly rounded and unpointed as I've ever seen them and also very little and lightly marked with fine spots, wreath near the middle of the egg. I can't know the order in which they were laid, but I mark them and take the following measurements: N
198 done

1. 16.4 x 12.5 mm.

2. 16.7 x 12.9 mm. N

T 41 - Female not on nest.

1745 - I leave.

May 9, 1954

Cool and changing quickly between cloudy and sunny after a cool night; northwest wind gusty; temperature 48° at 1130.

Present from 1145 to 1255 and from 1320 to 1645.

T 41 - Silent. 41 F not at nest. N

T 39 - Silent. Nest no farther along and surely abandoned.

4/20
T 40 from 1155 to 1215 - I hear three short songs, find M 40 with 40 F, both exploring the elm where 22 F had her successful nest. He pursues her directly to the ground, sings, flutters away with his back arched. I follow her for 30 seconds, think she gathers spider nests. M 40 flies up to her, she moves east, I lose. She hasn't returned to the elm so I assume she's still looking for a site. All M 40's songs are singles, all are from the general vicinity of the elm. J P
4/20

T 39 from 1215 to 1235 - Not a sign of a Prairie Warbler.

T 38 - A Nighthawk flies up from the ground, the third in three days.

The third egg is here, shaped like the others, with more fine black markings. It is 15.3 x 12.6 mm. This nest is poorly concealed. eggs

M 38 is silent.

T 37 - M 37 is silent. 37 F is not on the nest but the eggs are warm. N

T 36 - Silent for five minutes.

1255 - I leave.

1320 - I return. The wind is stronger; the sky has been cloudy for one hour; still 48^o.

T 36 to 1345 - No sign of a Prairie Warbler.

T 37 - M 37 silent; 37 F incubating.

T 35 at 1355 - Egg three is here, all are cold, so the set isn't complete. Egg three is 14.8 x 11.8 mm, has bigger spots, merging into a more solid wreath; spots are a redder brown and there are no blackish scrolls. This nest is moderately concealed, its weakness being its visibility from below.

M 35 is silent.

T 34 from 1400 to 1500 - I cover all the pines, find no Prairie Warbler nest, no sign of a Prairie Warbler.

U/160
A Cardinal nest is five feet high in the pines. It contains three eggs, with a fourth beside it on a pine branch, this one cold. Probably two eggs are Cowbirds, clearly two aren't.

T 33 - Complete silence for 20 minutes.

Two Nighthawks in the field. Bluebird's nest

18 feet high in a big dead beech. A chickadee nest, *chickadee*
adult in it, two and a half feet high in an old three
and a half stump.

T 32 - Nest as yesterday. Silence.

T 30 - The nest rim is built up since yesterday. Silence.

T 31 from 1530 to 1625 - I begin a search for all sorts of nests.

Field Sparrow nest in broom sedge, one egg. *1530*
1

1537 - M 31 sings once.

Cardinal nest I found recently on west side is *same*
Cardinal
now empty.

1600 - M 31 sings and I find him with a female. He *019*
pursues her. I follow her as she feeds along, usually
five feet or so high, sometimes on the ground. She
moves a lot, calls "check" frequently but irregularly.
He sings sotto voce several times in succession with
only two-to five-second intervals. She gathers no
material, doesn't explore, but note her quick wide
movement. M 31 keeps near, sings irregularly.

A Field Sparrow chases 31 F from a little tree. *in cfs*

M 31 flies at me and flutters to the ground five feet
from me in what seems a threat display; is the zooming
they sometimes do the same? *BF*

He still follows her and she calls. I hear fight

*no doubt
prob at
2 years
before
me by
accident*

notes, her call; has M 30 come up? - we're not near the area of his activity.

I think this is the first time M 31 has clearly had a mate. At 1623 she's still calling, 30 times in one minute unless some calls are his. He stays near her; they are too active to be any but recent mates.

all
note
pg
7

1625 - I leave the territory.

1645 - I leave.

May 10, 1954

Perfectly clear cold morning, becoming cloudy by 0800 and remaining so all day; no wind; temperature 40° at 0601, with a very heavy frost over all low ground and some hillsides. [This frost and two much lighter ones in the last few days killed many leaves and presumably whole plants. Thus most Virginia creeper and grape have turned brown and wilted and this should reduce nest concealment for Prairie Warblers. Also seriously injured are redbud, black locust, milkweed, tulip; maple is less affected and elm not at all.] Present from 0630 to 0730 and from 1645 to 1720.

T 41 - Male singing, female not at nest. Obviously it has failed, probably three or four days ago. I walk right into the new nest, about half finished. It is five feet high in a sassafras that is cut or broken down to about six feet and covered with grape and creeper.

T 01 - No song that I can be certain of.

T 39 - Nest as before and clearly not to be completed. Male sings on north end of territory but so little that I can't trace the female through him. I am also bothered by M 40 and M 41 and possibly even M 01, all of which may have sung on the edges of their territories, i.e. near T 39.

0730 - I leave.

1645 - I return. The temperature is 55° , the day
cloudy but without the chill wind of the last few days.

T 31 from 1645 to 1700 - M 31 sings on the west edge of the territory, very irregularly; moving long distances. I find
no sign of the female.

T 30 - The nest is well along and nearing completion. The final
lining must still be put in.

T 32 - The nest is complete and contains a Cowbird egg. It measures 20 x 15.7 mm. M 32 is silent. Nest poorly concealed. N
Nighthawk on the ground.

T 33 from 1715 to 1730 - Silence.

T 35 - 35 F is incubating so I can't measure egg four, which I N
I assume is here.

T 34 - Silence.

T 36 from 1745 to 1800 - Male sings a few high steps at the west
tree row, but I can't find 36 F.

T 37 - 37 F incubating; male silent. N

T 38 - 38 F incubating; M 38 silent. N

T 40 from 1830 to 1845 - M 40 sings two songs on mid-territory,
but I never see him. He seems to be moving a lot.

T 39 from 1845 to 1900 - M 39 sings several times but always
from different spots, and I get no help in finding 39 F.

T 41 - 41 F is building, M 41 silent. She gathers nest material
from the area north of the road (the nest is on the north
side of the road).

T 01 - Silence.

1720 - I leave. There are probably nests on all terri-
tories, but they are built so slowly (e.g., 30 F's) or the
males are so silent that I can't find some of them. *weather*

May 11, 1954

A perfectly clear windless morning; temperature 47° at 0545. By late morning some clouds appear and a mild west wind rises. Present from 0600 to 0730 and from 1515 to 1845.

T 41 - Old nest is empty; I remove it. It was well concealed.

*W. L. S.
Chad
all
details*

The new nest is still under construction. Male singing on territory.

T 01 - As yesterday, complete silence. It is doubtful if the male is still here.

T 39 - I spend about one hour on or near this territory, having some difficulty being sure whether males seen on the north and west sides are M 39 or his neighbors. No sign of building. At 0700 I find the female feeding high in the southeast corner of the territory. She is in sight for 15 minutes, always in this corner and never gathering nest material. The male sings near her much of the time.

Q. L.

There was a big Palm, Myrtle, and Black-throated Green wave last night and the many warblers present make it hard to follow Prairie Warblers.

T 40 - By watching the female I find the new nest. It is 18 feet high in a vertical fork of a 35-foot elm. She is building at 0630 but not very actively. The structure is well shaped but is extremely slight, consisting of a few fibers

649

woven in the outline of a cup but almost invisible from the ground. It was probably begun yesterday; in summer it would take only an hour or so to build. *me*

0730 - I leave.

1515 - I return. There are a few clouds but it is sunny (temperature 66°) with a slight west wind.

T 31 from 1515 to 1545 - No sign of Prairie Warblers.

T 30 - Nest complete.

T 32 - Nest contains only the Cowbird egg of yesterday. Since *✓* the nest, though lined, is not neatly woven together around the rim, i.e., it looks as it would if someone had pulled the rim off, I wonder if it is complete. If not, the Cowbird egg would probably cause its abandonment.

Silence.

T 33 from 1600 to 1630 - Silence till 1620 when a male sings an odd Palm Warbler-like song at the south end. There is an immediate fight with four Prairie Warblers in it, three of them chasing each other noisily. After 15 seconds and 20 yards' progress the three go to the ground. One seems to attack another, coming into close physical contact, the third sitting a few inches away with his bill open. The two in the physical encounter may have been male-female. After six or seven seconds the fight on the

ground breaks up and I find that one of the four Prairie Warblers is a female (perhaps more than one). I follow her on T 33 as she feeds near the ground and calls "check" rather loudly. A few faint male songs come from nearby. She picks at a piece of cloth I tied to a sassafras last ^{July} autumn, not succeeding in detaching it, so I suppose she is building. I soon lose her.

I can't tell where the other Prairie Warblers came from. The most likely assumptions are that they are in the south part of the orchard or possibly that they are migrants.

T 35 - The female incubates. Later the male sings a combination song of high and buzzing steps. ✓

T 34 - The male sings frequently at the north tree line (at the woods) and I watch and follow him for 15 or 20 minutes but never see the ^{male}. It is possible she has her nest on X. Songs are typical of this male.

T 36 from 1700 to 1725 - After hearing and seeing nothing for 20 minutes I hear a few very faint songs in the northeast corner and find both birds there. 36 F is near the ground and M 36 suddenly flies to within one and a half feet of her. She doesn't move; and he sits a few seconds by her and she then flies into a little elm (eight feet high) covered with Virginia creeper. Six feet up is a nest in the early stages. I would say it

was begun today if the speed of building were normal, but I doubt if it is. 36 F carried nothing to the nest; she sits in it and pulls spider webs (I'd guess) around the rim. M 36 flies to the nest tree and finally to within two or three feet of the nest, where he sits ten seconds looking at the female. He then flutters away but she does nothing to indicate that she reacts.

T 37 - Female not incubating, but the eggs are warm. N

T 38 - Female incubating. Y

T 39 from 1735 to 1830 - I listen for the male and watch for the female at the south end. Soon M 39 sings, staying most of the time in this vicinity. After 20 minutes or so 39 F appears near the ground and I have her in view for five minutes. I am sure she gathers material but I lose sight of her because of the great number of Palm Warblers here. This is a difficult place in which to watch her because of the trees. *other*

Among the big warbler flocks of last night were many Black and Whites, some Nashvilles, a few Redstarts and Ovenbirds. White-crowned Sparrows came in too. South of IIS I ran into a big flock of male Indigo Buntings, unidentified Sparrows; flycatchers, thrushes, Acadian Flycatchers (here for two days), also Pewees.

T 41 - Nest complete except for final lining.

T 01 - Silence.

1845 - I leave.

