

STARLINGS AS WINTER RESIDENTS IN THE UINTA BASIN, UTAH

By MERLIN L. KILLPACK and DON N. CRITTENDEN

Since Lockerbie's (1939) observations of the first Starlings (*Sturnus vulgaris*) in Utah a number of additional observations have been recorded from various western states (Beidleman, 1949; Bent, 1950; Ferrel, 1949; Godfrey, 1949; Grater, 1942; Jones, 1950; Pope, 1948; and Ransom, 1948).

The Starling has now become established as a winter resident in several areas in Utah (Woodbury, Cottam, and Sugden, 1949; and also notes from the zoology department at the University of Utah sent to us by Dr. Angus M. Woodbury). It is now desirable to describe some of the habits of these birds as winter residents in their newly occupied range, and it is our objective to do this for the Uinta Basin in the northeastern part of Utah.

Our study covers a four-year period from December, 1947, through December, 1951. Most of the data were gathered from four areas surrounding Roosevelt, in Duchesne County, Utah. The four areas were: (1) the environs of the town of Roosevelt; (2) the Winterton farm, located one mile west of Roosevelt on U. S. Highway 40; (3) the Roosevelt town garbage disposal area, referred to hereafter as "city dump"; and (4) Hancock Cove, located three miles west of Roosevelt.

As far as the writers could determine, there is no well established breeding record for the Starling from Utah. However, on July 17, 1951, a Starling, heavily spotted, was observed flying over the ordnance plant near Ogden, Weber County, Utah. Bent (1950) lists seven nesting records for Utah, but the source of his information is uncertain. Breiding (1943) and Niedrach (1945) list several nesting records for Colorado. Quaintance (1951) records one nesting record from Oregon.

Nesting records from adjacent states indicate that the first nesting Starlings chose sparsely inhabited sections. These nests were located in woodpecker holes and unused farm buildings in rural areas. It is possible that some Starlings may be nesting in the rural sections of Utah and escaping detection.

CLIMATE AND WEATHER

Climatic conditions varied considerably during the period covered by this study. During the winter of 1947, from 6 to 8 inches of snow lay on the ground from December until the middle of February. Minimum temperatures reached 15 degrees below zero. Below-freezing temperatures during the day existed most of the time during the month of January. In the winters of 1948 and 1949, heavy snows fell. Snow lay on the ground from December until the latter part of March. Minimum temperatures reached 27 degrees below zero. During most of January and the first part of February, below-freezing temperatures occurred during the day.

The winter of 1950 was mild. Only an occasional snow storm occurred. Snow did not stay on the ground longer than 3 or 4 days at a time. Above-freezing temperatures occurred during the day most of the time. Minimum temperatures reached 15 degrees below zero on two or three occasions.

Mild weather occurred in October, November, and the first part of December, 1951. Heavy snows fell during the latter part of December, and minimum temperatures reached 32 degrees below zero.

OCCURRENCE AND MIGRATION

There are no accurate records available to determine when Starlings made their first appearance in the Uinta Basin. Some residents were not aware that Starlings were other than common blackbirds until special attention was called to the fact. Others recalled

seeing them for several years, but did not know exactly when they made their first appearance. From the evidence gathered it appears probable that Starlings have been wintering in the Uinta Basin for at least ten years.

Starlings arrive in the Roosevelt area on or near November 5 of each year. In 1947, we did not begin observations until about December 17 although they had probably arrived in the Basin before that date. In 1948 and 1949, the first birds were observed at the Winterton farm on November 5. In 1950 and 1951 they arrived at the Winterton farm on November 3. These dates are comparable to those recorded in Salt Lake County, Utah, by Lockerbie (1948).

It was thought at first that the birds' movements were determined by the weather. In 1950 and 1951, the autumn season was mild with little stormy weather, yet the first date Starlings were observed at the Winterton farm was November 3. On October 19, 1951, Crittenden saw four Starlings on Myton Bench, six miles south of Roosevelt. This would tend to indicate they pass through the Uinta Basin on earlier dates than those listed above. However, the regular date for arrival at the Winterton farm suggests that Starlings may have developed regular migration habits in local parts of the state.

Local migration habits of Starlings may be interrelated with those of blackbirds. Although the writers have never seen Starlings among flocks of blackbirds in the autumn, from two to ten birds have been observed among flocks of Red-winged Blackbirds in spring migration. But otherwise, in their spring migration, Starlings congregate in small flocks of ten to one hundred birds and fly in a northwesterly direction. Starlings tend to leave the Roosevelt area about the first week in April. In 1948, the last birds were observed on March 21, in 1949 April 4, in 1950 April 15, and in 1951 April 7. In autumn they do not appear to be in association with any other species as they migrate into the Roosevelt area. They arrive in flocks of 20 to 50 birds until from 100 to 300 are congregated in the vicinity. They concentrate first at the Winterton cattle feed yards, then move into the environs of Roosevelt about December 15.

