THE WESTERN FRONTIER OF THE EUROPEAN STARLING IN THE UNITED STATES AS OF FEBRUARY, 1937

WITH ONE ILLUSTRATION

By L. M. DICKERSON

Since the successful establishment of the English Starling *(Sturnus vulgaris vulgaris)* in New York in 1890, its migration to the east-, north-, south-, and westward has been watched with interest by ornithologists, both professional and amateur. For a decade the starling remained along the eastern seaboard, meanwhile colonizing into southern Canada and New England. The spread along the Atlantic coast southward was more rapid, and once across the Appalachian mountain barrier the westward migration has progressed with an increasing momentum.

This westward migration is of particular interest because of the variety of ecologic factors encountered by the starling in pioneering a new area. In the northward and eastward migrations, temperature ranges are sufficiently low that this single climatic factor may be expected to dominate and ultimately limit the distribution and population density both directly and indirectly. To the west and south, on the other hand, the starling encounters an increasing variety of environment and decreasing climatic restrictions until it reaches the Great Plains region and the Rocky Mountains.

The progress of the westward advance of the starling has been summarized by May Thatcher Cooke (1925, 1928) covering the area east of the Mississippi River, and in one publication by E. C. Hoffman (1930) extending the study west of that line. The purpose of this report is to record new data which extend the westward range appreciably and to point out certain features of field observation which may be significant and deserve organized study. With the exception of a few locations recorded by Hoffman (1930), points east of the Mississippi River have been omitted from this report on the grounds that this feature of the subject has been covered adequately in previous publications. (See Forbush, 1915; Cooke, 1925, 1928; Lewis, 1927; Kalmbach, 1929.)

The writer wishes to express appreciation to Mr. James O. Stevenson, of the National Park Service, Washington, D. C., for permission to use certain unpublished records from his notes. Thanks are due, also, to the CCC camp superintendents and other National Park Service field personnel who have shown an interest and spirit of cooperation in collecting data, beyond that required by official duty.

DATA AND METHODS

The subject matter presented consists of new records supplemented, in the preparation of the accompanying map (fig. 34), by published records taken from the Auk, Bird-Lore and the Wilson Bulletin over the period 1928-1937. These published records have been particularly valuable in that they extend the westward frontier across states to the north of the new records.

The new records are from two sources, namely, (1) field observations by wildlife technicians of the National Park Service; and (2) records obtained concurrently from a number of isolated points by means of a questionnaire sent out to the superintendents of CCC camps located in Arkansas, Oklahoma, and Texas which with New Mexico and Arizona comprise Region III of the National Park Service.

The returned questionnaires proved both interesting and surprising. A description of the English Starling was sent out with each questionnaire, which was mailed on January 7, 1937. Replies began coming in the following week. Only about half of the camps reported the presence of starlings; but, in most instances where they were

reported to be present, pertinent clippings from current issues of local papers were enclosed. Usually these news articles were written by either a local ornithologist or a