7/2/54

May 12, 1954

Clear windless morning; heavy dew; temperature 45° at 0600. Present from 0600 to 0830 and with Alan Garrett from 1545 to 1730.

T 31 from 0600 to 0700 - After a few minutes M 31 sings on the north end of the territory and I find the female there. I soon lose her but he sings nearby so I wait. In five minutes he flies into a little tree and perches stiffly with his wings slightly spread, his bill open. She is near, so this may have been behavior directed toward her. I then follow her for 20 minutes or so as she moves gradually well southward, finally nearly to the tree row. M 31 follows but not closely; his songs come irregularly from 31 F's general vicinity. At one point she flies up about 35 feet in a hickory tree and sits quietly for five minutes. I think her eyes may have closed several times; she moves only her head during this apparent rest period. M 31 is some 10 or 15 yards away. At the end of the rest she moves a little, preens, and begins to feed. Clearly she isn't building very fast. It's possible that she may have finished and that this is the pre-laying period, but I don't think she has begun to build yet.

of 9
done
steps?

A male sings several songs in the southeast corner of the field, the songs much like M 31's but not M 31's. When I go to investigate he falls silent and I can't find him.

T 30 - Nest complete. M 30 has sung only one or two times in my hour on III.

T 32 - Nest as before, with one Cowbird egg. Silence during the 30 minutes or so that I'm within earshot. N

T 33 from 0720 to 0750 - M 33 is either silent, or if he sings one or two times the songs are so faint I can't be sure. No other sign of a Prairie Warbler.

T 35 - 35 F is incubating and M 35 singing. Y

T 34 from 0800 to 0825 - M 34 sings from X and I find him there.

Near him and on the ground is 34F. I watch her for 15 or 20 minutes as she quietly sits for a minute or two at a time, or with little of a Prairie Warbler's quick movements feeds on the ground or catches spittle bugs. She never gathers material, and her behavior and M 34's suggest that she has not yet begun to build (or that she may have abandoned an early structure). I finally lose hope that she will lead me to a nest and I leave her. *spitting*

0830 - I leave.

1545 - I return with Alan Garrett, having as my main purpose the locating of 39 F's nest.

T 39 from 1545 to 1630 - Alan watches one part of the southeast end of the territory and I roam around on the other. M 39 sings

occasionally but not enough to be helpful. Finally we see 39 F (which we have had in view for ten minutes) head in a direction which leads me to watch the right tree, a 40- to 45-foot elm west of the white pine grove. I find the nest about 30 feet up from the base of the tree, which is near the bottom of the little valley separating IV S and and IV N; i.e., the top of the tree is not so high in relation to the ground near it and farther up the slope. Still, the nest is probably the second highest I have found. It looks as though it was begun yesterday if you assume a normal rate of building (and 39 F is carrying material quite rapidly now, a trip every two or three minutes).

This nest, preceded as it was by the fragment, shows how much the weather retarded reproduction. This pair has been mated for a long time and the weather seems to have lowered the sex drive. Note that in nearly all cases of delayed nesting this year the male has been silent and has not pursued the female or displayed to her. This is in sharp contrast with the cases last year late in the season where 18 F, 17 F (?), and 26 F were unable to get over the threshold of nest building for several days but the males were very active in pursuing them. I take it then that the weather has had a depressing effect on the males as well as the females.

Another point for future development is that it seems to

me to be unquestionable that copulation takes place after nest building. The only alternative to explain the different speeds of building and the different lengths of the interval after completion and before laying is that the rate of development of the fertilized egg differs from female to female and that the rate is affected by the weather. This seems out of the question. If I'm correct, it may be that the male's sex drive is as much as or more inhibited by cold or rain than the female's.

A final thought is that ^{the} nearly unfailing regularity of egg laying after the first egg is laid suggests that one copulation fertilizes the whole set. This seems too obvious to need development here: It could be checked by shooting the male on the day the female lays her first egg. No

T 40 - Nest well along. It looks complete from below, though clearly isn't.

T 38 - Female incubating. Y

T 37 - Female incubating. Y

T 36 - The nest is about 3/4 finished on the outside, the major deficiency being the fact that the walls are not built up to the full height.

T 01 - In 20 minutes we hear and see no Prairie Warbler.

T 41 - Nest complete.

1730 - We leave.

The weather has been fair and rather warm all day with just a touch of chill in the air.

May 13, 1954

Like yesterday, this morning is clear and very dewy 0645^o temperature 45°. At 0930 it is slightly cloudy, but most of the day is warm and there is almost continuous sunshine. Present from 0720 to 1030.

T 31 - M 31 is singing on the center of his territory and I immediately find 31 F's nest. It is about one foot high in a two-foot elm and looks as though it was begin yesterday, possibly before; I can't get too close because she is building.

The third male sings irregularly but frequently near the little woods and I follow him. Soon a female appears and I watch her for five to ten minutes. She feeds along at about a five-foot level, the male singing in her vicinity. Judging their casual behavior by that of other pairs that have delayed building this year, I'd guess she hasn't begun to build or has only just begun. Also the male hasn't been here very long. Call this pair 45's.

[Their status was never clear, and I never saw a female again. I'll refer to IIIS males as M 45, but it may have been ^{more than one} different birds.]

T 30 - One or two songs at the most; the nest is still empty. N

T 32 - A Field Sparrow nest has four young, hatched today or yesterday; female brooding. 477

32 F's nest hasn't been laid in. As I begin to wonder if it ever will be, M 32 sings a typical song at one-half volume from the blackberries about 25 yards away. I find him and 32 F together there. Their behavior is significant for the pre-laying period, if they are in this stage. She is sitting quietly about ten inches from the ground close against a berry bush stem, her back to the sun as though basking in it. He sits a few feet away. He sings occasionally, so softly he is scarcely audible. She moves about after a few minutes but she doesn't leave the little thicket of berries. He moves too, not following her directly but clearly paying attention to her and staying close by. His few songs are all whispers.

T 33 - As I come into the orchard a female drops from an elm stub about ten feet high and covered with creeper and flutters about 25 feet away, her wings beating in flight like a courting male's and continuing to beat after she lights. Her flight is slow. This is a fairly normal distraction display except that the flight is from a higher spot and is farther. On the stub is a well-concealed nest that looks as though it was begun at least a full day ago and may have been begun earlier still. A male sings a type-8 song nearby.

I set out to see if this is a new orchard pair or is the 33's. Later at the 33's usual spot near the north edge of the woods I find M 33 singing, 33 F gathering and dropping a feather.

nest
not
laid

This is perhaps 120 yards from the nest I found, and I think there must be two pairs. [This was error; the nest was 33 F's.]

T 35 - 35 F incubates; M 35 sings. ✓

T 34 and X - Not a sign of a Prairie Warbler in 15 minutes here.

T 36 - When I go to the nest M 36 is in it. He flies about 20 feet away, then returns when I squeak to be sure it was he and not the female. The nest is still not fully formed, showing some light spots in its low walls. Finding a male actually sitting in it (although he may have been doing so for only a second before I found him) is very unusual and is another of those occasional female-like acts I've found males engaging in. *OK in over why*

T 37 - 37 F is incubating. 7

T 41 - Egg¹ is present, so this female certainly has wasted no time in beginning to lay in her second nest. The egg is 16.8 x 12.3 mm. It is rather elliptical and pointed at both ends, its spots large and reddish-brown, covering the larger three-fourths of the egg and forming a distinct but not a coalesced wreath. M 41 sings skids near the nest. *egg has N*

T 01 - Silence. M 01 has never appeared since May 8 and seems to have left. [True.]

1030 - I leave.

May 14, 1954

Clear with a slight haze in the east, after a clear night; no wind; temperature 52° at 0600. Present with Paul Davis from 0600 to 1130.

T 31 - M 31 sings three songs in five minutes. The nest is complete in form but still very thin and porous looking.

T 30 at 0620 - 30 F is on the nest, so at last she's laying. M 30 sings three songs nearby, at perhaps 30 yards. Songs are half-volume. One is a weak step, one an abbreviated skid. See below.

Y
M 30 -
laying

T 45 from 0625 to 0715 - Silence. At 0645 an adult Cooper's Hawk flies over. At 0650 we find the male singing by the hackberry. He is chased by a Field Sparrow, moves 30 yards northwest (limit of the territory in that direction) and M 31 and he fight there. Once M 45 seemed to be exploring for sites.

Cooper's Hawk
and FS
M 31

Cowbirds fly by, three males, one female.

C cow

T 30 at 0720 - 30 F's egg one is present. It is rather rounded, spotted with large, faded brown marks which form a wreath about 1/3 of the way from the large end and are distributed over the large three-fourths. It measures 15.6 x 12.3 mm.

N
egg
large

T 33 - M 33 sings two or three skids. I examine the nest found yesterday; it is still rather scanty looking from the outside.

By 0845 we have followed both sexes here enough to see

that the nest is 33 F's. Three times I watched her carry material to it and then fly northeast out into the field. *ditto in birdy*
So she seems to carry over 100-150 yards on some occasions. *only*
M 33 sings near the nest, fragments. He has flown over much ground this morning, from the nest to the sink hole and of course to his area near the elm at the edge of the field. *ST*
Another Prairie Warbler chased him from the sink hole.

T 32 - The nest is still without Prairie Warbler eggs. M 32 sings *N*
in the field and also in the orchard on the northwest edge.

T 35 from 0855 to 0915 - 35 F is incubating, M 35 singing. He moves *N*
considerably over the territory, singing regularly his combination steps. First he sings in the north woods tree line a *patrol ST*
few yards west of the fox den. Then he flies southwest to the locusts where last year I sat to watch 16 F's nest. Then, as yesterday, he takes off on a long flight across the open fields to the big elm 150 to 200 yards out toward the southeast corner of the field. I have heard a chatter-type skid like M 34's come from there yesterday and today, but the song may very well be M 35's.

T 34 - Silent during the last 20 minutes. During 30 more minutes I hear nothing of M 34.

T 36 - 36 F carries Antennaria down to the nest but is greatly deterred by our presence. We finally go 35 yards from her nest, but she waits at least six or seven minutes before

going to it. Note she is in the initial lining stage.

T 37 - 37 F is incubating, M 37 singing skids nearby fairly frequently but irregularly. Beyond the road on IV S a male sings a high step, perhaps 35 - 50 yards north of it. [This male was probably M 46, found later.]

T 38 - Female not on nest at 1028; it contains only three eggs, one of which is egg four. I measure it: 15.3 x 12.8 mm; marked and shaped like the others. The eggs seem cold, so we sit to watch the nest. At 1034 the female comes to within 12 yards of it, probably because of us flies some 25 yards on first to the south. At 1039 the male sings for the / time in our 15 minutes on the territory. At 1045, still no sign of 38 F so we give her up.

