

MIGRATORY MOVEMENTS OF EASTERN
FOX SPARROWS ON CAPE COD,
IN RELATION TO THE WEATHER¹

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THE unusually favorable location of the Austin Ornithological Research Station near the end of Cape Cod, Massachusetts, and its ideal variety of conditions for attracting birds, make it something of a "catch-all" for birds passing through the region.² Intensive trapping on this area, coupled with constant observation, results in a fairly accurate knowledge of the local status of many species.

Among the various functions of the Station is that of ascertaining what factors—meteorological, ecological, or otherwise—govern the status of any particular species. The following notes were prepared to show to what extent local migration of Fox Sparrows are controlled by temperature and wind conditions. On the mainland, migrations of Fox Sparrows are relatively regular and uniform. A study of the records of 254 of these birds, banded at the Station since October, 1930, points to great migratory irregularity of the species on the Cape.

Generally speaking, the autumnal seasons of 1930 and 1931 were mild, and, similarly, both were characterized by temperatures which averaged above normal. During the fall of 1930 heavy waves of migrating sparrows were reported throughout the New England area. Juncos and White-throated Sparrows, particularly, visited the Cape in large numbers. Yet only seven Fox Sparrows were taken at the Station. The first of these was banded on October 17th, and the last on November 8th; none repeated.

The autumnal migration of 1931 proved a decided contrast to that of 1930. A dearth of migrating birds was widespread in New England—a condition that has been attributed to the excessive rains of the breeding season, occasioning great losses to nestlings. The smaller migrants were taken at the Station in far less numbers than during the preceding fall. Fox Sparrows (*Passerella i. iliaca*), however, were very abundant, 150 having been trapped and banded from October 13th, the date of the first arrival, to November 25th.

¹ Contribution No. 18 from the Austin Ornithological Research Station.

² For a description of Station, see *Bird-Banding*, Vol. III, No. 2, p. 51.

Single individuals were taken on October 13th, 19th, 23d, and 28th, respectively. Fox Sparrows were absent from the Station from the latter date to November 5th, when another single bird was taken. During that period local weather conditions were good; the temperatures averaged 50°, and moderate westerly or northwesterly winds prevailed. On November 7th, coincident with a decided drop in temperature (minimum 28°) and brisk northwesterly winds, a large flock of Fox Sparrows appeared at the Station. During the next four days 112 birds were banded. Temperatures meanwhile regained their former high average, and the migration came to a temporary standstill. On the 12th, a day beginning with heavy frost and fresh easterly winds, about 28 Fox Sparrows remained. These repeated in the traps, their numbers gradually diminishing, while 30 new birds drifted in until the 24th. During this time the temperatures ranged from 50° to 60°, and the wind-directions were variable. On November 25th the temperature once again took a drop, from 58° to 40°, and the wind was southeasterly. These conditions occasioned the exodus of the Fox Sparrows apparently. Only one of the 150 birds that were banded between November 7th and 25th was present after the latter date.

Nine stragglers appeared in the traps after November 25th, and of these, four, possibly five, birds, spent the winter. This was an unusually mild winter in southern New England. Clemency of weather, coupled with an ever-available food-supply at the traps, no doubt induced the winter sojourn of the birds in question. One of these birds, B148827, banded on November 26th, was intermittently trapped throughout the winter, and was taken last on March 31, 1932. The other three birds were more or less constant repeaters, their records being as follows: B148829, banded on November 28th was in the traps almost daily until April 5th; B148831, banded December 2d, was taken for the last time on March 13th; and B148834, banded December 13th, was a fairly regular repeater up to the last day of its stay, April 10th. Attention may be called here to B148825, which was banded on November 25, 1931, and reappeared for the first time after banding, on April 6, 1932. On the surface, this might be considered a return. It is probable, however, that the bird wintered in the vicinity.