The peak in numbers of wintering Starlings occurs from the middle of December to the latter part of January. The average number of birds observed from November 5 to December 20 was approximately 150, from December 20 to January 20 approximately 500, from January 20 to March 1 about 250, from March 1 to April 1 approximately 60.

The number of birds wintering in the Roosevelt area seems to be increasing. During the winter of 1947 a total of 75 birds was observed, in 1948 approximately 450, in 1949 about 700, and in 1950 over 1000 birds in a single flock were observed on several occasions.

Although the individual birds seem to be moving in and out of the Roosevelt area continuously between December 1 and April 1, some were at least partially established as winter residents. Birds banded in Roosevelt January 7 and February 8, 1950, and January 18, 1951, were taken in the same locality February 11 and March 18, 1950, and February 1, 1951, respectively. Birds migrating into the area for the first time could be distinguished by their actions. Resident birds seemed to be familiar with the feeding areas, knew what sections offered the best protection, and would fly to these areas without hesitation. On the other hand, new migrants seemed to become confused when disturbed. Banding efforts have not as yet yielded any records to indicate that any of the same individuals return year after year.

FOOD HABITS

Ninety-five stomachs were analyzed to obtain the data on food. Stomach contents were segregated and measured in cubic centimeters. The foods were separated into plant, animal, and garbage groups.

Plant foods consisted of the fruit of Russian olives (*Elaeagnus angustifolia*), grain, corn silage, hay, and weed seeds.

Animal food included Coleoptera, Hemiptera, pupae of Diptera, Anoplura, snail, and Locustidae. Garbage consisted of waste foods, hair and bone.

Birds collected for stomach analyses were obtained on all four study areas mentioned above. Samples taken from all four areas did not show any appreciable difference in the kind of foods eaten. This would indicate that their choice of food was fairly consistent or that they move about from area to area in search of food.

Table 1

Contents of 95 Stomachs of Starlings Taken in Roosevelt Area and Expressed in Volume Per Cent

Food	Per cent for 1947-49	Per cent for 1950	Per cent for the 4 years
A. Plant food	64.81	80.42	73.79
1. Russian olive	17.35	50.10	36.16
2. Grain	26.13	21.08	23.27
3. Corn silage	16.13	9.24	12.16
4. Alfalfa hay	4.97	.....	2.11
5. Weed seeds	.23	.....	.09
B. Animal food	2.70	5.02	4.05
1. Coleoptera	1.72	3.62	2.82
a. Scarabaeidae	1.49	3.47	2.63
b. Coccinellidae	.....	.10	.06
c. Curculionidae	.23	.05	.13
2. Hemiptera	.04	.10	.07
3. Diptera pupae	.89	....	.38
4. Anoplura	....	.10	.06
5. Snail	....	.10	.06
6. Locustidae	.05	1.10	.66
C. Garbage	32.49	14.56	22.16
Total per cent	100 100	100 100	100 100

Data from the stomach contents (table 1) indicate that plant foods make up 73.79 per cent of their diet, garbage 22.16 per cent, and animal food only 4.05 per cent. Russian olive fruits (fig. 1), comprising 36.16 per cent, is the principal food eaten. Grain comes second, with 23.27 per cent, garbage third with 21.47 per cent, and corn silage fourth with 12.16 per cent.

Table 1 shows a variation in the quantity of the foods eaten between the winter seasons of 1947-49 and that of 1950. The percentage of plant food eaten increased from 64.81 per cent during the period from 1947-49 to 80.42 per cent in 1950. This was due to the increased intake of fruits of the Russian olive. These increased from 17.35 per cent to 50.10 per cent, grain decreased from 26.13 per cent to 21.08, and garbage decreased from 32.49 per cent to 14.56 per cent. Animal foods nearly doubled in the amount consumed, comprising 2.70 per cent in 1947-49 and 5.02 per cent in 1950. These differences may be due to differences in sampling, inasmuch as almost half of the specimens used were obtained in 1950 alone.

In table 2 figures on percentage of individual birds eating the various foods more or less parallel the figures on the quantity of food eaten (table 1) except that the number of birds eating animal food is high in proportion to the volume consumed.

In the winter of 1950, Starlings were observed feeding more abundantly in Russian olive trees and in open fields than in former winters. The number of birds feeding at

the cattle feed yards was less. There were approximately 100 birds feeding at the Winterton feed lots during the winter of 1950 where from 200 to 300 were observed in previous winters.

In the years that the ground was covered with snow, Starlings would flock to the bare sections as the snow melted in late winters. Some of the late winter migrants were observed feeding in the *Sarcobatus* and *Distichlis* plant communities. On one occasion, January 21, 1950, five Starlings and three Red-shafted Flickers (*Colaptes cafer*) were observed eating frozen fruit on an apple tree located in Hancock Cove.