The Towhee nest here now has only two Towhee and two Cowbird eggs. A chickadee nest is in the apple tree hole where one was last year. The limb with the hole has broken off and is only leaning against the trunk.

T 39 - 39 F is carrying material to her nest, which is still only about half finished. M 39 sings a type-8 west of the nest, then fights either M 38 or M 40 in the southeast corner of his territory.

T 40 at 1100 - Nest looks complete. M 40 is in the nest tree but well above it. He sings several songs unlike his usual ones.

5000
Towhee
2 + 2
Chickadee
seen

5/14

T 41 - The second egg is present, measuring 10.5 x 12.2 mm. It's
wreath is a little heavier than egg one's, and there are
fewer spots off the wreath. There is an odd thin streak
of brown, about six mm. long, around the small end of the
egg.

T 01 - Silence.

1130 - We leave.

May 15, 1954

A clear sunny morning after a clear night; heavy dew; temperature 56° in the shade at 0830. Present from 0830 to 1215 and with Ray Grow from 2000 to 2030.

III from 0830 to 1045 - After a great deal of searching and listening I cannot be sure that there is a third male here, and I rather feel that there isn't. M 30 has begun to sing a hoarser skid than he originally did and even sometimes sings a harsh chatter. There are a few songs from just at the little southeast woods but they are quite likely M 30's. At 1000 I find a female Prairie Warbler on T 30 near its south end and follow her for 20 minutes while she feeds quietly along on or near the ground, covering many yards. She finally goes to the northwest corner of III and there there is a ten-minute series of noisy male fights right beside her and beginning only when she comes up (therefore possibly caused by her). She goes on feeding without paying any overt attention, calling softly. The males are surely M 31 and almost as surely M 30. M 30 thus seems to have extended his territory into the northwest corner. The foregoing explanation also accounts for things seen but not understood yesterday.

T 30 - Egg two is present, measuring 16 x 12.4 mm. It has a pronounced wreath of light brown medium-size spots with a few darker (one black) scrolls. See above and below.

T 11 - The nest is finished but for the final lining. See above and below.

Both males are noisy today but irregular in song. M 30 sings sotto voce when near 30 F. Note they are not moving quietly along together at this stage of the cycle.

30 F eats a spider or two, several spittle bugs. M 30 catches an insect exactly as a flycatcher does and returns to his perch.

In the southeast corner of III, I find two Field Sparrow nests, each in broom sedge with four eggs, under incubation. Also there is a Towhee nest built of grass, on the ground by a little (4-foot) cherry tree, female incubating three eggs.

II - There is a new male here, one that probably arrived recently. His song is a chatter, the half and half type. He is poorly marked on both the face and flanks and his back has only faint red streaks. He sings about every ten seconds from west of the road on the south end of II. I don't know his full territory, if he has one, or whether he is mated. [This male became M 42.]

T 32 - In the first place, this territory's bounds now become clearer.

M 32 sings frequently, though irregularly, and he moves a good deal. The territory is an oval covering a strip of the west 2/5 of the orchard (the strip not extending more than a few yards south into the orchard), the east part of the south half of II (probably not west

to the road), and the field out to the sink hole.

M 32 sings his usual song, but for the first time he varies it with high skids and they comprise more than one-half of his songs today. *Song change*

There is an egg with the Cowbird egg, measuring 15.4 x 12.2 mm. It is marked with small dark spots; some of those in the wreath are blackish. Except for the wreath there are few spots. *N egg loc*

T 33 - 33 F is carrying broom sedge down, M 33 singing brief chatter songs from quite nearby. She gets the down south of the nest, the first time she's gone in that direction. *57 July*

T 35 - About 50 yards east of the elm which M 35 sings from, at the edge of the woods and the field, a male Prairie Warbler is singing a skid song. He then moves a few yards north to the elm in the field; M 35 went there from his territory a few days ago, and I saw him there yesterday too but failed to mention it. The male, M 35, then flies on north to the main part of his territory. I find 35 F incubating. *V*

M 35 sings here, now singing a high insipid step that often ends in a buzz, his usual song. He moves along the north edge of the woods, going well west onto what I would have thought was T 34.

T 34 - I go onto this territory and find a female. She flies to a very well marked male with a bright red back and he moves on a little. She almost seems to flutter in her *070 9 June*

flight. In about 30 seconds she heads into the pin~~es~~.

I can't say anything else about this.

T 36 - M 36 sings an insipid skid, then a type-8. The nest is ready for the final lining. The territory now includes 25 yards of the south end of I. of
nest

Field Sparrow nest in broom sedge, female incubating five eggs. FSP
5

T 37 - M 37 sings often south of the nest, his song most frequently a high skid but sometimes just four or five buzzes, the Golden-wing-like song. The eggs in the nest are warm. N

T 38 - M 38 is singing frequent skids on the southeast part of his ridge, and in ten minutes I see 38 F go to a 30-foot elm. About 10 feet up in a little bunch of leaves growing out of a main upright branch are the beginnings of her new nest. It was begun yesterday, I'd judge; it's a loose unshaped mass. of B
nest

T 39 at 1145 - 39 F is still building and M 39 is singing type-8's near the tree. of B nest

T 41 - The nest still contains only eggs one and two. Presumably a Cowbird has taken today's egg. M 41 sings loud and regular skids near the nest. N

1215 - I leave.

2000 - Ray Grow and I return to see if 41 F will begin incubation tonight. We wait till dark and she never appears. nest
seen
from

May 16, 1954

A cloudy day with the sun shining through the overcast; slight southwest wind; temperature 60° at 0800. Last night was clear, the moon nearly full. Present from 0800 to 1230 and from 1900 to 1945.

III from 0810 to 0900 - I sit at the hackberry for 25 minutes and hear only M 30 and M 31, both singing very little. At one time M 30 comes to the hickory by the hackberry, sings six of his new rasping songs, then flies diagonally northwest toward that corner of III. The territory lines here are puzzling.

T 31 - The nest looks no farther along; it is still unlined. See above under III.

T 30 - M 30 is now singing his regular very high skid. Fortunately he does so from near the hackberry, and I can see him well enough to be sure that it is he that has also sung the hoarse ^{song} skid. He now switches to that, goes to the hackberry, and then comes north. Probably there are only two males here; the only question is how M 31 let his territory get so narrow- ^{Ted}rowed.

As I get ready to leave III at 0900, what may be M 45 sings.

M 30 (for sure) sings frequent insipid steps in the cherries near his nest. Once he flies from one limb to another without interrupting this song.

There is a four-foot pilot blacksnake ten yards from

*black
snake*

30 F's nest.

Egg three is present, measuring 16.4 x 12.4 mm. It is marked like the others with heavy spots and a few black scrolls. *egg done*

II from 0900 to 1015 - The situation here may be different than I had imagined. On the south end of II and toward the west side is the male I found yesterday, a modestly marked bird with a chatter song that he sings constantly, moving about very little. I assume for the moment that he is unmated and also that he arrived recently. [This is correct. He became M 42.]

Northeast of him, on II, is another male that sings the same song; and just as frequently and with as little moving about. He is well marked. [This male sang here irregularly and finally turned out to be M 36.]

T 32 - M 32 sings frequent high skids, a few chatters, and I follow him over his territory, as described yesterday, including the sink hole.

0930 - 32 F is on the nest. *✓*

1000 - 32 F has left and her egg two is present. It is 14.9 x 11.9 mm; the small spots are largely confined to the wreath, some of the spots being quite dark. *egg done*

T 33 - M 33 sings his type-8's occasionally, but only in short fragments. Most come from near the nest, but three or four are

east of it on the more open hill. I'd say this territory is shifting southwest due to the location of the nest and probably due to M 32's north-eastward movement resulting from pressure on him or from 32 F's nesting location. 33 F is still carrying broom sedge down. T

T 35 at 1015 - As I come to the pines a singing male there in the southwest corner of V flies far out to the elms in the field. I therefore judge this is M 35 and I think his position in the pines is some indication M 34 is gone [error].

1015 - 35 F is not on the nest. In it are the Cowbird egg and her eggs one and two. Thus egg three has been taken; I don't know if there was a fourth, but my original guess was yes. N

1030 - She is back on the nest.

I am sitting writing and waiting for the males to sing. A fox trots by with a chipmunk; when I move he drops the chipmunk and runs. A few minutes ago I saw a three-foot snake of a species I don't know. It disappeared into a hole in the ground when I approached it. (It was either a fox or a milk snake.) milk snake

1040 - M 35 sings in the dogwood field to the east. I follow him as he sings first a high insipid step ending in a harsher chatter, then just a chatter. He goes to within ten yards of the nest and sings and the female flies 012 during me

up to him on a limb three feet from the ground. There are three or four twittering notes as she comes up, then he sings a loud chatter as he faces her three inches away. *Cope?* She spreads her tail slightly and he flies a few yards away. I note nothing peculiar in the flight. I check the nest, which is of course unoccupied, so 35 F stayed on it only ten minutes. M 35 is silent so I go to T 34.

T 34 - I begin to search the pines for a nest. In ten minutes I find it, on the east edge and in a two and a half-foot elm, *N* about one and a half feet high in a vertical fork. It contains four eggs, one of them a Cowbird's, all warm. The Prairie Warbler eggs are rounded and lightly marked. I withdraw and 34 F hops around near the nest, so I go back to T 35 to let her resume incubation.

I feel confident that this nest was slowly built during the cold weather, that she has only recently begun incubation and that on 5/12 it was she and M 34 I saw on X. I wonder very much if M 34 is still present. It is 1120 and I've heard only a few songs, all sounding like M 35's. Was it M 35 that 34 F encountered yesterday and fluttered before? I doubt it.

T 36 - Nest complete but empty. *N*

T 37 - 37 F is incubating. *✓*

T 39 - In 10 minutes 39 F does not carry material to the nest.

It should be complete.

T 41 - The nest still contains only the first two eggs and probably has failed. The cause is obscure since nothing in the nest has been disturbed. Perhaps 41 F is dead [she was not dead].

1230 - I leave.

1900 - I return. The day became cloudy at 1600 and it now threatens to rain. I go to III to see if 30 F will begin incubation tonight.

T 30 at 1900 - There are three eggs. 30 F is not in view and M 30 is silent. At 1930 exactly 30 F flies straight up to the nest tree and enters the nest. In two seconds M 30 flies to the tree, hops to within two inches of the nest, flutters for a second there as a Prairie Warbler does while picking up an insect from a plant while on the wing. The fluttering may have been that or it may have been some sort of attention to 30 F. M 30 then flies 15 yards or so away and in a second sings two skids. Nothing else happens and I go.

N
8/27-
W
me

T 31 - The nest looks unlined (i.e., without a final lining).

1945 - I leave.

