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1953

## Mourning Dove Newsletter, Issue No. 7

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II.12.1



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE

OFFICE OF REGIONAL DIRECTOR

PEACHTREE-SEVENTH BUILDING  
ATLANTA 5, GEORGIA

June 30, 1953

ADDRESS ONLY THE REGIONAL DIRECTOR  
FISH AND WILDLIFE SERVICE  
AND REFER TO

REGION 4

NORTH CAROLINA  
SOUTH CAROLINA  
GEORGIA  
FLORIDA  
KENTUCKY  
TENNESSEE  
ALABAMA  
MISSISSIPPI  
ARKANSAS  
LOUISIANA  
VIRGINIA

MOHLER

Supervisor of Game  
Game, Forestation and Parks Commission  
Lincoln 9, Nebraska

Dear Sir:

The enclosed Mourning Dove Newsletter summarizes the information on populations available at this time. It represents an extensive cooperative effort since most of the states were asked to participate in the call-road count. We greatly appreciate your cooperation and hope it may be continued next year.

We will appreciate having you show this to your P-R coordinator.

Sincerely yours,

*Harold S. Peters*

Harold S. Peters  
Research Biologist

Enclosure

Game, Forestation & Park Commission  
RECEIVED  
JUL 2 1953  
Coch. .... M. G. ....  
Draft. .... Check. ....

U. S. DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
Peachtree-Seventh Building  
Atlanta 5, Georgia

Issue No. 7

June 29, 1953

MOURNING DOVE NEWSLETTER  
(Not for Publication)

This issue contains a summary of Mourning Dove populations data for assistance to the states and the Fish and Wildlife Service in preparing dove hunting regulations. It will also be of interest to all persons working on this important migratory game bird, whether in state game departments, institutions of learning, or individuals.

The previous issue was number 6, June 30, 1952. Since that date many of the southeastern dove projects have been either terminated or modified, so that information has not been gathered as extensively on populations during the past year as formerly. Consequently the major data available at this time has come from call-road counts taken between mid-May and mid-June in 41 states, random road counts during April and May in 7 southeastern states, and hunter bag checks in 9 southeastern states during last hunting season.

The following information is not for publication or citation. The conclusions have been placed first for quick reference.

Conclusions

The steady upward climb of dove populations in most of the country east of the 100° meridian has continued for a third successive year. Call-road counts during May and June have shown an increase in breeding population of 15 to 20 percent from last summer. Since the early part of the 1953 nesting season has been fairly successful we anticipate an increased dove population available for the hunter this fall.

Doves have gradually increased in numbers in eastern United States since the alarming low in the fall of 1950 which was attributed to trichomoniasis. The population was further affected by severe weather conditions in the winter of 1950-51. With good production in 1951 and 1952 the birds increased each year but we are not yet certain whether they have reached the high numbers present in 1948-49.

The best information at hand indicates the fall population in 1953 should be somewhat greater than that of 1952. We hope that the many cooperators who have contributed data and assistance will continue to gather important populations information from the major Mourning Dove range. Call-road counts were made in most of the western states this year; these will furnish valuable information for comparisons with similar counts in the same areas next season.

#### Call-road Count Data

A total of 1,714 call-road count routes was covered in 41 states and one province by 265 cooperators during May and June of this year. This total greatly exceeds that of 196 routes counted in 1952. Most of the states increased the number of their routes this year by wider participation of state technicians, wardens, individuals, and federal game agents. In addition most of the western states have made counts for future assistance.

The number of calling doves and the number of doves seen was recorded on each route. Table 1 shows the counts made in each state for the past three years, and the analysis of the routes is given below.

#### Summary of Doves HEARD on Call-Road Counts

##### A. Routes Censused in 1952 and 1953 - Comparable Data

Comparable data from 135 call count transects in states east of the 100° meridian show an average of 22.1 birds heard per route in 1953, an increase from the average of 19.5 birds per route last year. Unless a 1 in 15 mischance in sampling from the 135 routes both years has occurred the number of calling doves in the eastern United States has increased about 15 percent. This difference is nearly significant at the 90 per cent level.

##### B. Routes Censused in 1952 and 1953 - All Routes

Results from 383 routes in 1953 and 395 routes in 1952 from states east of the 100° meridian show an average of 21.6 doves heard per route this year as compared to an average of 18.2 last year. This increase of approximately 17 per cent in the number of doves calling on all routes in eastern United States is statistically significant at the 99 per cent level, unless a 100 to 1 mischance in sampling has occurred a real increase in the calling population is to be noted for 1953 from these data.

When the 1953 and 1952 data for the states east of the 100° meridian are separated into four sections for analysis they show little change. In fact, both the northeastern section and the midwestern section show no significant change. The southeastern section shows an average decrease to 15.2 in 1953 from 18.4 in 1952; a nearly significant decrease at the 95 per cent level. The lower Mississippi section has an average increase to 23.1 doves per route in 1953 from the average of 18.4 in 1952. This is significant at the 99 per cent level. The table on the next page shows the details of the above comparison and analysis.