Fig. 1. Russian olive (*Elaeagnus angustifolia*), principal food eaten by Starlings in the Uinta Basin, Utah. Photograph taken using a mounted specimen near Winterton Farm, February 14, 1951.

Grain and possibly corn silage are the only items in their diet that would tend to be of any economic importance should their numbers become great.

ROOSTING

The first evidence of roosting was obtained in the winter of 1949. One roost was noted one-fourth mile north of the Winterton farm, one in the Hancock Cove, one at the city dump, and two on the east edge of Roosevelt. All of the roosting sites were open-fronted, straw-thatched cattle shelters (figs. 2 and 3). Starlings and English Sparrows roosted together in tunnels dug in the straw roofs (fig. 3). No Starlings were found in any of the sheds with the entrances partially enclosed by wire or doors. In the winter of 1949, Starlings were seen in or at these roosting sites throughout their stay. Even the last three birds observed on April 15, 1950, were seen flying to one of the roosting sites on the east side of town.

In 1950 no night-roosts were discovered although several efforts were made to trace the birds as they left their feeding areas. They would form into flocks of approximately 100 birds and fly toward the southwest. This course is the same taken by Red-winged Blackbirds at roosting time. Evidently they were roosting in an area away from habitations as no one reported seeing them at roosting time.

During the sub-zero weather of 1950, which occurred during the week of January 29 to February 3, three Starlings were observed roosting with chickens seven miles north-

west of Roosevelt. Approximately fifty birds had been feeding in this area for some time. However, these three birds, caught and banded, were the only ones entering the chicken house for roosting purposes. None was found later in the same area when the temperatures increased.



Fig. 2. Typical open-fronted, straw-thatched cattle shelter used by Starlings for roosting in severe weather. Photograph taken February 16, 1950.

Some Starlings used the crevices in the ledges on the sides of a low bluff near the Winterton farm for roosting purposes in the extreme cold weather occurring the last

Table 2
The Number and Percentage of Times Each Kind of Food Occurred
in 95 Starling Stomachs Analyzed

Food	1947-49		1950		Total for 4 years	
	Number	Per cent	Number	Per cent	Number	Per cent
A. Plant food	31	67.39	41	83.67	72	75.79
1. Russian olive	13	28.26	25	51.02	38	40.00
2. Grain	12	26.09	18	36.73	32	33.68
3. Corn silage	12	26.09	5	10.20	17	18.94
4. Alfalfa hay	4	8.70	0	00.00	4	4.21
5. Weed seeds	6	13.04	0	00.00	6	6.32
B. Animal food	15	32.61	29	59.18	44	46.31
1. Coleoptera	11	23.91	28	57.14	39	40.53
a. Scarabaeidae	9	19.57	25	51.02	34	35.79
b. Coccinellidae	0	00.00	4	8.16	4	4.21
c. Curculionidae	2	4.25	3	6.12	5	5.26
2. Hemiptera	1	2.17	2	4.08	3	4.35
3. Diptera pupae	6	13.04	0	00.00	6	6.32
4. Anoplura	0	00.00	1	2.04	1	1.05
5. Snail	0	00.00	1	2.04	1	1.05
6. Locustidae	6	13.04	9	18.37	15	15.79
C. Garbage	17	36.96	14	28.57	31	32.63

week of December, 1951, and first week of January, 1952. In this same period several birds were observed using the roosting sites at the city dump and at a spot one-fourth mile south of the Winterton farm. One Starling was caught roosting in the attic of the Roosevelt Junior High School on January 10, 1952.



Fig. 3. Typical holes dug in roof of straw-thatched cattle shelters by English Sparrows and used as roosting sites by Starlings.

Wright (1909) indicated that Starlings had a difficult time surviving the cold weather. She cited several examples where birds were found dead at the roosting site with ample food supplies available. The writers found only one dead bird at a roosting site. This would suggest that Starlings are well adapted to the severe climatic conditions of northern Utah.

SUMMARY

Starlings have been wintering in the Uinta Basin, Utah, since 1947 and perhaps since about 1942. They arrive about November 5 of each year and leave the area about the first week in April. Weather conditions do not seem to influence the timing of their arrival. Migration appears to be continuous throughout the winter season, but this may merely be suggested by local movements. It was proved, through banding efforts, that some of the individual birds had remained in the area of Roosevelt, Duchesne County, Utah, as winter residents at least over part of the winter season. It is probable that some individuals stay the full winter season.

The major foods eaten by Starlings in the Roosevelt area, listed in order of importance, are (1) Russian olive fruits, (2) grains, (3) garbage, and (4) corn silage.

Starlings withstand the cold winter nights by roosting with English Sparrows in holes dug in the roof of open-fronted, straw-thatched cattle shelters.

As far as could be determined the Starling has not yet become established as a breeding species in the state of Utah; however, it is possible that it nests in outlying parts of northern Utah.

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