May 17, 1954

Cloudy in the morning after a rain at night, partly cloudy during the rest of the day; wind from the north; temperature 72° at 1600. Present from 1630 to 1930.

T 41 from 1630 to 1700 - The nest is as before and I conclude it's abandoned. Silence and no sign of a Prairie Warbler.

T 40 - Silence; the female is not at the nest.

T 39 - Nest building has stopped. Silence.

T 38 - Silence. Nest building has evidently stopped.

T 37 - 37 F is incubating. Silence.

T 36 - When I go up to the nest M 36 flies up to a limb 15 feet away and calls "check" while facing me rigidly. In 15 seconds he flies quickly away. Note this quasi-defense of the nest. It is still empty.

T 34 - 34 F is incubating. In my 20 minutes on V, M 34 never sings; he is almost surely gone or he'd be more vocal now that incubation has begun [probably error - note that most males were silent today].

T 35 - 35 F is incubating. M 35 sings regularly at 15-second intervals, a rasping skid. He covers all of the territory north of the field and goes west to the ravine. M 35's skid is not high at the end, and he does not raise his head higher and higher (Saunders). In fact at times he lowers it toward the end and even looks around.

T 32 at 1750 - 32 F is incubating (presumably a three egg set). M 32 Y
sings a chatter skid from the field.

II from 1800 to 1820 - Silence. The two new males are not in
evidence.

Green snake.

T30 at 1820-30 F is off the nest. There is a fourth egg, 16.8 x
12.5. It is marked with a coalesced, blurred, heavy wreath ^{egg} _{lower}
of reddish brown. Ten minutes later 30 F is incubating.

T 31 - As I come up a Prairie Warbler flies away toward the woods
to the west and M 31 follows. Probably the first Prairie
Warbler was 31 F. The nest still seems to me to lack the
final lining. It is empty.

T 32 - 32 F is off the nest at 1830. It contains egg three and N
the second Prairie Warbler egg is gone. The third egg is
15.2 x 12.4 mm. and is marked with sharp, heavy spots of ^{egg} _{lower}
a dark brown color, medium size. The nest now contains
a Cowbird egg, and Prairie Warbler eggs one and three.
The disappearance of egg two suggests that a new Cowbird
egg will be deposited or it is a very late removal by the
female that laid the old Cowbird egg. 32 F returns to the
nest as I walk away and begins to incubate, so this should
be a three-egg set.

II - A male is singing regular chatter skids. He often sits
forty feet high and sings without moving much. [This is
the male that became M 42.]

T 40 - Nest still unoccupied, so incubation probably hasn't begun. /

T 41 - M 41 sings frequent insipid steps at the east-west fence.

1930 - I leave.

May 18, 1954

A sunny, fresh day; temperature 66° at 1600. Present from 1615 to 1830.

T 31 - The nest is still unlined and will surely not be completed. It is perfect except that it lacks the final thin layer of grasses. M 31 sings a few times and I find 31 F feeding near the nest. I follow her without seeing anything of interest.

T 30 - 30 F is incubating.

T 32 - To my surprise 32 F has a fourth egg. It is 15.5 x 12.5 mm. The implications of this are interesting: She was incubating and perhaps even leaving the nest periodically yesterday long before evening. The removal of an egg probably indicates either that a second Cowbird will lay here or that the first Cowbird has returned to take an egg a long time after laying. N

M 32 sings on the south edge of the field east into M 33's old territory, not far from the elm.

Fifteen or so big black cattle have been turned loose in the field and are grazing and tramping it down, going all over V too. This began two days ago and will probably cause some Prairie Warbler loss.

[It didn't.]

II - A male that may be M 32 sings on the southeast edge.

T 35 - M 35 sings; 35 F incubates. ✓

T 34 - No sound of a male. 34 F incubates. ✓

T 36 - Nest still empty. N

T 37 - There are young here, probably in their second day. I forgot to look for them before. 37 F broods, lets my hand get within one and a half feet before moving off. No display. *Q. fawn* ✓

T38 - No adult is at the nest. It is very poorly concealed from one side. N

T 39 - No adult is at the nest. N

T 40 - Again today 40 F has not begun to incubate. She should begin tomorrow. N

T 41 - In 45 minutes, no sign of 41 F. M 41 sings a few times from the little apple orchard, then falls completely silent.

1830 - I leave.

May 19, 1954

A cloudy day with occasional light rain after a steady heavy rain in the early morning and until 0900. At 1700 it clears a little for the first time and at 1930 begins to rain hard. Temperature 57° at 1600. Present from 1615 to 1815.

T 31 - In 15 minutes I find 31 F's new nest. It is eight and a half feet high, built against an upright limb of the little elm that 29 F had last year's successful nest in. It is still empty but is complete. M 31 sings near it about five times, once flies southeast to the hackberry as though it is his territory.

The unfinished nest has water standing in it this long after the rain, which shows its nearness to completion.

Chat's nest, one egg, two feet high in a honeysuckle, female evidently incubating.

T 30 - 30 F is not on the nest but the eggs are warm. A few minutes later a male with a high skid fights M 33 in the southwest corner of the orchard. It is probably M 30.

T 33 - M 33 sings fragmentary songs, type-8 (one) and chatter. He fights a male in the southwest part of the orchard, keeping his bill open after the fight.

T 32 - The nest is empty and under it lies one broken egg. The other eggs are gone. Since the inside is quite wet, this

may mean it failed before the rain. Cattle weren't responsible, clearly. A chat's nest five yards away (one egg) seven feet high in the blackberries is unharmed. *same Chat*

M 32 sings loud chatters in the southeast corner of II and from the south edge of the field. No attempt to find 32 F.

T 34 - 34 F is incubating. No songs. ✓

T 35 - 35 F is incubating. No songs. ✓

T 36 - The first egg is present, lying in 1/8-1/4 inch of water. ✓

It is odd in that it is long and pretty pointed and thin, it's spots small and sharply marked, rather dark brown and confined largely to a wreath near the big end. It measures 16.8 x 11.9 mm. Silence. *egg done*

T 37 - M 37 sings rasping steps and a high insipid step. He carries food. The young can't be seen but it feels as though there are four there. ✓

T 38 - Silence; no adult at the nest. ✓

T 39 - No Prairie Warbler near the nest. A male sings in the very northwest corner of the field, across the road. It is almost surely M 39. ✓

T 40 - 40 F has begun to incubate, M 40 sings once. ✓

T 41 - In 30 minutes M 41 sings regularly for two or three minutes, 100 yards west of the second nest. No sign of 41 F. It's

hard to explain her deserting a nest with only two eggs
in it. [Probably frightened, e.g., snake.]

1815 - I leave.

May 20, 1954

Clear and cool after a rainy night; wind from the north;
temperature 44^o at 0700. Present from 0730 to 1015.

T 31 - M 31 sings in the southwest corner of III. The nest contains the first egg. It is 15.7 x 12.1 mm., a pointed egg with distinct darkish spots, mostly on the wreath. N
egg done

M 31 later is singing in the northwest part of III, near the nest. done
Chat

The chat's nest now has two eggs. The Towhee and one of the Field Sparrow nests found several days ago are as before. done
Tow
Field Sparrow
eggs

In the southeast corner of III a lightly marked (compare May 23 male) male sings a medium skid irregularly but frequently. He must be a third male on III, and I suspect he has been here ten days or so; my statements of several days ago that there are only M 30 and M 31 were quite likely erroneous. I'll search for a female and nest later.

T 30 at 0830 - M 30 sings two high skids, the only ones I've heard this morning. 30 F is incubating. ✓

II - There are two males singing here (and M 32 can be heard to the east), so I think it's safe to say they are on territory. The north one sings some type-8's but most of the songs of both are chatter skids. It looks as if there are

15 pairs present again this year. [The north male later turned out to be M 36, the south one M 42.]

T 32 - M 32 sings frequently and irregularly in the field and I find 32 F with him. She moves about near the ground but in 15 minutes does not seem to have begun to build. He stays in her vicinity.

T 34 and T 35 - Both females are incubating and both males sing. So my theory that M 34 is dead or gone is error. He sings very infrequently today, all but one high-buzz-step being his usual songs. M 35 sings a buzz-step and utters many dry angry notes; I see no other bird near him. T 35 seems to go southwest to the beginning of the east-west pine row (white pines).

T 36 - The second egg is present, measuring 16.4 x 12.1 mm. M 36 is silent.

T 37 - The young are alive. I don't see the parents.

T 38 - M 38 sings near the nest but I don't go there.

T 39 - No incubation yet. M 39 sings two or three faint songs.

T 40 - 40 F is incubating.

An adult Sharp-shinned Hawk flies over as I return and cross from IVS to I.

There was a good warbler migration last night. Black-throated Green and Magnolia were in it and I heard a Connect-

icut Warbler this morning.

1015 - I leave.

May 21, 1954

A clear cool morning with a heavy dew and little wind; temperature 45° at 0700. Present from 0700 to 1200 and from 1745 to 1945.

T 30 - 30 F is incubating.

T 31 - M 31 sings a few songs near the woods and I see 31 F feeding as I pass her nest. I'll see later if she has a second egg.

The chat's nest on this territory has a third egg and a Cowbird egg, which latter I take.

0725 - I begin a thorough search of the southeast $\frac{1}{4}$ of III for nests and Cowbird eggs: A Catbird and a Red-eyed Vireo are here. Cardinal nest, six feet high, redbud and Virginia creeper: 1 Cardinal egg. Field Sparrow nest (new one), four eggs, in grass, female incubating. (To explain the heavy Cowbird parasitism of early Prairie Warblers, note that sparrow nests on the ground seem free of Cowbird eggs.)

Two male Indigos on territory near the cedar tree. One or two Indigos in the southeast corner.

Bob-white just south of III; nest may be built on III.

Blue-gray Gnatcatcher in the woods.

Search
Chat
3+1

Card - 1
F - 4

Bachman's Sparrow in the center of this far south section of III.

Two singing thrashers, one in the little woods, one on the south line of III.

Old Towhee nest has one young, two eggs.

Tow 2 eggs
1 young

Male Chat in the southeast corner, toward the center.

Old Field Sparrow nest, south center, one egg and three new young.

Field Sparrow
1 egg
3 young

Field Sparrow nest in the grass on the east line; one broken and dry Cowbird egg in it.

Field Sparrow
1 broken egg
1 dry Cowbird egg

Old Field Sparrow nest with four young probably three days old. Field Sparrow nest in grass, four eggs.

Field Sparrow
4 young
4 eggs

1000 - I quit quartering the field. I've found (anew or again) four active and one destroyed Field Sparrow nests, representing probably five territories in a little over 1/4 of III. I probably missed a chat's nest and two Red-eyed Vireos (in the little woods and on the east edge). Indigos have not begun to nest.

T.B.