Statistical Analysis of Doves HEARD on Call-Road Counts

	All Comparable Routes E. of 100" M.		Total of All Counts E. of 100" Meridian		Sections of Area East of 100" Meridian							
					N. E.		S. E.		Lower Miss.		Midwest	
	52	53	52	53	52	53	52	53	52	53	52	53
Avg. Doves per rte.	19.5	22.1	18.15	21.5	9.8	9.7	18.4	15.2	18.4	23.1	20.8	20.7
Std. deviation	13.25	15.95	11.9	16.6	6.4	10.0	11.4	12.0	10.7	13.4	12.9	16.1
Std. error	1.11	1.36	.597	.849	.86	1.7	1.00	1.25	.938	1.39	1.18	1.87
No. of routes	135	135	395	383	43	36	90	92	100	92	89	73

Summary of Doves SEEN on Call-Road Counts

A. Routes Censused in 1952 and 1953 - Comparable Data

Comparable data from 108 call-road count transects in states east of the 100" meridian give an average of 22.8 doves seen in 1953, an insignificant decrease from the average of 23.2 seen on the same routes in 1952. While these averages seem to denote little change in the birds observed, the variability of these data was high and the 15 per cent increase shown in the numbers of birds heard on these same routes is well within the statistical sampling error inherent in the road count data.

B. Routes Censused in 1952 and 1953 - All Routes

Results from 383 call-road count transects in 1953 and 373 in 1952 in states east of the 100" meridian give an average of 20.2 doves seen in 1953, an increase from the average of 16.7 birds seen last year. Thus a comparison of all doves observed on 1952 and 1953 call-road count routes indicates an increase of about 20 per cent, unless a 100 to 1 mischance in sampling has occurred, east of the 100" meridian. The difference in the two years is statistically significant at the 99 per cent level. The table on the next page gives the details of the above comparison and analysis.

### Statistical Analysis of Doves SEEN on Call-Road Counts

	Comparable Routes E. of 100" M.		Total of All Counts E. of 100" M.	
	52	53	52	53
average seen per route	23.2	22.8	16.7	20.2
standard deviation	24.45	22.05	15.65	21.2
standard error	2.35	2.12	.81	1.08
number of routes	108	108	373	383

### Hunter Bag Checks

Doves in hunters bags have been checked by wardens and technicians in the ten southeastern states during the past four hunting seasons as part of the Cooperative Mourning Dove Study. Table 2 gives the results of this examination and shows the percent of juveniles in the bags and the kill per gun hour. The number of juveniles gives indication of nesting success and production for the year, while the kill per hour gives indication of the population available to the hunter. The kill per gun hour shows an increase in 6 states and a decrease in two states over the previous season.

Many technicians and wardens have collected a wing from each dove examined to provide important information on percent of juveniles and relative age of juveniles in hunters bags. The southeastern states have included such information in their quarterly and annual P-R reports. In addition, the federal game agents have sent in a large number of wings from last season's kill, from which the following table has been compiled. This gives the per cent of juveniles and compares very favorably with that in Table 2.

### Analysis of Wings Collected from Doves in Hunters Bags By Game Management Agents During 1952-53 Season

State	Dates Collected	Number Wings		Percent of Juveniles
		Adults	Juveniles	
Alabama	Oct. 12-31	21	23	52.2
	Dec. 27-Jan.3	21	12	36.3
Florida	Oct. 2-18	60	132	68.7
Georgia	Sept. 15-25	33	163	83.2
Kentucky	Sept. 1-8	58	394	87.2
Louisiana	Sept. 13	1	24	96.0
Mississippi	Oct. 15-29	57	73	56.2
North Carolina	Sept. 16 -			
	Oct. 14	100	165	62.3
South Carolina	Sept. 15-27	105	307	74.5
Tennessee	Sept. 15-29	317	998	75.9

Table I  
Number of Call Count Routes for 1951, 1952, and 1953

State	1951	1952	1953	State	1951	1952	1953
Alabama	10	8	9	Nevada			12
Arizona			9	New Jersey		3	6
Kansas	4	2	6	New Mexico			4
California			18	New York	4	4	10
Connecticut			1	North Carolina	6	7	18
Delaware		1	2	North Dakota	1	2	7
Florida	10	9	25	Ohio	16	16	15
Georgia	10	21	17	Oklahoma		5	4
Idaho		4	16	Oregon			7
Illinois	1	2	29	Pennsylvania	3	5	15
Indiana	1	4	7	Saskatchewan			7
Iowa		3	11	South Carolina	8	9	17
Missouri		7	20	South Dakota		5	2
Kentucky	11	7	17	Tennessee		11	25
Louisiana	13	7	19	Texas	12	7	10
Maryland	3	3	5	Virginia	2	5	11
Massachusetts			1	Washington			12
Michigan	1	6	15	West Virginia			3
Minnesota		4	13	Wisconsin	<u>3</u>	<u>7</u>	<u>4</u>
Mississippi	8	9	17				
Missouri	5	8	16				
Montana		1	3				
Nebraska	1	4	9	TOTAL	133	196	474