One of the above birds, B148829, has an interesting history, considered from the angle of range of winter feeding. During its stay, a period of 130 days, it repeated in the traps a total of 143 times. There were ten "off" days when the traps were

not in operation. During 21 consecutive days, in which trap-rounds were made usually four times daily, this sparrow was taken 70 times. The bird became remarkably tame and, when handled, showed neither fear nor nervousness. When released, it invariably flew but a few feet to a commanding perch. During the first part of the winter the bird became addicted to a place about a quarter of a mile from headquarters, where it practically lived in two traps located on the edge of a tangle of briery thickets. Early in January it became attached to a more sheltered spot yet another quarter of a mile distant. This new location, on the edge of a pond, densely overgrown with sweet clethra, alders, lambkill, and catbrier, became the retreat from which the bird rarely moved.

The 1932 and 1933 autumnal migrations of Fox Sparrows on the Cape were very disappointing. In 1932 a total of 17 individuals was taken on 10 different days, from October 21st to November 21st. It may be recalled that the fall flight of small birds in New England, in 1932, was one of the heaviest in years. Unprecedented numbers of Juncos, Song Sparrows, White-throated Sparrows, and Thrushes visited the Station during the month of October. Precipitation was above normal, while temperatures were normal and fairly uniform. On fourteen days during the month winds came from southerly quarters, and on only eight days the wind came from the north. Four distinct migration waves, each lasting three or four days, were recorded at the Station. The fourth and last influx of small birds, which, incidentally was by far the heaviest, took place on October 21st, the arrival date of the first Fox Sparrow. From the 21st to the 25th a total of 1221 small birds of various species were banded, and of these only 11 were Fox Sparrows. At this time the winds were consistently northeasterly, and the temperatures averaged 58°. A drop of temperature to 39° in the early morning of the 25th was synchronous with the hasty end of the migration, for after that date very little movement was manifest. Single Fox Sparrows appeared desultorily on October 26th, 29th, 30th, November 3d, 4th, and 21st.

The 1933 fall migration of land-birds on the Cape was the antithesis of that of 1932. The prevailing winds during October were northerly; the temperatures were below normal. The northeasterly winds, so fruitful the year before, failed to bring migrants, for during the first week of the month wind-direction was monotonously northeast, and very little movement of birds was observed at the Station. A total of 14 Fox Sparrows was recorded, the first arriving on October 16th,

the others following desultorily up to November 2d. During this time, an almost complete absence of passerine birds was experienced on the lower Cape.

The spring migrations of Fox Sparrows offer interesting contrasts. During the early spring of 1931 the migration of small birds was poor. A Fox Sparrow was banded at the Station on April 7th, the only record for the spring. Temperatures during March and April were above normal; the precipitation was slight. Winds were mainly from northerly quarters.

Average temperatures and a normal volume of bird-movement obtained during the spring of 1932. Of 31 Fox Sparrows recorded, 12 disappeared immediately after banding, while the others tarried a few days, entering the traps a total of 49 times. The first of these appeared on March 8th. It is possible this bird wintered in the vicinity. Not until March 21st did the next Fox Sparrow arrive, and one to four new birds were taken daily until April 5th, when the flight was practically over. A distinct movement took place on March 30th, when six new birds were taken. During late March and early April the temperatures fluctuated greatly, and the winds came from a westerly or southwesterly direction on all but three days. A belated transient was taken on April 20th, and, with the exception of B148834 (one of the wintering birds), the Fox Sparrows were gone by April 9th.

The weather conditions of the early spring of 1933 were similar to those of the spring of 1931. Again the early migrants were slow in arriving. Better success was had with Fox Sparrows, however, for 21 were recorded, of which 11 lingered briefly and repeated a total of 48 times. The first bird arrived on March 10th, and single individuals, generally, straggled through until April 8th. On April 4th the first pronounced movement of small birds was noted, and 6 Fox Sparrows were trapped. These birds appeared during a brisk sou'westerly, with temperatures around 50°, a higher recording than those obtained earlier. It would seem as though this influx of small birds was precipitated by both wind and temperature conditions.

The foregoing notes indicate that Fox Sparrows are very irregular migrants on Cape Cod, and that they occur in sporadic abundance. Some of these birds are resident on the Cape throughout the winter. As far as could be ascertained, distinct movements of the species appeared to be governed by the temperature; while wind-direction alone appeared to exert a questionable influence.

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