T 31 - The second egg measures 16.2 x 12.4 mm. I'm relatively sure there are only two Prairie Warblers on III, that M 30 and M 31 both extend to the little woods. This is the result of following them and listening.

There is a Brown Thrasher at the north end of III.

T-33 - 33 F is incubating and M 33 singing ~~fragmentary~~ songs near
the nest. Y

A male sings a chatter skid in the south part of the
orchard, or better, in the open field south of it. He seems
to be on territory. [This became M 44.]

T 32 - 32 F is flying around in the blackberry bushes as though
building. M 32 sings on the west edge of the field. Once he
sings in flight, fluttering his wings and arching his back. 512
Three surveyors begin shouting here and this seems to shut
the birds up. In 30 more minutes I can't find them.

II - Both new males are singing. I'll call the south one M 42.

T 34 - 34 F is incubating. Y

T 35 - 35 F is incubating. I frighten her from the nest to see if
the eggs have hatched; they have not. Y

T 36 - 36 F is on the nest at 1110. At 1140 I return and she is
gone. The eggs are cold so she seems not to have begun to
incubate. The new egg three is 15.8 x 11.9 mm. Y

T 37 - The young are alive.

T 38 - 38 F is incubating. She returns to the nest while I'm here. Y
This must be a three-egg set. M 38 sings near her, to the
west on the south part of the ridge.

T 39 - This nest is on its side, probably knocked over by the rain

two or three days ago. I hadn't noticed it before.

T 40 - 40 F is incubating, M 40 singing occasionally.

1200 - I leave.

1745 - I return.

T 30 - 30 F incubates.

T 32 - M 32 sings in the southeast part of the field, 100 yards from
his post of this morning. After 40 minutes I find 32 F there.
She gathers spider webs and takes them west and I lose her.

T 36 at 1845 - 36 F is not on the nest. I sit to watch incubation
begin. At 1937, 36 F comes silently and alone and enters
the nest.

1945 - I leave.

May 22, 1954

Clear morning. Present with Charles Berriman from 0545 to 1030.

T 31 at 0545 - I arrive to watch 31 F go to her nest and lay, but *laying*
she is already on the nest when I come up. Later I measure
egg three, which is 16.3 x 12.4 mm.

T 30 - 30 F is incubating. *✓*

T 42 - M 42 has a female before which he displays in the usual way.
I follow them for about 25 minutes.

T 32 - M 32 sings but we learn nothing.

South orchard - a male sings loud here, and has done so since
we've been within earshot. We watch him without ever losing
sight of him for one hour. He perches high, much of the time
in the osage oranges, and sings very regularly and frequently,
exactly like an unmated male on territory. I'll tentatively
call him M 44. [He stayed, got a female on May 23, contin-
ued as M 44.]

T 33 - 33 F is incubating. *✓*

T 34 - 34 F is incubating. *✓*

T 35 - The Cowbird egg has hatched and there are two Prairie Warbler
eggs in the nest. I weigh the Cowbird, which is 2 gm., 500
mg.. The warblers should hatch tomorrow.

T 36 - 36 F is away, so I measure egg four, which is 15.7 x 11.8 mm. *✓*

T 37 - The young are alive.

T 38 - 38 F is incubating. ✓

T 39 - We spend about 30 minutes on the territory, much of it sitting down, without hearing or seeing anything.

T 40 - 40 F is incubating. ✓

T 41 - Silence; nothing learned.

1030 - We leave.

May 23, 1954

A perfectly clear windless morning; temperature 54° at 0600. Present from 0615 to 0900.

IIIS [T 45] - There is a new male here, well-marked. He sings regularly and frequently from high in the tree row, a buzzing song like a Golden-wing, or a buzzing half step-half skid. M 31 is at the south end of T 31 singing back at the new bird.

T 31 - See above. 31 F is on the nest. ✓

T 30 - M 30 is singing from the south end of the territory, near the little woods. 30 F is incubating. ✓

T 36 - 36 F is incubating and M 36 singing a few faint insipid steps nearby. ✓

T 37 - The young are alive and an adult calls as I reach into the nest. N

T 34 - 34 F is not on the nest but the eggs are warm. M 34 sings. N

T 35 at 0650 - 35 F is on the nest. M 35 is singing to the south, both his high step that gets harsh on the last three or four notes or a harsh half step - half skid. ✓

0657 - 35 F leaves the nest. I go to it and find that it contains one Cowbird weighing 4 gm., 540 mg. and one Prairie Warbler egg. Yesterday there were two Prairie

Warbler eggs, so it seems to me to be a fair assumption that one Prairie Warbler has already died as a result of the Cowbird, either by starvation or crowding. See below, also.

T 34 - 34 F is now on the nest. I think M 34 sings on X.

T 35 - A male sings ^a chatter song at the sink hole, then flies 200 yards east to the big elm. This must be M 35; subsequent events confirm this belief.

T 32 from 0715 to 0815 - I have a very difficult time here because for a while M 32 is silent and more important because 42 F (south female on II) has begun a nest and she gathered material once from the field. Thus, I have a hard time determining which pair is which. In the end I find that M 32 sings over his whole territory but spends most of the time on the south edge in the east-west center. 32 F is here. She does not gather material, so far as I can see, and she still seems to be searching for a site. Once she crouches and turns in a leafy fork of a grape about 25 feet up in a tree at the edge of the field. I leave this pair and go to T 42.


Indigo female building, as was true yesterday; the same bird.

T 42 - M 42 sings irregularly on the south edge of II.

Finally I see him flutter a little and I find 42F heading in the direction which confirms my impression that it was she I saw in the southwest corner of the field. She calls once with fiber in her bill. She has material but I lose her. A few minutes later M 42 dives straight down with wings folded (drops perhaps 15 feet) and lights two feet away from 42 F on a limb 10 feet high. She sits crouched a little and somewhat stiff, not retreating. He holds his bill open, then in two seconds flutters away. She goes to a nest in this same tree, about 18 feet up in a cluster of creeper. The tree is an elm. The nest is quite loose, just a little hollow ball of fibers. It was probably begun yesterday.

NII male - This male [M 36] sings a short type-8 frequent and regularly.

T 33 - 33 F is incubating, M 33 singing type-8 steps nearby.

T 44 - M 44 sings irregularly but rather often when I arrive. I find him perched 20 feet up in an elm and note that his body is still and bent downward like this  as though he is watching something below. He stays this way, moving a little, for two minutes and I see a female sitting very quietly about three feet from the ground and below him. She looks up at him. He then flutters down on her and they hover and flutter over about two

linear feet and for two seconds. She goes to the ground and he immediately flutters quite slowly for fifteen yards, singing as he goes (normal song). In flight the angle of the whole body is not horizontal nor is the head arched back. Instead the body tilts at this angle with the head uppermost: / The wings beat both slowly and with very small amplitude. He then sits about two feet up and sings and she sits bobbing her tail and feeding a little. He moves six or seven times, a few feet each time, always flying as before and never getting over 25 yards from her. After the third or fourth move she begins to follow in his general direction, never straight to him but sometimes to the perch he has just vacated. In a little hawthorn she seems perhaps to crouch in a fork and once she may have pulled at plant fiber while on the ground. As she sits two feet up in the haw he flutters to her and they hover a second by it, she dropping but instantly going back to the same tree as he flutters on away. Note there have been no real contacts and the encounters are quite short; she doesn't drop to the ground nor does he persist in staying with her. As he flutters away he exaggerates the usual flutter characteristics so that the flight is very slow, the wings cupped and only slightly moved. After he lights 20 yards from her he sits with his bill one quarter inch open for ten seconds, his head thrust forward and down slightly, his tail down and his

back therefore humped. He thus looks like a male in a fight.

0845 - I must leave the territory.

T 30 and T 31 - Both males singing.

0900 - I leave

A three and a half-foot racer is on III. *prairie racer*

The chat's nest on III is empty. *same chat*

The fact that Prairie Warblers are still coming in is surprising but beyond question. From today's developments I can safely say 44F, 42F and the male in III S (M 45) have all arrived today or within two or three days. (M 45).

Morgan-Monroe

1000 to 1430 - Russ Mumford and I went to Morgan-Monroe to explore a study site and try and band adult Prairie Warblers. We had no luck in our trapping and I've given up the idea of working there. The area is too brushy and I think trapping requires careful knowledge of the individuals to be trapped. We found two nests, one five feet high in a Scotch pine and one two feet high in a sugar maple. The first contained one Cowbird egg, the second was just being lined (with Antennaria).

May 24, 1954

Sunny calm morning; temperature 60° at 0600. Present from 0615 to 0745 and from 1600 to 1900.

IIIS - Silent.

T 31 - 31 F incubating, M 31 singing. Y

T 30 - 30 F is incubating. Y

T 36 - 36 F is incubating. Y

T 37 - There are four young in the nest. N

T 34 - 34 F is incubating. Y

T 35 at 0650 - 35 F leaves the nest shortly after I arrive and I Y

go to it. To my surprise it contains one Cowbird, one Prairie Warbler, and one Prairie Warbler egg. Whether I missed an egg or a young bird yesterday I can't be sure but I'd guess an egg. While I weigh the birds one by one M 35 comes and feeds the one still in the nest. Unfortunately I have to scare 35 F off the nest each time I take a bird back. She jumps off quietly and without display, so I'd guess I have not upset her too much. ?

Cowbird - 7 gm, 750 mg.

Prairie Warbler - 650 mg. 35

The Prairie Warbler's weight is consistent with its having hatched very recently or with its having lost weight.

M 35 sings when he comes to the nest.

T 32 - In 20 minutes I find 32 F and hear M 32 sing one or two songs but I don't see any building.

T 42 - The nest has assumed full shape - M 42 is silent most of the time. This is a very well-concealed nest.

0745 - I leave.

1600 - I return.

IIIS - I think the new male, M 45, is here. I hear one song and see a male, but since he goes onto III it may be M 31.

III - The new Cardinal nest (third found here) is empty.

T 44 - I follow M 44 for 25 minutes. He sings very frequently and regularly, but I never see yesterday's female. He stays high most of the time and even when he feeds in the broom sedge I'm pretty sure he is alone. His territory seems to run northwest to within 25 yards of the gate in the meadow and to come within 25-30 yards of 33F's nest. The line runs southeast.

T 33 - 33F is incubating. Later I may hear M 33 northeast at the edge of the field.

*See
Card*

4

T 32 from 1700 to 1800 - After a lot of work I find the new nest.

32 F leads me to it by carrying spider webs several times in a row from a low bush just west of the north-south fence out into the field. M 32 sings in bursts, some of the songs loud and regular, quieter when near 32 F. Note the heavy concentration of Prairie Warblers on this part of the farm this year.