STATE	PERIOD	Number Doves				Percent Juveniles				Kill Per Gun Hour			
		49-50	50-51	51-52	52-53	49-50	50-51	51-52	52-53	49-50	50-51	51-52	52-53
Ala.	10/17-31 Dec. - Jan.				970 442				59.8 26.9				2.3 1.2
Ark.	10/15	182	104	103* 186+		65	77	65* 55+			2.2		
Fla.	Oct. 12/17 - 1/15	406 774	118	535	319 378**	72.7 21	89.0	82.7	68 31**	1.0 2.3	1.3 2.6	1.3 1.7	2.2 1.9**
Ga.	Sept. Dec. Jan.	2388		1306	1912 1469	62	12	73	74 12.6	2.1		1.8	1.9 1.5
		2595	1530	647				7		1.5	2.2	1.2	
Ky.	9/1-30 9/16-10/15	888	1129	1113	1154	65.6	65.1		69.2	1.3* 1.94	1.3* 1.64	0.8* 1.84	1.9
La.	12/1-30 12/12 - 1/10	124	169	726		12.5	35.4	35.4		1.9	1.7	1.1	1.8
					922								
Miss.	9/16-30 10/15-29	1996	1044		536	69.2	61.6		54.8		1.8	1.3	1.2
N. C.	9/16-30 10/1-15	706	1943	962	676	73.2	60.3	52.5	48	2.1	1.2	1.0	1.4
S. C.	Sept. 12/27-1/10	108	4	180* 1021#	814 964	69.5		75* 69.3#	77 74		2.1	1.8	
Tenn.	Sept. Oct.	465 302	1542 304	1679 177	1354 460	52.5 75.2	51.3 52.0	73 74	79.7 55.7	.53 .49	1.6 1.1	1.3 1.2	1.9 1.7

\* Biologists Check

+ Warden Check

\*\* Fla. Season Dec. 15-29, 1952

# Wings



### Random Road Counts

Throughout the course of the southeastern dove study each state has kept records of numbers of doves seen during random or controlled road counts. This information has been very valuable in providing information on production, migration, wintering abundance, and comparative abundance. During the past several years we have learned that random road counts can furnish helpful information on populations. Table 3 gives the number of miles of such counts in 7 southern states for the months of April and May during the past 5 years. The doves heard on one hundred miles gives a basis for comparison of the populations during the different years. The increase in Alabama, Louisiana and Tennessee supplements the increase in the doves heard on call-road counts from the lower Mississippi valley states, while the decrease in Florida, Kentucky and North Carolina is also related to the results of the call-road counts. Such correlation of the results of the two techniques serves to strengthen our understanding of the dove picture.

### Results of Christmas Bird Counts

For the past fifty years many bird students have conducted an annual count of birds during Christmas week. Great emphasis is given to the finding of as many species as possible in each area, with second emphasis on the numbers of individuals found of each species. Consequently many helpful data may be secured by analyzing these Christmas bird counts, sponsored by the National Audubon Society, and published in "Audubon Field Notes". Dr. John W. Aldrich, Fish and Wildlife Service, has analyzed these counts to abstract information on the Mourning Dove, and reports there was an overall indicated increase of 56 per cent in December 1952 counts from the counts of the previous year in the eastern states and Texas. The greatest increases were in southern Florida and southern Texas and some of the northern midwestern areas. There was a belt of decrease running across the northern part of the southern states. While this study gives only an indication of trends and is known to be biased since the greatest effort of the counters is to record as many species as possible, it is interesting to compare this analysis with results of the other techniques treated in this newsletter.

### Disease

Since the severe outbreak of trichomoniasis in 1950 there seems to have been an annual gradual decrease in the incidence of this dove disease. Only a few scattered reports of its prevalence have been received for 1953.

### Explanation of State Tables

The following pages contain tables showing the results of Mourning Dove call-road counts which have been analyzed in this Newsletter. Only those received at Atlanta by June 25 could be included. The counts are listed by states and counties; the left side of each table gives a comparison of counts of the same routes for 1952 and 1953 while the right side of the tables give results of new routes in 1953. Unless the cooperators clearly indicated comparable routes the compilers were unable to correlate 1952 and 1953 routes for counties as indicated. In 1952 each route was covered three times so the figure given represents the average number of doves heard and seen for each route. Only one count of each route was made in 1953. All of the counts were taken according to a standardized procedure prepared on the basis of field research over the past three years. Any deviation from the instructions rendered the information unuseable and all counts were necessarily discarded. Each count began one-half hour before actual official sunrise and required two hours. It consisted of 20 three-minute listening stations at one mile intervals. The number of doves heard calling (calling) was recorded for each station while the number of doves seen at stations while driving between stations was listed.