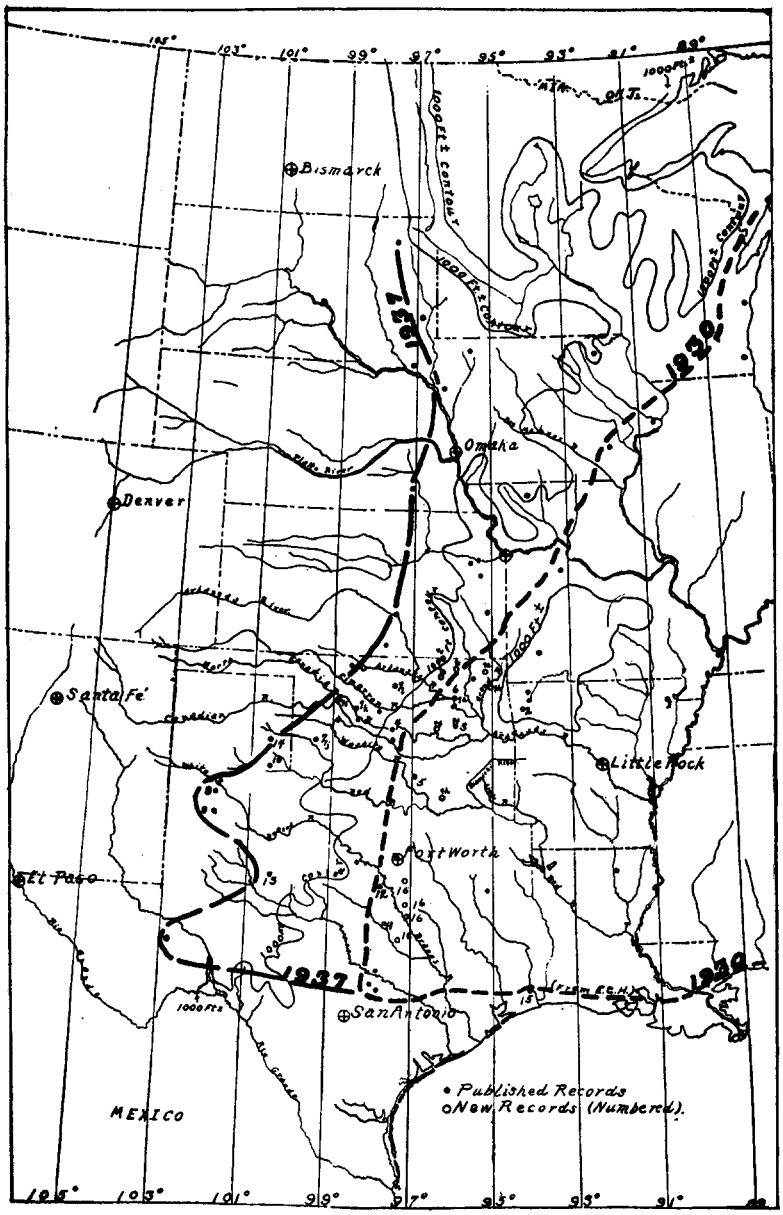

Fig. 34. Map showing the westward migration frontier in the United States, of the European Starling (*Sturnus vulgaris*) to February, 1937.

biology teacher in a nearby school, and represented typical first reactions to the presence of migrating flocks of the English Starling. In every case the noise and litter from roosts, and apprehension of competition with native songbirds, were featured. Field

observations by wildlife technicians during December in the area covered by the questionnaire indicated that probably during January and February the birds would have reached their widest distribution. Thus, the timing of the questionnaire accounts for, in a measure at least, the widespread distribution indicated, and suggests an actual dispersal rather than successive reports of one large migrating flock.

Of the questionnaire records only those are published which the writer considers to be sufficiently well grounded as to identification to justify recognition as positive and authentic. One report is supported by a study skin; another by a photograph of a dead starling.

DISCUSSION

The new records reported here are migration records only. There is presumptive evidence that the starling now breeds in the eastern part of Texas and possibly in eastern Oklahoma. No definite records of nests were obtained, however, and for that reason no attempt has been made to show the limits of the breeding range on the accompanying map.

As noted by Hoffman (1930), investigations in England indicated that land elevation influences starling migrations there. The same author found that in 1929-1930 the western frontier approximately paralleled the 1000-foot contour. The present frontier (see accompanying map) is established well above the 1000-foot level, but still parallels this line as closely as it did in 1930. It is worthy of note, however, that all records to the west of (above) the 1000-foot elevation occur very close to streams, some of them in the headwaters of tributaries. It may be significant, also, that the most westerly records are along streams the courses of which most nearly parallel the east-west trend of migration. It has been noted frequently and commented upon repeatedly in published notes that the starling tends to favor the neighborhoods of large bodies of water. Banding records indicate, also, a greater tendency toward migration in birds close to the frontier than among those in the long established breeding areas. First-appearance records are too few to show reliably to what extent migration is limited to water courses and shorelines, but many circumstances are suggestive. For instance:

The starling was reported in eastern Oklahoma and in northwestern Arkansas in 1929-1930, yet not until 1934 is there any record of it in eastern Arkansas. Lundquist (1934) reported the first record from South Dakota, from a location in the northeast corner of that state. This isolated occurrence antedated any records from the southeastern corner of the state adjacent to Iowa, from which state the bird had been reported several years earlier. These circumstances may be due entirely to incomplete reporting of the migrants; but the differences in time of recording would be readily understandable if the migration of the starling is in fact restricted to shores and streams. Thus a route westward from Lake Michigan or Lake Superior to the Mississippi River and up a western tributary to the northeastern corner of South Dakota would be shorter and more direct than a route down the lake shore and Mississippi to the Missouri River and thence up this river and its tributaries to the southeast corner of the same state and adjoining portions of Iowa. The large number of small lakes and streams in Wisconsin and Minnesota would make long overland flights unnecessary, and the elevations of land to the north would tend to favor a westward and southward course. With the limited data available no definite conclusions are justified. If, however, the starling rarely or never migrates overland directly, that circumstance may have a definite bearing upon its ultimate distribution and the effect it has in competition with native bird populations.