The nest looks about one and a half feet high and from a distance seems well shaped but thin, almost surely begun yesterday.

II N male - [M 36] sings type-8 steps frequently on the north end of II, then flies west to the fork of the road.

T 38 - On two trips to the nest I see no sign of 38 F, so I suppose it has failed. It is extremely conspicuous. M 38 silent for 15 minutes.

T 39 - Silence and I wonder if the pair is still here. [It was.]

T 40 - 40 F is off the nest at least 19 minutes, returning that long after I arrive. Ten minutes from the time I begin to watch the nest M 40 flies to it, sings a skid of half volume, flies away about 15 feet after perhaps three seconds at the nest (I can't see whether he stands on the rim, sits in it, or is only near it) and sings a loud song. Then in ten seconds he flies down to within 10 feet of me (I'm 30 yards from the nest tree), calls "check" twice and looks at me, then leaves.

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5/24/54

1900 - I leave.

I've heard a Prairie Warbler singing in our yard
all morning.

Russ Mumford told me yesterday that the Turkey Run
naturalist found a Prairie Warbler nest last summer in a
little red cedar tree.

*Large
mound of
mud*

May 25, 1954

A cloudy slightly windy morning (northwest wind) after a rainy night; temperature 61° at 0615. Present from 0630 to 0745 and from 1500 to 1900.

IIIS - The new male M 45, sings here. I watch him singing from high perches (except for one trip to the ground) for ten minutes and see no sign that he's mated.

T 31 - M 31 is silent, 31 F incubating. ✓

T 30 - M 30 is silent. The nest has been destroyed, i.e., the eggs are gone and part of the rim is torn away. This is probably due to a mammal.

T 42 - Silence. The nest looks complete and in five minutes I see no sign of 42 F. ✓

IIN male - [M 36] sings a regular and frequent type-8.

T 34 - The nest contains two Prairie Warbler and one Cowbird egg. All are warm. When I return from T 35, 34F is still gone from the nest. A male sings a faint, high, insipid step with a Goldfinch-like quality. It may be M 35 but is on T 34 I'm pretty sure. ✓

In about 22 minutes 34 F has not come to the nest unless she did so while I was on T 35. The nest is dry and warm so it's hard to see how it can have failed.

T 35 - The nest contains only one Prairie Warbler egg and the

174
5/25/54

Cowbird weighing 11 gm, 250 mg. Note how frequently a parasitized nest seems to have an egg that doesn't hatch.

35F flies from the nest reluctantly and silently, fluttering straight away for at least 20 yards. She makes no *his his* sound at any time in the one minute I'm here. The Prairie Warbler starved I suppose.

T 37 - The four young fill the nest. No sign of the adults. *N*

T 36 - 36 F is incubating and M 26 is silent. *✓*

0745 - I leave.

1500 - I return. The day is partly cloudy, the temperature 67°.

IIIS from 1500 to 1515 - Silence.

T 30 from 1515 to 1545 - A few very faint songs, probably from the southeast corner of III.

T 31 - M 31 sings regularly near the little woods.

T 44 - M 44 is high in a sycamore that stands above a rather thick growth of trees, the place where he spent most of his time yesterday. He sings regularly and frequently, never moving out of the tree. I watch for the female for 30 minutes without success.

T 33 - The nest is gone with only a few shreds left, undoubtedly prey to some mammal, M 33 sings a faint, often-abbreviated song to the east on the hill. I won't start

looking for the new nest yet..

T 32 - The nest is complete. M 32 is silent.

T 42 - M 42 sings twice as I pass.

T 34 - The eggs are cold so the nest has failed. M 34 sings in the pines at the south end. N?

T 35 - 35 F is on the nest, M 35 singing nearby. Y

T 37 - The young are still in the nest. It is probable that either the incubation or the brooding period has been prolonged one day over the normal. Since I have no other instance of this it is a pity that I can't be sure which it is. N
wrong
check
re
written

T 38 from 1700 to 1815 - M 38 sings south of the second nest, across the ravine on old T 8. After much searching I find the nest there, eight feet high in the outer branches of a dogwood. I had seen 38F two times and was standing right beside the nest tree, I hope without doing any harm. It looks complete from below, and since from 1800 to 1815 she never came to it, the chances are it is nearly done. Once during this interval of watching, 38 F flies to a little elm near the nest and M 38 flies up to her, within an inch or two. He flutters his wings for a second and there is the twittering sound given sometimes when male and female [or two Prairie Warblers of any sex] meet. He then flies straight away some 20 yards fluttering a little 19

in flight. She waits two or three seconds and flies away.

5-1/2 by

M 38's songs are high faint steps uttered near the nest, i.e., not more than 35 yards away and high (35 feet). When he gets farther away he quits singing. The songs are frequent but irregular, with period of several minutes (but usually not so long) of silence.

T 39 - Silence. I suspect this pair has broken up, [error] which would not be inconsistent with the movement of Prairie Warblers in the last five days or so.

T 40 - 40 F is incubating.

Y

II-N - Silence.

T 42 - Silence.

T 30 - Silence.

T 31 - M 31 still sings near the woods, coming quite close to me (six feet) just above and on the ground. Sometimes he sings sotto voce, I think when he is interested in me.

so he goes at me?

IIIS - Silence.

1900 - I leave.

Saw two Connecticut and one Mourning Warbler, Olive-Sided Flycatcher today.

May 26, 1954

A cloudy morning with a northwest wind; temperature 60° at 0630.
Present from 0630 to 0945 and from 1515 to 1830.

IIIS from 0640 to 0655 - When I arrive there are three male *Caf*
Cowbirds calling and displaying in the top of a dead elm.
In two minutes the number has reached eight, all males and
all bowing and spreading their wings; they leave in two's
and three's. This is what makes any attempt to talk of
Cowbird numbers a guess.

I have IIIS in hearing range while I'm on III and I
never hear a Prairie Warbler. I conclude that the male
that came in on 5/23 was a wanderer, like the male in our
yard the next day [probably this is error].

T 30 - M 30 sings in the southeast part of III, between the little
woods and the south tree row. He perches in the hackberry
for one minute and sings without challenge from M 31, so
this must be right on the line. Some of his songs are ab-
breviated and I see him sitting silent and looking down.
Soon 30 F appears, flying from small tree to tree and *g up*
crouching in sheltered spots. She moves somewhat aimless-
ly, so I think she has not selected a new nest site yet.
I think that M 30 went onto IIIS, but his songs are now so
high and short that I can't be sure that I hear him. He
then moves north, I think a little beyond the woods.

T 31 at 0720 - 31 F is incubating. M 31 has sung earlier, when I came to III, but now is silent. ✓

T 42 - The nest is unattended. Silence. N

IIIN - Silence.

T 36 - 36 F is not on the nest, but the eggs are warm. N

T 37 at 0730 - The young are still in the nest so I sit to see them fledge. The adults are audible near me, calling "tsu" and "tsip" and "check." The young are silent, make no noise or motion when I put my hand up to feel them in the nest. The adults sit with food, unwilling to go to the nest. while I'm 15 feet away, so I move back 15 more feet. M 37 sings two combination high-buzz-steps, then just the Golden-wing-like buzz; he does this while carrying food.

0742 - Both adults go to the nest, the male 15-20 seconds before the female. If I cup my ears I can hear the young calling from 30 feet back. One adult carries a fecal sac away. *audible 3:00*

Three male Cowbirds call and display here.

37F calls 20 times in one minute near (35 feet and less) me. The call is a "tsip" but it has a kissing sound too. This is a quality not infrequent in Prairie Warbler calls and one I've never been able to describe before.

M 37 sings an insipid step from a hawthorn between me

and the nest, half volume. He does not have food.

0755 - M 37 has food. He sings first a high skid typical of him. Then he sings one Golden-wing, one skid, and at 0756 goes to the nest. The young call while he is there (20 seconds) and for 10 seconds after he leaves. Seven skid songs in next three and a half minutes.

0801 - He takes food, singing one loud skid with it in his bill; there is no sign that he opened his bill to sing. 37F is here with food, calling the same kissing sound. M 37 seems to look at her five feet away in the same tree and rapidly open and shut his wings three or four times somewhat like a gnatcatcher. I think he gives an odd little series of notes, but I can neither be sure nor can I describe them. He moves away and occasionally sings his skid and the combination step. 37 F has sat here five minutes without going to the nest; her call has become a faint "tsu." She sits quietly 15 feet from the nest looking at me.

0808 - M 37 arrives 25 feet up in an elm carrying food and singing loud skids. 37 F begins to give a single call note of a new sort, a high "peep"-like sound that resembles the notes of the twitter, except of course that they are in a very rapid series. Among these new notes are one or two "checks."

0809 - M 37 goes to the nest and in 15 seconds 37 F goes too. So far she has ventured to the tree only when he goes first. I have a good many cases of female warblers being less bold in feeding young than are males.

M 37 is singing Golden-wing songs.

0815 - 37 F is near with food, calling "tsu." I am going to other territories and come back here. Fledging doesn't seem imminent.

T 36 - 36 F is incubating.

T 38 - from 0822 to 0835 - M 38 sings faint and insipid steps of seven to nine notes, staying fairly high in the trees along the ravine. I watch the nest and at 0834, 38 F carries milkweed down to it.

A Field Sparrow nest, domed, on ground, in grass, female on three eggs.

I forgot to note yesterday that I took the second nest. It was empty and unharmed, so the predator was probably a snake.

T 40 - 40 F is incubating and M 40 is silent.

T 39 - In ten minutes no sound of a Prairie Warbler.

T 35 - The nest is empty, in no way disturbed. Adults silent and not seen.

T 34 from 0900 to 0930 - Both adults are back at the south end of the pine row, both silent. I see them for only a few seconds once, but since M 34 sang here yesterday I suppose the nest is going in here.

T 32 - Nest still empty. M 32 sings two loud chatters in the field. N

T 33 - Silent.

0945 - I leave.

1515 - I return. It is cloudy and sultry.

T 31 from 1515 to 1535 - Silence.

120/140
T 44 from 1535 to 1615 - M 44 sings almost constantly at intervals of from 15 to 22 seconds. During most of the time (almost 30 minutes) he is on the northwest part of his territory as I've understood it. For nearly all of this interval he sits quietly 35 feet high and sings and preens, almost never moving. At the end he drops down on a gnatcatcher that has been calling about five feet above the ground. He pursues the bird ten feet, then moves on northwest. To my surprise he flies high to the big trees right by 42 F's nest and then falls silent and disappears. It occurs to me he and M 42 are the same. Against this are the fact that M 42 and M 44 were both seen and watched on the two territories on 5/22 and 23, that a male whose mate is laying (42 F) usually doesn't sing like this. For it are the

inc
gnatcatcher
No -
usual
singing

observation today and the fact that M 42 has an extremely small territory so far as I know. I'll have to wait. [No basis for identifying these as one bird emerged.]