TABLE III  
Random Road Counts for 7 Southeastern States for April and May

	1949		1950		1951		1952		1953	
	Miles	D/ 100 Mi.	Miles	D/ 100 Mi.	Miles	D/ 100 Mi.	Miles	D/ 100 Mi.	Miles	D/ 100 Mi.
Apr.	1563	7.8	1451	10.4	4003	4.7	8212	3.5	6119	6.7
May	2685	10.1	2300	7.6	6214	6.5	11021	5.8	8223	9.6
Apr.	---	---	2276	5.6	S. 7474	26.7	3671	34.9	5897	22.4
					N. 5146	21.1	2954	25.6	3430	12.8
May	---	---	---	---	S. 7760	13.8	5008	30.7	5196	13.9
					N. 5466	11.4	3241	18.6	2445	11.8
Apr.	---	---	---	---	342	4.1	3400	5.0	30765	3.7
May	---	---	---	---	5065	4.8	3300	6.7	26505	5.1
Apr.	---	---	1647	9	7239	2.8	10978	1.9	15007	4.9
May	---	---	1279	14	9348	7.9	8267	5.4	12292	6.5
Apr.	---	---	1584	2.1	12838	4.5	11689	3.6	7324	3.4
May	---	---	1504	4.1	12977	8.0	11932	4.2	4462	3.1
Apr.	---	---	---	---	1455	5.0	6447	3.7	11131	7.1
May	---	---	---	---	2036	6.5	4143	13.5	8030	15.8
Apr.	20586	14.3	1383	14.5	7036	5.2	602	9.5	---	---
May	26336	19.5	1340	21.9	6984	8.4	1243	12.9	38128	14.6

The persons conducting counts are listed alphabetically under each  
e. We gratefully acknowledge their cooperation and hope they may be  
to repeat the 1953 routes next year for future information on fluctua-  
s in the dove breeding population.

This issue of the Mourning Dove Newsletter was compiled by  
old S. Peters, Branch of Wildlife Research, Fish and Wildlife Service,  
unta, Georgia. All of the statistical analysis was made by Leonard E.  
e, Southeastern Representative of the Wildlife Management Institute.

BAMA

W. Close, J. K. Lightsey, L. M. Martin, C. H. Richardson Jr., W. Rosene Jr.

nty	Heard		Seen		County	Heard		Seen
	1952	1953	1952	1953		1953	1953	
Montgomery	44.7	31	23	29	Montgomery	26	6	
					Montgomery	40	9	
					Morgan	44	25	
					Limestone	38	20	
					Baldwin	20	9	
					Etowah	29	8	
					Mobile	16	7	
					Mobile	9	10	

ZONA

O. Barnes, Bruse, Fleming, S. Gallizioli, T. Knipe, Charles Murray, G. W. erson, W. Swank, N. C. Williams

County	Heard		Seen	
	1953	1953	1953	1953
Graham	41.6	218		
Santa Cruz	53.6	74.3		
Pima	30.3	41.6		
Graham	58.6	38.3		
Maricopa	65.6	362		
Maricopa	66.6	307.6		
Maricopa	35.6	398.3		
Maricopa	20.6	11.3		
Maricopa	27.3	232		

ANSAS

W. Perkins, M. J. Turner, White River Refuge

nty	Heard		Seen		County	Heard		Seen
	1952	1953	1952	1953		1953	1953	
ansas	19	40	61	45	Arkansas	55	33	
ghead	14.7	36	54	90	Craghead	47	59	
					Ouachita	14	27	
					Ouachita	13	32	

IFORNIA

liam Anderson, W. D. Bailey, W. A. Brann, J. B. Cowan, W. W. Elders, C. G. Fairld, Thomas Garrett, E. H. Koobs, F. E. Kreller, Wallace Macgregor, Erwin Single, R. Switzer, W. A. Wooten

CALIFORNIA (Continued)

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Los Angeles	18.8	36	29.8	39	Sutter	15		27	
					Butte	32		36	
					Humboldt	11		69	
					Modoc	19		15	
					Tehama-Shasta	76		37	
					Los Angeles	23		42	
					Imperial	50		372	
					Imperial	33		484	
					Riverside	29		133	
					Ventura	127		48	
					Los Angeles	44		107	
					Colusa	14		74	
					San Joaquin	0		138	
					Sacramento	8		0	
					Modoc	22		7	
					Imperial	21		622	
					Merced	8		23	

CONNECTICUT

. S. Billard

<u>County</u>	<u>Heard</u>	<u>Seen</u>
	<u>1953</u>	<u>1953</u>
Hartford	5.5	1

DELAWARE

. P. Cofer, N. G. Wilder

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Kent	20.6	28	3.6	12	New Castle	6		4	

FLORIDA

. L. Beckwith, R. P. Esser, M. F. Hudson, N. H. Long, F. T. Phillips, T. W. Strunk, Frank Winston, J. W. Wolfley

FRIDA (Continued)

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Franklin	21	23	28	14	Alachua	0		14	
Frank	10	32	41	14	Alachua	7		1	
Le	21.5	29.5	2.7	10.5	Alachua	0		10	
Charlotte	20.2	29.5	3.3	2.5	Alachua	4		3	
Don	19.3	21		17	Marion	7		0	
Frank	17	25		3	Levy	11		6	
Shington	3	9		0	Gadsden-Leon	13		7	
					Levy-Marion	27		40	
					Levy-Alachua	29		43	
					Orange	26		12	
					Lee	0		0	
					Highlands	18		12	
					Lafayette	28		9	
					Volusia	14		0	
					Columbia	3		0	
					Bay	0		0	
					Walton	5		6	
					Santa Rosa	18		9	