The question raised in the preceding paragraph is one of several which can be studied adequately only by organized banding and reporting. Another is raised by Nichols (1937) in his comments upon the records of north-south migration obtained by Kalmbach (1932) and Thomas (1934), when he points out that the migration and spread of the starling in America has been along a northeast-southwest axis, principally. In Europe, similarly, the migration is primarily along a northeast-southwest axis. To what extent and through what subjective response topography affects the migration of the starling is unknown. This is an introduced species pioneering a new continent. It will be easier to get conclusive information on the environmental factors affecting its spread before the breeding range reaches its ultimate limits than at any time later.

It is apparent that the present is an opportune time to begin such a study as is needed. In order to make such a study effective it is necessary (1) to have a favorable opportunity for banding both young and winter migrant birds in considerable numbers, and (2) to have favorable circumstances for accurate returns of banded birds from new areas. Observations by the writer in the field during 1936 (record 16) indicate that there is probably an ample supply of breeding birds along the Mississippi River and that an abundance of winter migrants can be trapped along the 1930 frontier mapped by Hoffman (1930). Through Texas and Oklahoma this line corresponds approximately to the location of U. S. Highways 81 and 77. On a trip through this area December 20-23, 1936, large flocks of starlings were seen east of highway 81; yet only small groups were seen within a few miles west of the highway and none was observed south of San Antonio. Beyond this belt (approximately the 98th parallel of west longitude) the starling approaches increasingly arid climatic conditions before reaching the Rocky Mountain region. Thus an excellent opportunity is offered to test, in rather closely measured terms, the effectiveness of this barrier. (See fig. 34.)

The second requisite is met by the present coincidence of time and distribution. The starling has penetrated to the 103rd parallel, but apparently little if any distance beyond. Just west of the 105th parallel begins a series of National Parks, Monuments and Forests extending practically from the northern to the southern boundary of the country. In these areas are resident personnel competent to report banded birds accurately. Furthermore, prompt observation and return of banded records can be obtained from these areas without an elaborate preparatory organization.

To date, the starling has demonstrated its ability as a pioneer in the eastern and central United States and may be considered as an exotic species which is here to stay. An aggressive, adaptable bird, it readily displaces many native species where there is an abundant food supply assured by human activities, such as agriculture and poultry husbandry. As yet its success under more primitive conditions is unknown. So far there has been little competition with native American game birds. With several species of non-game birds the starling competes for both food and nesting sites. Probably the most serious threat to the native song birds is to be found in the tendency of starlings to congregate during late winter and early spring in large migrating flocks. These flocks effectively clean up all available reserve foods just before and during the northward migration of many species. The starling is an omnivorous feeder. Thus both seed-eating and insect-eating migrants may be left at the mercy of any severe snow storm or similar climatic catastrophe encountered.

SUMMARY

At present the European starling may be considered to have extended its migration range to approximately the 103rd parallel of west longitude. The greatest density of migrating populations encountered during December, 1936, and January, 1937, oc-

curred approximately between the 97th and 98th parallels. The breeding range has extended to the Mississippi River and probably as far west as eastern Texas. The present distribution of the bird offers an exceptionally favorable opportunity for the institution of an organized program of banding and field study to reveal the critical and dominant factors involved in the establishment and distribution of this exotic species in the continental United States.

RECORDS NOT PUBLISHED PREVIOUSLY

1. Crowley's Ridge State Park, Paragould, Arkansas. Report sent in by W. R. Bell, Landscape Architect, SP-14, of Paragould. Starlings were reported to, and identified by, Mr. William Meriweather, a local ornithologist, living at 309 Garland Street, Paragould, in 1934. In 1936 two reports of small flocks (6 to 8 birds) in that vicinity were sent in. (The letters SP followed by a number, here and below, are CCC camp designations.)

2. Devil's Den State Park, West Fork, Arkansas. A photograph of a dead starling was taken in the park February 11, 1937, by Mr. W. B. Perry, Mechanic. This record is of interest because it comes from a wooded area, thinly settled and with an elevation of more than 1000 feet above sea level.

3. Okmulgee, Oklahoma. Report sent in by Mr. Walter C. Hallock, Supt. SP-14, Okmulgee, January 1, 1937. Small flocks of starlings were observed feeding about the city.

4. Oklahoma City, Oklahoma. On February 2, 1937, the Oklahoma News carried items on the nuisance habits of the starling. This is of interest in that the report concerns flocks of starlings within the city. Previous reports from this area were principally concerned with birds reported near Lake Overholser, the city water reservoir, several miles from the city.

5. Platt National Park, Sulphur, Oklahoma. Starlings were identified in the park December 11, 1936, by Mr. Don Stauffer, Forester, Platt NP-1, and reported by Superintendent Wm. E. Branch. This report is confirmed by a study skin sent in by Mr. Stauffer and constitutes the only known report of the starling from a National Park west of the Mississippi River.