T 33 - M 33 is silent for all but five of 30 minutes. In that time he sings loud but sometimes abbreviated type-8 steps and does not act as though a female is near.

T 34 or 35 from 1700 to 1740 - One or both males are singing and I watch one at the territory line for a long time. He could be either, is very probably M 35. No sign of a female near him. He sings a chatter skid about half the time, the rest a high step ending in a buzz. For one period of five minutes he calls like a male in a fight, as he sits perched 20 feet up. Once I think the two males fight in the area where M 34 has been.

Once the male I am watching during his fighting call interval flies down into the white pines and calls. A few seconds later a red fox runs out, but I don't know if there is any relation between the two events.

T 37 - The young are still in the nest. M 37 brings food from the tree row up by the east-west road.

T 42 - Silence.

T 31 - 31 F is incubating.

T 30 from 1800 to 1830 - Silence except for one or two songs by M 30.

1830 - I leave.

May 27, 1954

A cloudy morning after a rain at night; temperature 62° at 0630. At 0700 it began to rain hard and rain fell frequently throughout the day. Present from 0630 to 0900 and from 1815 to 1915.

ly
T 30 M sings frequent/and irregularly near the little woods, largely from just north of it and on north to the projecting woods. It begins to rain soon after I get on III. No sign of 30F.

T 31 - M 31 sings all over the center of his territory. 31F is incubating.

T 42 - No sign of the pair.

T 44 - M 44 sings frequently and regularly on his territory.

T 33 - M 33 sings one or two times from the north edge of the orchard. I spend 15 minutes but can't see him or 33F.

T 32 - Silence. The nest is empty.

T 36 - The eggs are dry and warm.

T 37 - The adults are feeding the nestlings, which should fledge today. They don't move when I put my hand over the rim and touch them; they can't see me.

T 39 - Silence for 15 minutes.

T 40 - M 40 comes well over on to T 39 and sings. This tends

Boys
A. L. L.

toward a suspicion that M 39 has gone. 40 F is incubating. Y

T 41 - Silence in ten minutes. Interestingly, the second nest, which was left with two Prairie Warbler eggs in it, now has only a Cowbird egg in it. This was deposited several days after the failure and is one of my very few records of a Cowbird's laying in an unused nest. Possibly the Cowbird frightened 41 F away and caused the failure. C on failed nest

T 37 - 37 F is brooding in the rain. Y

0900 - I leave.

1815 - I return. It has not rained for two hours or so and a little sun shines.

T 30 - M 30 sings on the center of his territory. The song is loud and irregular. In 30 minutes I can't see 30 F.

T 31 - 31 F is incubating every time I go to the nest. M 31 sings. Y

T 36 - The eggs are quite dry. N

T 37 at 1900 - To my surprise the young are still in the nest, their bills showing over the rim. N

1915 - I leave.

May 28, 1954

Another cloudy morning with evidence of rain at night and every indication there will be more; temperature 66° at 0600. Present from 0615 to 0830 and from 1345 to 1545.

IIIS - Silence. Evidently M 45 did not remain here.

T 30 from 0620 to 0720 - I find M 30 singing on mid-territory. He then goes to the projecting woods and sings frequently there. I follow him over the territory without seeing 30 F until 0700. At that time I hear M 30 singing very soft toneless chatter skids, about half the regular length, some hardly audible. 30 F is feeding on and near the ground below him and just east of her first nest. Once she gathers spider webs but drops them. Several times she sits motionless for a minute. The last time this happens she is 10 feet up in a little peach tree and I walk up to get a closer look. Just then, 0710, M 30 flies to her from some nearby perch, flying slowly but without a pronounced flutter. She crouches a little and raises her tail to an angle of about 30° from the horizontal plane of the body. He lights on her back, head facing the direction of hers, and sings one short skid of medium volume. She calls about three or four "tsips." He lowers his posterior as in copulation but stays only about two or three seconds at the most. Neither moves the wings. He flies silently and normally about 15 yards away, her last call coming as he leaves her. She sits motionless for ten

seconds, then jerks the posterior end of the body quickly up and down three or four times as Prairie Warblers do sometimes after defecating. In 30 seconds she repeats this. In 20 seconds she preens a wing once or twice. She then defecates, jerks, and begins to preen at great length. M30 is silent. I leave the territory.

T 31 - 31 F incubates after being off the nest earlier. M 31 sings. N
He was with her as she fed while off the nest, flying close behind as she went from tree to tree. 5/29

T 32 - Egg one is present, measuring 15.4 x 12.3 mm. and marked with small dark distinct spots mostly confined to the wreath. N
M 32 sings his usual song and several high skids in the field and the north edge of the orchard. 199

T 44 - M 44 sings frequently.

T 33 - I spend 20 minutes near the big elm on the northeast edge of the orchard. M 33 sings loud, regular type-8 steps here. Once I think I see 33 F in the blackberry field but I can't find her when I go closer.

Gnatcatchers are carrying material from the field to a nest 45 feet high in a honey locust. Gnatc.

T 34 - M 34 sings frequently just east of the pines on the north end. No sign of 34 F. M 34 goes to X and sings.

T 35 - M 35 sings in the locusts on the west edge of his territory.

The territory runs over to the last locust grove, giving
M 35 much the larger territory on V.

T 36 - 36 F. incubates. Y

T 37 at 0820 - The young are in the nest, calling noisily even in
the adults' absence. They also move a good deal. It is
raining now and has been for 20 or 30 minutes. I can't stay
to watch them fledge. M 37 brings food and sings a rasping
step. N

IX - A male sings a dry short chatter skid here for the first
time. He may be M 45, the IIIS male, but in any event it's
interesting how much movement still goes on.

0830 - I leave.

1345 - I return. It has rained very hard off and on during
the morning and it begins to storm violently almost as soon
as I arrive at the north end of the area. I take shelter in
a shed for 20 minutes.

T 41 - M 41 sings skids between the sites of the first two nests.

T 40 - The nest has failed; it looks intact from below. M 40 sings
type-8's (new for him) on the southwest part of the territory.
I make no search for 40 F.

A Sparrow Hawk flies over with a lizard. There is a good
deal of alarm calling by the song birds. 8/12/54

T 39 - I make a search on the south end by the gulley, where M 39 sings loud and frequent songs, probably going south of it somewhat. 39 F appears and flies west into the pines, so I imagine the nest is down here. 5/28/54

I find a nest of 39F. It is built on a little elm that has been pulled over into a horizontal position by wild grape growing on it. The nest is 6 1/2 feet high and is on top of the bent-over leader. It is well concealed except from above. It is not complete, has a well-developed rim but hardly any bottom.

Whip-poor-wills incubating two eggs in the open woods on T 39. Whip-poor-will
2

T 37 - The young have fledged and are scattered, one of them 35 and one 40 yards from the nest. All are calling loudly when I arrive. With no difficulty I catch and band three, all with red over silver on the right leg.

21-62024

21-62025

21-62026

The first weighs 6 gm. 400 mg., but since my equipment is wet this is fairly rough and I give it up. JCS

37 F puts on many distraction displays, doing one odd thing. She fans her right wing more than her left in the early stages of intensity; as the performance increases the two wings are moved equally. As usual, she moves the W

wings a lot, holding them out wide and tumbling down bushes and tree trunks.

The young can fly 10 yards or so and are followed by the female when they do. The noise attracts only M 37; the 36's never appear.

Red-eyed Vireo nest, four feet high in a maple, one Cowbird egg.

1545 - I leave.

RV
1C

May 29, 1954

A cloudy morning, becoming brighter by 0900, with a little sun through the haze; by noon it is fairly sunny and by 1800 clear; temperature 63° at 0700. Present from 0700 to 1200 with Bob Curtis and from 1300 to 1700.

T 41 for 45 minutes - M 41 sings his high skid constantly from the north line of the woods and from the little apple orchard. I walk carefully over much of the territory without seeing 41 F. Undoubtedly she is nesting.

I then drive to the south end and meet Curtis.

T 31 - M 31 sings irregularly and 31 F incubates. Y

T 30 - from 0830 to 0900 - M 30 sings in the projecting woods and east of it. We follow him but never see 30 F.

T 42 - M 42 sings. The nest is not occupied but soon should be. N

LEN - We scour nearly all of the ground which is east of the road, missing only the very north fringe. No sign of a nest. [M 36] sings literally the entire time we cover the territory, i.e., for one and a half hours. The song is a moderately loud, regular, frequent type-8. I'm beginning to wonder if he's mated. [Of course, this work was all based on error.] Sing note

T 35 - We find M 35 and when he begins to sing more faintly see 35 F. She gathers broom sedge down and after her trip into 5' away

the dogwood field I see her nest. It is five and a half feet high in a ten-foot dogwood, poorly concealed. It is nearly complete, lacking only some of the lining.

T 34 - The 34's are in the southwest corner of the territory. M 34 sings a few loud songs. Once he flies up to 34 F as she sits in a little elm. *19*

T 32 - Egg two is here. It is marked with a thin wreath of heavy spots and measures 15.4 x 12.2 mm. M 32 sings in the field and at the north edge of it. *egg*

T 33 - The field is somewhat hard to understand. I think perhaps a new male is crowding in here. We see two males fighting in the corner of the field and one seems not to be M 32. 33 F is in sight a good deal, as is M 33. She shows no sign of building. *mobbing*

The most interesting thing is the attention of three Prairie Warblers, two Field Sparrows, and one Bluebird to a pilot blacksnake. The Bluebird first attracts me. It begins to call and scold and soon 33 F and a Field Sparrow come up. Both keep looking down at the ground with the Bluebird. Then M 33 and the second male fly up. For 30 seconds or more the males sit within ten feet of each other without any signs of animosity despite the fact that they have fought earlier. Then one moves a little closer to the other and there is some angry calling. This period of inattention and then of hostility is repeated. Meanwhile

33 F quietly watches the ground, sitting only one foot above it. The males too get quite close to the snake. All Prairie Warblers are silent. There is almost no tail flipping and no display; the reaction seems to be curiosity. When we go up to investigate, we find a three and a half-foot black-snake lying quietly in a long loop.

1200 - We leave.

1300 - I return.