REGIA

Bert Cannon, Jack Connell, Jack Crockford, W. T. Harrod, James Jenkins, Marvin  
Nelson, Dan Nelson, E. P. Odum

<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>
Bob & Monroe	12	9	9	5
Edge & Pulaski	10	8	5	7
Frank	23	21		7
Leon	5.5	12		5
Stow	27.5	32		11
Franklin	38.5	38		32
Allding	18	21		4
Colon	15.3	17		0
Flor	7	23		20
Shington	25	21		0
Irens	21.3	17		2
Lloch	21	7		3
Adolph	20	31		3
Satur	16.3	15		5
nden	1	0		0
Wendes	5.7	11		4
Wnee	7.5	17.6		21.2

HO

ood Bizeau, Charles Blake, E. T. Carter, J. S. Cromwell, Edson Fichter, Mr. and  
 . Hugh A. Harper, Milt Reeves, R. L. Selter

nty	Heard		Seen		County	Heard		Seen	
	1952	1953	1952	1953		1953	1953	1953	1953
gham	6.8	6	18	18.5	Nez Perce	38	32		
er	17	27	31.5	21	Nez Perce	8	7		
mock	11	7	12	10	Ada-Canyon	46	191		
ibou	7	12	25	17	Nez Perce	28	42		
					Nez Perce	57	55		
					Jerome	29	23		
					Twin Falls	25	121		
					Power	1	49		
					Jefferson	6	44		
					Bonneville	10	51		
					Ada-Canyon	16	16		
					Bear Lake	23	5		

INOIS

erge Arthur, H. A. Ball, Lee Bush, John Calhoun, W. H. Casey, P. Dickinson,  
 W. Gulbreath, B. N. Haddick, R. R. Harmon Sr., L. H. Harms, Mrs. B. M. Hicks,  
 R. Hoffman, C. K. Hutchinson, H. J. Kampmann, A. L. Keck, C. W. Kossack,  
 Kringer, J. Lockart, Brittan Masters, O. W. Mechfessel, J. H. Moak, L. R.  
 tch, C. F. Sherrer and son, J. Slachter, G. L. Terwilliger, Mr. and Mrs.  
 as Wrischnik

nty	Heard		Seen		County	Heard		Seen	
	1952	1953	1952	1953		1953	1953	1953	1953
k & Lake	8	24	13	6	Union	23	8		
	2.3	4	3.6	6	St. Clair	12	23		
					Madison	6	14		
					Madison & Jersey	4	21		
					DeKalb	0	3		
					Macon	0	8		
					Macon	0	9		
					Mason	75	120		
					Mason	64	122		
					Ogle	27	5		
					Ogle	20	7		
					Macon	3	21		
					Williamson	26.5	20.5		
					St. Clair	39	26		

(Continued next page)

ILLINOIS (Continued)

<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
St. Clair	1	7
St. Clair & Monroe	24	14
Hancock	37	43
Marshall & Pittman	8	5
Ogle	5.7	8
Fulton	60.7	55
Washington	33.3	27
Whiteside	4	5
Lawrence	34.7	52
Champaign	2	10
Williamson & Jackson	22	24
Williamson & Jackson	57	34
Lee	16	13

INDIANA

J. M. Allen, D. M. Brooks, W. E. Ginn, M. C. Reeves

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>			
Whitley	20	39	9.3	11	Whitley	29	6
Daviess	28.3	29	52.6	43	Daviess	38	75
Hendricks	15.3	11	11.3	21	Hendricks	17	33
Jasper & Pulaski	16	40	21.2	27			

IOWA

W. C. Brabham, L. C. Fleming, E. L. Kozicky, H. T. Maltby, R. J. Meyerding,  
G. Soselyn, H. T. Walsh

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>			
Winnebago	29	34	26	18	Story	17	41
Clay	49.7	11	46	11	Boone	41	20
					Emmet	22	43
					Polk & Dallas	19	45
					Mills & Fremont	46	40
					Worth	23	30
					Lee	50	69
					Clay	28	76
					Emmet	30	60



KANSAS

J. Coats, Dave Coleman, T. C. Gatie, Leo Klameth, M. E. Ramsey, T. S. Robinson,  
M. D. Schwilling

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Barber	5.3	12	41	25	Linn	27		41	
Reno	25.7	48	111	53	Franklin	27		39	
Sedgwick	36	29	116	81	Russell	61		65	
Barton	24.3	19	84	62	Barton	64		87	
Montgomery	13.3	5	40	27	Rush	8		35	
Saline	51	81	112	63	Finney	9		2	
Shawnee	22.7	20	38	19	Finney	36		42	
					Pratt	17		54	
					Cloud	92		52	
					Marshall	65		43	
					Lyons	15		41	
					Crawford	18		25	
					Ness	22		31	