6. Tulsa, Oklahoma. Twelve starlings were observed in open woods, feeding through trees in Mohawk Park in December, 1936, by Mr. Hugh S. Davis, Director of Conservation and Zoological Gardens. Previous reports of individuals or pairs of birds in this region have been published.

7. Oklahoma City, Okla. Mr. James O. Stevenson observed 200 starlings at Oklahoma City on December 25, 1935, and collected one specimen. Other records reported by Mr. Stevenson from Oklahoma with dates and notes are as follows: (*a*) Tulsa, large flocks seen in February, 1936; (*b*) Pawhuska, 100 seen in November, 1935; (*c*) Bartlesville, large flocks seen during the winter of 1935-36; (*d*) Spavinaw, large flocks seen during the winter of 1935-36; (*e*) Vinita, large flocks seen during the winter of 1935-36; (*f*) Okmulgee, large flocks seen during the winter of 1935-36; (*g*) Prague, small flocks seen in December, 1935; (*h*) Durant, small flocks seen in December, 1935; (*i*) Seiling, several seen November 20, 1935; Sayre, 350 seen December 18, 1935; Watonga, small flocks seen in December, 1935; (*j*) Ponca City, small flocks seen in December, 1935.

8. Hale Center, Texas. An account in the Lubbock (Texas) Avalanche Journal, February 19, 1937, commenting on the large numbers of starlings about the countryside, was sent in by Mr. Melvin D. Cohen, Supt. SP-52, Lubbock, Texas. The author of this article suggested that recent floods in the Ohio and Mississippi river valleys may have forced migration into Texas! Other comments indicate that the starling is not a familiar bird in the region. Descriptions of the birds accompanying the articles were sufficient to credit the identification in this and the following instance.

9. Lubbock, Texas. A clipping from the Lubbock (Texas) Avalanche Journal of February 19, 1937, relates attempts of the local constabulary to shoot out flocks of starlings which annoyed hotel guests. This clipping was submitted by Mr. Melvin D. Cohen, Supt. of Camp SP-52, Lubbock.

10. Memphis, Texas. A news account from the Amarillo (Texas) Daily News of January 29, 1937, describes the starling as a relatively unfamiliar bird in the region. This item was submitted by Mr. Wm. M. Anderson, Supt. SP-14, Canyon, Texas.

11. McGregor, Texas. Starlings were observed about 3 miles from McGregor, on state highway no. 7. This report was submitted by Mr. B. A. Tripp, Inspector for the National Park Service, January 12, 1937. This report is interesting primarily in that with other records it indicates that the starling was widespread over the state at this particular time.

12. Cleburne, Texas. Scattered groups of starlings were observed near the city early in December. By the middle of January they had appeared in the park 13 miles west of the city. This report was submitted by Mr. C. R. Byram, Supt. SP-53, Cleburne.

13. Sweetwater, Texas. Starlings were first observed around Lake Sweetwater about December 20, 1936. They increased in numbers until by January 5, 1937, it was estimated that several thousand

starlings were present in the park. An interesting feature of this report is that the birds were reported as moving southward. Report submitted by Mr. E. F. Rowland, Supt. SP-41, Sweetwater.

14. Shamrock, Texas. Four starlings were observed near Shamrock, in the Texas Panhandle, December 21, 1935, by Mr. James O. Stevenson.

15. Beaumont and Port Arthur, Texas. On January 8, 1926, a starling was brought to Mrs. Bruce M. Reid of Port Arthur for identification. This information was submitted by Mr. Henry D. Anastasas, Supt. SP-50, Beaumont, Texas. The appearance of the starling at Port Arthur in 1926 is interesting in that it antedates by several years the earliest record for Arkansas and Louisiana, which must have been passed or crossed during the migrations. This circumstance would be understandable if the starling, in its southward migration, moves only along watercourses and the flocks do not disperse until after the return migration begins. Thus the birds would not be led into the western areas until they followed the Gulf coast or until, on the return migration, the birds followed tributary streams and were led off the main watercourses. Quoting from Mrs. Reid's letter to Mr. Anastasas concerning present populations (ten years after the first appearance): "In 1936 from late October on through March starlings were as common as any other bird with the exception of the swallow."

16. Alvards, Hillsboro, Waco and Temple, Texas. Flocks of starlings were observed by L. M. Dickerson along highway 81 (US) during a trip through this area December 20 to 23, 1936. Large flocks were concentrated in the territory along and just to the east of this highway which lies close to the 98th meridian. A few miles to the west of the highway along parallel roads no starlings were seen. None was seen south or west of San Antonio, Texas. A few miles north of Hillsboro, two flocks of about 200 birds each were seen. Other flocks contained from 12 to 50 birds. Small groups of starlings were seen with blackbirds also.

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