T 30 - M 30 sings in the projecting woods, a high faint song. I soon find 30 F and follow her closely for 25 minutes as she feeds slowly along near and on the ground. She never gives any sign of exploring or building behavior. M 30 quietly keeps close to her, singing very little and simply flying along to spots near those she chooses. She goes north through the woods to the road and and here I see an odd thing. She climbs (in flight) into the trees about 20 feet. In a minute I see two Prairie Warblers, one mounted on the other and persistently pecking at the feathers on the lower bird's nape. Both are silent. This lasts seven or eight seconds and the lower bird hops about one foot down to another branch. The other keeps its position and rides along on the lower's back. All this is of course exactly what one would expect in copulation but I'm almost sure the female was on top. Unfortunately I can only note the probability. After 12 seconds of contact they separate

Imag
73
reversed
mount
cup

and I watch 30 F. She calls two or three times, jerks her whole posterior half up and down several times and goes on feeding. I follow for ten more minutes and see M 30 still moving along near her. He never sings during the copulation. I conclude there is no nest yet.

T 42 - M 42 sings.

T 44 - M 44 is fighting just north of the gate with M 42. He then flies back south 20 yards in a display flight. He rejoins M 42 and repeats the display. It is like the one I saw him give before in its off-horizontal position. I see a female, very drab, near him and follow her. He continues to display. She flies into high trees and persistently explores tangles of vines and nest sites: I leave after ten minutes of watching this. Almost surely this female is a new arrival; it's safe to say she hasn't nested yet.

T 33- M 33 sings regularly but I don't see 33 F in ten minutes on the territory.

A new male is present. He is a type - 8 step singer on the southeast end of the orchard, across the little valley from T 33 and on land that has regularly been part of T 44. He uses an area that M 44 seldom got to, the little row of old osage orange trees and on east of them. He sings regularly and frequently and is a moderately marked bird. It is amazing that males are still taking

up territory when the early males arrived and their mates began to nest over a month ago. Of course today's new bird may leave as the one on IX two days ago did. [This male never got a female and left on about June 8. In retrospect I call him M 02.]

T 34 for 30 minutes - M 34 sings a few times and I find 34 F near him. M 34 and M 35 get in a fight in the little southwest clearing and 34 F feeds quietly along calling occasionally. I have her in sight for ten minutes or more and see neither building behavior nor the usual male solicitousness as just observed on T 30. If the nest hasn't been built yet this is a good example of the differences in behavior of different males (M 30 and M 34). [The nest had been built.]

T 36 - 36 F is incubating and M 36 singing type-8's on VII. [I must have suspected that the II N male was M 36.] ✓

T 37 - Silence.

T 38 - There are two eggs in the nest. ~

T 40 - The second nest has clearly failed. In ten minutes I hear nothing and I decide to look for the new nest tomorrow.

T 39 - The nest found here yesterday is not developed. No sign of 39 F though M 39 sings.

T 41 - I cover the little orchard and the fields north of it where M 41 sings, but without finding the nest.

1700 - I leave.

May 30, 1954

A fine sunny morning with a heavy dew; temperature 57° at 0630. Present from 0700 to 1200 and from 1430 to 1800.

T 41 - M 41 sings very regularly but I make no search for the nest.

T 40 for one-half hour - M 40 sings a few high songs but not from any one spot. No sign of 40 F.

Field Sparrow nest, broom sedge, female on three eggs. F
3

T 39 - M 39 sings regularly. The nest I found is unimproved and is very likely a fragment built after the first failed.

When I find the new one I can confirm this.

T 38 at 0830 - 38 F is on the nest. ✓

T 35 - The nest is not completely lined and 35 F is not coming to it. It may have failed. [Error.]

T 34 till 1000 - M 34 sings erratically on the territory and I can't find 34 F. She has probably built.

T 33 - I spend 30 minutes without finding a sign of 33 F. M 33 sings very frequently and regularly over the whole territory and I wonder if perhaps 33 F has gone. [right] Certainly she not
snake hasn't built. M 33 joins a Field Sparrow, two Bluebirds, a gnatcatcher, a male Towhee, two Red-eyed Vireos, and a female Indigo Bunting at the spot where yesterday we saw the black-snake. All call and show great interest in the ground. M 33 calls several times. I'm sure a snake must have been there but I can't find it.

T 32 - M 32 sings high skids and a few of histypical songs. He has crowded M 33 a little to the east.

T 02 (the new male) - This bird has moved east since yesterday, giving M 44 more room on his original territory. He sings regularly and frequently and I am fairly sure has no mate.

T 44 - M 44 is now southeast of the heavier growth, in the shrubby meadow. When I go there I see 44 F with nest material in her bill but she never takes it to a nest and I lose her. She holds it for three or four minutes so she must be building. M 44 sings at his usual volume but very infrequently.

T 31 - 31 F is on the nest. M 31 sings in the center of III.

T 30 - Silence for 15 minutes.

T 42 - 42 F has begun to incubate.

1200 - I leave.

1430 - I return.

T 31 - 31 F incubates.

T 30 - I listen and hear M 30 singing very faintly in the northeast part of III. I find him with 30 F there. His songs are high, insipid steps, barely audible even when I'm right beside him. She feeds along on and near the ground and as he did yesterday he stays within a few yards of her. There is no courtship

hour, day 2

and nothing to indicate she is ready to build. I have her in view for 12 minutes and then decide she isn't worth watching any longer.

30 F feeds regularly, going from one goldenrod to another and taking ^{high} larvae from the growing tips. This is an ^{food} extremely common feeding habit of Prairie Warblers, one I've not mentioned before. It is a good way to identify a major source of food.

T 44 - As soon as I arrive I find 44 F at the spot where she was ^{high} this morning. She quickly goes to a nest on the outer leafy ^{nest} tip of an elm, 20 feet from the ground. It is very sketchy, begun surely no earlier than today. M 44 is very near; he ^{1st day} sings occasional loud songs.

T 33 - I meet Paul Davis and a friend and we cover the territory for 30 minutes. M 33 sings loud and frequently over the whole hillside and out into the field to the north. Again there is no sign of a female.

T 02 - M 02 sings at timed intervals of 12-15 seconds. No female. ✓
I note something I've seen before, that males without mates seem to explore nest sites a little and even to flutter ^{I'm} slightly. This may be anticipatory on my part and not his.
[I'm correct - no mate.]

T 32 - The third egg measures 15.5. x 12.4 mm. M 32 fights M 33 at the north edge of the orchard.

197
5/30/54

T 34 - M 34 sings at the south end of V and fights M 35 there. 34 F is present but we soon lose her. In 30 minutes we make no progress in locating the nest by his singing.

519

T 35 - The nest looks complete. Since ⁰⁸³⁰ morning 35 F has added much black hair as the final lining. It comes I'm sure from the black cows in the field.

nest
near

T 36 - 36 F incubates and M 36 sings his type-8 step.

4

T 40 - For 45 minutes I search for 40 F without luck.

M 40 sings all over the territory, an infrequent and irregular skid of 3/4 volume. He spends most time at the north end near the wires but 40 F never shows up.

moving nest

prob 514

1800 - I leave.

May 31, 1954

A cloudy morning, becoming sunny and hot at 0930; by mid-day a strong southeast wind and the temperature over 80°; in mid-afternoon it threatens to rain but after a few drops it clears up and continues very windy; temperature 67° at 0600. Present from 0600 to 1200 with Paul Davis from 1515 to 1745.

T 31 - 31 F is incubating and M 31 sings irregularly and infrequently.

T 30 from 0615 to 0645 - M 30 sings very infrequently east of the projecting woods. We never see 30 F.

T 42 - 42 F is incubating, M 42 silent.

Orchard - There is a strange male in the southwest corner of the orchard and ranging north to the track going southeast to the valley. Paul watches him for 25 minutes while I check on other males and he is definitely not one of the regular orchard birds. It's barely possible he is M 42, but I think not. His song is a medium skid, slow and without energy. [Note he left before my visit on June 1.] He is not heavily marked. Once he fights M 33, on whose territory he encroaches a little (to the first nest, which was at the very edge of territory 33). No regular male comes much to the spot where he is; i.e., it is not really a part of any active territory.

- T 44 - 44 F is building and M 44 singing very occasionally nearby. ♂ 1 only
- T 02 - M 02 sings his type-8 step and seems to flutter a little in flight.
- T 33 for 30 minutes - We follow M 33, who sings loud and regularly and without any concentration on a particular area. I feel sure he has no mate. Once he fights M 32, who has moved east on him a little. A few minutes later M 33 fights a male at the sinkhole, sings faintly there for one minute, then goes back to his territory. The other male could have been M 32, or M 34.
- T 32 - 32 F is incubating so I don't measure her fourth egg. See under T 33 for M 32's fight. Y
- T 35 - Nest is complete but still empty. 35 F is near it, sitting or moving quietly within a range of 15 yards for over five minutes. I have few examples of females' staying near complete nests. N
fewer
longer
nest
- T 34 for 35 minutes - We listen and watch the open spaces without seeing any sign of 34 F. M 34 is quite silent except for one five-minute burst of loud regular songs from the vicinity of the north-south pines. I conclude 34 F has finished her nest, which is to be expected since 35 F who failed a day later has finished. Note though the different reactions of females who lost nests at about the same time: 33 F
during
lying
100
day one
Lp

seems to have left, 30 F has not built yet, and 35 F is finished.

We open a Field Sparrow egg which is in the red pine nest with a Field Sparrow about four days old and one Cowbird egg. The embryo is well developed though much shrunken since its death. I think it is noteworthy that nests in which Cowbirds lay very often contain eggs that don't hatch; if today's egg is evidence, the failure to hatch is not because they are infertile. I suggest that the Cowbird egg has something to do with the available heat or shelter.

T 36 - 36 F incubates.

T 37 - Silence, as has been the case ever since the young fledged.

T 38 at 1020 - 38 F is off the nest. It contains four warm eggs.

T 39 - M 39 sings frequently.

T 40 - for 1 1/2 hours - We split up and cover the territory with great thoroughness without seeing a sign of 40 F. M 40 sings very irregularly and often rather faintly but he moves all over the territory and if the female is here he gives no indication of it. If he stays in one place more than another it is in the strip of woods between the road and the electric line. We each watch one of these cuts through the trees, only about 50 feet apart, and no female ever crosses them.

1200 - We leave.

1515 - I return. It is very hot and sultry, over 80°, and a strong wind is blowing from time to time from all directions but generally from the south.

T 39 - 40 - I cover these territories but get no new line on the situation. In 30 minutes on T 40 I find him acting as he did this morning. M 39 is more silent. *prob song*

T 41 - M 41 sings frequently but it's too windy to search for his nest.

I then drive to the south end of the area.

T 31 - The lane southeast through the woods from the sheds reached the northwest corner of III last week. Since we were here this morning the lane has been widened and a brush tangle in the corner of the field has been burned out, the burned and scorched area covering about 500-700 square feet. The fire got within 10-15 feet of 31 F's nest but she is still incubating, to my great surprise. M 31 is silent. *Y*

T 30 for 30 minutes - M 30 is silent but I happen to find 30 F and follow her for six minutes without seeing any signs of building.

1745 - I leave.