KENTUCKY

Harold Barber, Bruna, A. R. Bumsted, F. W. Collins, W. L. Gault, T. A. McGowan,  
R. A. Grizzell, Jr., F. C. Hardy, W. B. Lee, Arnold Mitchell, A. E. Smalley,  
C. M. Smith, R. C. Soaper, Chester Stephens

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Henderson	10	16	32.3	27	Bourbon	10		3	
Henderson	19	23		10	Calloway	24		22	
Jackson	4.7	3		0	Trigg & Lyon	20		5	
Christian	17	15		6	Trigg & Lyon	3		13	
Larue	15	26		24	Henderson	25		45	
					Shelby & Spencer	31		38	
					Knox	12		7	
					Carroll, Henry				
					& Trimble	27		4	
					Morgan	21		2	
					Lawrence	2		0	
					Adair	14		7	
					Calloway	33		35	

LOUISIANA

R. T. Barnes, Paul Cole, J. B. Kidd, R. E. Murry, J. D. Newson, V. H. Reid,  
J. D. Withers

<u>County</u>	<u>Heard 1953</u>	<u>Seen 1953</u>
Morehouse Parish	15	4
Acadia	5	3
Sabine & Vernon	22	9
East Baton Rouge & Iberville	6	4
E. Feliciana	11	5
Concordia	21	38
Lafayette	10	26
Lafayette	20	30
Baton Rouge	13	22
Terrebone	12	18
Rapides	18	2
Rapides	19	12
Vernon & Natchitoches	35	13
Natchitoches	39	9
Webster & Claiborne	28	23
Acadia	3	6
West Baton Rouge & Iberville	14	3
Fangipahoo	18	5
Caldwell & Ouachita	36	11

MARYLAND

D. H. Arner, H. M. Balderson, A. J. Duvall, S. M. Keefer, P. D. Lines,  
C. S. Robbins, Milton, Siegert

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard 1953</u>	<u>Seen 1953</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>			
Howard	13	8	5.6	4	Washington	1	6
Prince George	13.7	16	5.7	4	Howard	6	30
					Prince George	37	54

MASSACHUSETTS

Bertram Leaheater

<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
Essex	11	15

MICHIGANP. Baumgras, L. Buchholder, G. Carter, S. Creech, O. DeWaard, H. Dykema,  
A. G. Gazlay, V. Janson, J. E. Null, Petoskey

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>			
Washtenaw	18	24	8.3	14	Monroe	13	16
Kent	23.5	30	4.7	12	Tuscola	0	2
					Tuscola	5	3
					Washtenaw	16	10
					Ingham	13	2
					Monroe	33	5
					Bay	21	5
					Luce	0	0
					Luce	0	0
					Newaygo	25	3
					Newaygo	16	3
					Ingham	27	8
					Ingham	19	6

MINNESOTAL. J. Bonde, F. H. Davis, W. J. Ellerbrock, Jr., W. H. Longley, L. L. Pike,  
N. J. Ordal

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>			
Jackson	57	38	32.5	16	Dakota	37	25
Olmsted	35.5	12	54.5	13	Jackson	45	29
Scott	7.3	22	20.3	15	Nobles	33	22
Olmsted	38.5	12	46.5	11	Nobles	28	16
Polk & Red Lake	43.5	22	10.5	14	Beltrami	17	9
					Ottertail	35	37
					Dodge	23	9
					Olmsted	11	11

MISSISSIPPI

H. Bobbs, Jr., N. C. Hutcheson, J. C. Lanier, B. C. Lundy, J. H. Phares, H. R. Redmond, J. Starkey

County	Heard		Seen		County	Heard		Seen	
	1952	1953	1952	1953		1953	1953	1953	1953
Issaquena	14.6	24	14.4	20	Marion	50	74		
Warren & Yozee	16.4	18	9	4	Rankin	22	22		
Rankin	31.2	41	1.6	7	Washington	21	16		
Lafayette	2.7	4	6.3	13	Issaquena & Warren	9	16		
Stone	20	26	0	1	Washington & Issaquena	11	31		
Washington	9.3	32	28.7	13	Warren & Claiborne	12	18		
Hinds & Madison	5.7	14	4	7	Marion	44	25		
					Rankin	40	9		
					Lafayette	2	9		
					Stone	16	5		

MISSOURI

C. R. Alexander, P. B. Dowling, R. L. Glesenkamp, J. B. Lewis, G. J. Maschmann, A. P. McCormack, Kenneth Sadler, H. M. Wight

County	Heard		Seen		County	Heard		Seen	
	1952	1953	1952	1953		1953	1953	1953	1953
Cape Girardeau	33.3	43	28	27	Calloway	35	46		
Howell - Douglas	10.6	13	1.6	2	Cole	41	15		
Green	22	16	35	52	Cape Girardeau	14	12		
Boone	37.6	51	51.6	81	Dekalb & Daviess	42	22		
St. Charles	18.3	26	27.6	32	Daviess	30	65		
					Texas	9	10		
					Green	16	30		
					St. Charles	25	22		
					Lawrence	34	77		
					Lawrence	11	29		
					Boone	50	78		

MONTANA

J. D. Birch, L. A. Peterson, George Spinner

County	Heard		Seen		County	Heard		Seen	
	1952	1953	1952	1953		1953	1953	1953	1953
Yellowstone	33	24	7	11	Lewis & Clark	1	4		
					Yellowstone	54	2		

NEBRASKA

Dave Eigsti, W. E. Eigsti, E. W. Glandon, W. B. McClure, L. M. Moos, H. M. Morgan, Burton Nelson

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Lancaster	47.6	31	93.6	83	Lancaster	31		36	
Adams	17	21	81.5	42	Lancaster	5		37	
					Hamilton	82		89	
					Adams	76		69	
					Lincoln	9		12	
					Logan	22		3	
					Logan	53		18	

NEVADA

H. L. Cantrell, B. H. Cater, Billy Clark, O. V. Deming, Earl Dudley, J. C. Greenley, G. W. Gullion, B. M. Hazeltine, B. B. McKaig, Ed Siri, Fred Wright

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
					Churchill	14		66	
					Clark	32		38	
					Clark	40		28	
					Clark	11		10	
					Clark	0		0	
					Elko	0		26	
					Elko	3		20	
					Lyon	17		17	
					Lincoln	6		683	
					Nye	98		337	
					Pershing	20		83	
					Washoe	0		0	

NEW JERSEY

E. G. Bevan, R. A. Spinks, R. D. Spinks

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Sussex	5.6	4	1	1	Cumberland	4		10	
Hunterdon	6.0	7	1.6	12	Sussex	3		1	
Cumberland	4.3	3	1	12	Hunterdon	10		18	

NEW MEXICO

H. Campbell, L. S. Gordon

<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
Bernalilla & Valencia	27	51
Bernalilla, Santa Fe & Sanderall	9	7
Grant	93	131
Grant	81	52

NEW YORK

C. P. Brown, Charles Mason, H. S. Peters, Dennis Tascar, E. E. Wagner, J. A. Walker

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>			
Niagara	20	34	21	20	Seneca	6	6
Niagara	17	34	17	15	Seneca	14	5
Orleans & Genesee	17	34	7	8	Suffolk	49	15
Wayne	18	42	14	33	Jefferson	23	0
					Herkimer	8	0
					Albany	4	1

NORTH CAROLINA

R. L. Bird, Robert Halstead, R. B. Hazel, H. V. Hines, B. H. James, R. E. Milstead, T. R. Mitchell, S. F. Poole, G. J. Ross, C. B. Woodhouse

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>			
Cabarrus	43.3	40	39.3	15	Carrituck	11	11
Johnston	23	29	24.7	35	Martin	29	14
Davidson	21.3	25	14	30	Johnston	15	18
Macon	9.3	8	1	2	Iredell	36	26
Wake	17.7	12	22	21	Macon	2	0
Robeson	31.3	21	23.3	5	Wake	18	30
Pitt & Martin	29.7	16	2.3	1.5	Robeson	22	2
					Beaufort	5	41
					Martin & Beaufort	1	22
					Dare	2	4
					Rowan	33	70

NORTH DAKOTA

D. V. Gray, Harry Jensen, R. N. Randall

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>	<u>Seen</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>	<u>1953</u>
Burleigh	42	33	20.3	26	McHenry & Bottineau	47	18
					Burleigh	60	15
					Sheridan	10	11
					Startsman	11	33
					McHenry	6	11
					Startsman	4	6

OHIO

H. S. Peters, Jere Preston, W. B. Price, H. Wheeler

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>	<u>Seen</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>	<u>1953</u>
Ottawa	23	12	2	13	Pickaway & Ross	7	36
Franklin	7	18	7.5	10	Athens	25	2
Franklin	17	22	12.5	20	Wood	4	19
Franklin	15	31	10.3	17	Wood	3	18
Franklin	19	12	15.3	9	Wood	1	21
Franklin	12	12	13.3	15	Wood	0	23
Franklin	23	30	15	24			
Franklin	21	24	12.0	6			
Franklin	30	13	11	14			

OKLAHOMA

M. M. Dodson, T. H. Hooper

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>	<u>Seen</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>	<u>1953</u>
Oklahoma & Canadian	11.6	5	12.6	6	Wagoner	5	16
Pittsburg & Latimer	13.6	9	13	17	Tulsa & Rogers	7	11

OREGON

Paul Bonn, M. S. Cummings, T. R. Lawhorn, I. D. Luman, J. C. Savage, C. R. Shepard,  
C. N. Underwood

	<u>County</u>	<u>Heard 1953</u>	<u>Seen 1953</u>
	Umatilla	10	30
	Jackson	8	1
	Umatilla	52	32
	Yamhill	7	30
	Klamath	87	11
	Deschutes	22	1
	Umatilla	46	26

PENNSYLVANIA

G. L. Bowers, J. P. Eicholtz, S. E. Forbes, J. M. Haverstick, Robert Howarth,  
S. C. Mace, H. S. Peters, W. C. Richter, R. L. Snyder, C. R. Studholme

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard 1953</u>	<u>Seen 1953</u>
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>			
Erie	8	10	2	5	Elk & Jefferson	0	2
Elk	2.5	1	.5	0	Centre	1	0
Luzerne	1	0	10.6	5	Centre	1	2
Allegheny & Butler	7.4	6	1.2	4	Lycoming & Clinton	4	3
Lancaster	9.3	15	2.3	7	Franklin	6	4
Lancaster	17.3	13	9.3	3	Center	18.1	1
York	14.7	7	10	9	Perry	1	0
					Perry	4	1

SASKATCHEWAN

T. A. Harper, R. A. Ruttan

<u>Location</u>	<u>Heard 1953</u>	<u>Seen 1953</u>
Lat. 50° 45', Long. 104° 55'	30	4
Lat. 50° 44', Long. 105° 3'	4	1
Lat. 53° 12', Long. 105° 56'	19	5
Lat. 50° 36', Long. 104° 53'	20	11
Lat. 50° 48', Long. 104° 55'	14	2
Lat. 52° 43', Long. 108° 12'	0	0
Lat. 52° 4', Long. 107° 59'	0	0



SOUTH CAROLINA

A. I. Barron, Jr., G. H. Brown, H. L. Holbrook, W. C. Lehmann, L. H. Myers,  
H. M. Steele, D. E. Wade

County	Heard		Seen		County	Heard 1953	Seen 1953
	1952	1953	1952	1953			
Dorchester	9.3	10	0.3	1	Lexington	63	40
Charleston	11.3	21	11	3	Anderson	7	84
Richland	52	17	9	12	Oconee	4	46
Anderson	4	3	51	77	Richland	15	2
Oconee & Pickens	3.8	6	12.3	40	Charleston	4	0
Richland	7.3	8	16	12	Edgefield	19	10
Clarendon	21.3	22	3.7	1	Edgefield	18	6
Laurens	15.7	34	27.7	14			
Aiken	12.3	12	6	9			
Charleston	10	13	1	4			

SOUTH DAKOTA

E. L. Sutton

County	Heard 1953	Seen 1953
Brown	20	73
Brown	16	49

TENNESSEE

J. D. Eadie, J. T. Hammond, C. R. Hayes, J. C. Howell

County	Heard		Seen		County	Heard 1953	Seen 1953
	1952	1953	1952	1953			
Shelby	27	36	29	13	Shelby-Tipton	44	29
West #1	12.7	17		26	Davidson & Cheatham	22	20
West #2	10	16		10	Elount	11	30
West #3	28	49		22	Knox	14	3
Highland Rim #1	15.7	12			Knox	10	5
Highland Rim #2	14.3	15			West #1A	16	31
Central Basin	33.3	38	22	66	West #2A	20	13
East Tenn. #1	28	39	8.7	21	West #3A	72	23
					Highland Rim #1A	17	17
					Highland Rim #2A	10	13
					Central Basin #3A	32	14
					Central Basin #4A	18	9
					Central Basin #5A	30	20
					Central Basin #5B	35	33
					East Tenn. #1A	34	15
					East Tenn. #3A	9	7
					East Tenn. #3B	12	7

TEXAS

R. J. Holstein, C. E. Holt, Jr., C. H. Johnson, Jr., J. R. Singleton, A. J. Springs

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Wise	5.3	23	40	28	Wise	10		9	
Robertson	42.6	24	32	15	Robertson	42		49	
Chambers	19.6	26	42	59	Chambers	25		14	
Bosque	22	44	57.3	33	Wilson	128		75	
Wilson	86	127	132	90	Bosque	57		28	

VIRGINIAJ. W. Aldrich, E. R. Atkinson, G. A. Gehrken, J. C. Harvey, Jr., H. S. Mosby,  
C. H. Shaffer, D. F. Shuffler

<u>County</u>	<u>Heard</u>		<u>Seen</u>		<u>County</u>	<u>Heard</u>		<u>Seen</u>	
	<u>1952</u>	<u>1953</u>	<u>1952</u>	<u>1953</u>		<u>1953</u>		<u>1953</u>	
Westmoreland & Richmond	4.6	23	14.3	43	Fairfax	14		9	
Alexandria & Fairfax	5.3	11	2.6	15	Essex	25		37	
Campbell	27.2	27	8	11	Bedford	15		22	
Southampton	23.7	24	12	38	Nansemond & Isle of Wight	15		17	
Nansemond & Isle of Wight	14	18	33.3	29	Southampton	22		6	
					Montgomery	3		3	

WASHINGTONE. T. Carter, L. R. Childers, M. C. Dillon, H. A. Hansen, M. H. Lundy,  
W. H. Oliver, L. Seabury

<u>County</u>	<u>Heard</u> <u>1953</u>	<u>Seen</u> <u>1953</u>
Spokane	16	14
Douglas	30	19
Spokane	0	1
King	2	0
Skagit	0	0
Yakima	39	100
Yakima	91	171
Okanogan	39	70
Yakima	52	137
Yakima	77	184
Yakima	68	144
Whitman	42	47