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SONG SPARROWS AND TERRITORY

WITH FOUR ILLUSTRATIONS

By MARGARET MORSE NICE

The Mississippi Song Sparrow (*Melospiza melodia beata*) near Columbus, Ohio, is a typical territory-holding bird, on the whole conducting itself much as does Howard's (1920 and 1929) classic example of this behavior, the Reed Bunting (*Emberiza schoeniclus*). Since 1930, I have banded with colored and aluminum bands about 270 adult Song Sparrows on their territories on Interpont (forty acres of flood plain between our house and the Olentangy River). In 1929, an intensive study of two pairs provided the foundation for these population studies.

The male Song Sparrow, if a resident (see Nice, 1933c) remains on or near his territory throughout the year, although not defending it from other birds during the molt, or in the fall (except from a young male trying to settle on it), or in the winter. If a summer resident, he stays on his territory throughout his stay here. Females never hold territory for themselves, in contrast to the Redbreast (*Erithacus rubecula*) (Burkitt, 1924) and California Shrike (*Lanius ludovicianus gambeli*) (Miller, 1931). Males do not drive off their mates at the end of the nesting season, as Burkitt found was the case with the Redbreast.

The Technique of Territory Establishment.—Since territory constitutes the basis of most of melospizan behavior in this region, it is natural that the procuring and defending of territory should have a definite technique consisting always of song and display and sometimes of combat. The bird in possession of a territory signifies the fact, as is well known, by his loud song, which is repeated five to seven times a minute from a conspicuous perch. But when a new male appears with intent to settle next door, or perhaps to appropriate a portion of the first bird's territory or even to take it entirely, then the owner's behavior changes at once and the procedure of territory establishment begins. The new bird sings constantly, eight to ten times a minute, usually puffed out and sometimes vibrating a wing, while the owner, silent and menacing, follows him closely. After a while the first bird starts to chase the newcomer, but the latter always returns to the piece of land he covets. Finally there is a fight on the ground, after which the birds separate and each sings triumphantly on his own territory.

This is the complete pattern, but there are countless variations according to the seriousness of the participants, while the roles may be changed as the contest pro-

gresses. It usually happens that the less serious the encounter the greater is the posturing, as Howard maintains (1929); in these ceremonial affairs the chase and fight are omitted. During the initial stage there is the greatest of contrasts between the humble, imploring role of the new arrival and the glum, threatening attitude of the bird already in possession.

The boundary quarrels of the Prairie Horned Lark (*Otocoris alpestris praticola*) according to Pickwell (1931) are fairly similar to the behavior of the Song Sparrow; but with the former species the fighting is always in the air.

Behavior in Fall.—After the molt the male usually indulges again in singing on his territory. Some males sing very little, but others sing a great deal. Two of my residents (4M and 50M) gave two full months of fall music. Since these birds begin to sing in late January or early February and continue through July, they each have an eight months season of song each year, even longer than the Horned Lark which Pickwell (1931, p. 38) believed held the record in this respect for passerine birds. This singing differs little from that of spring, except that less complete songs are given than earlier. There is no "return to primitive irregular singing" as believed by Wheeler and Nichols (1924, p. 499) and Saunders (1929, p. 58). The prolonged, formless singing heard in the fall comes solely from juvenile birds, and a male that has once definitely established adult singing (this takes place in February) never returns to warbling.

Some of the juvenile resident males take up their territories in September and October and there they remain for the rest of their lives. Others try to do the same, but are driven out by the adult owner as soon as he finishes his molt. Still others apparently do not attempt to settle down until February. As for the summer residents, I have evidence that some of them choose their territories during their first fall and return in the spring to a definite area, which they try to claim for their own.

Behavior in Winter.—The reason that the adult residents of both sexes stay in the vicinity of their territories in winter, if sufficient food and cover are present, would seem to be largely habit. The birds grow attached to their homes, even though they have no tendency toward exclusiveness at this season.

Similar behavior is shown by winter residents, at least by some of them. For three years one of these birds, a male, has returned to the same restricted area and spent the entire winter there.

In winter Song Sparrows do little but eat weed seeds (on January 16 from 8:00 to 9:00 a. m. 50M spent 54 minutes eating), and consequently most of them gain in weight, some of them much. The average weight of females throughout the fall and spring is about 20 grams; in winter some reach 23 to 25 grams. Males average about 22 grams in fall and spring; but many weigh from 25 to 28 and one even 30 grams in winter. The birds are never fat in fall, the gains not appearing until December.

Other species of birds that winter here and which I have opportunity to weigh frequently do not show appreciable gains—the Slate-colored Junco (*Junco hyemalis*), Tufted Titmouse (*Baeolophus bicolor*), and Carolina Chickadee (*Penthestes carolinensis*). All these are much more active and range much farther than do the Song Sparrows.

In winter the male resident may range over an area approximately 160 by 250 yards, a district from six to ten times as large as the breeding territory. In cold spells birds may come considerable distances for brief visits to my feeding station, several from 300 yards, while two traveled more than a quarter of a mile.

In the coldest weather, especially if there is snow, Song Sparrows are apt to form small flocks of loose organization. One day in January, I watched a juvenile

resident (50M) leave his regular flock in our garden and join another 200 yards to the south, the birds here paying no particular attention to him. After staying with them for five days, he returned to his first companions.

The composition of the flock nearest us during three winters has been different every year except for two birds—4M and 50M. Each year there have been one or two juvenile resident males, and three or four winter residents, most of which have been males. This flock has never been a "family party," nor wholly a "neighborhood group," since some of the birds nest here and others in some region to the north. The same conditions probably hold in the other flocks in this region, as young Song Sparrows never stay with their parents after they are a month old, nor do mates associate with each other during the fall and winter, even if both are resident and stay in the same area throughout the year. I find that the sex of my Song Sparrows can usually be told by the wing measurement, males almost always showing a length of 65 mm. or more, and females usually less than 63 mm.

Behavior in Spring.—Some resident males begin to proclaim their territories in late January or early February, according to the weather, although a few juveniles do not do so until late February. Summer resident males return from late February through March and at once take up their territories. The territories embrace about three-fourths of an acre.

Some males, both resident and summer resident, keep the very same territories year after year, an adult summer resident being able to drive out any juvenile resident that may have taken up his territory. Other males change territories to some extent, even when no change has occurred in the environment. The farthest of these voluntary moves has been about 100 yards.

Each year a few adult males move into Interpont, presumably driven from their original territories by cultural changes. On March 1, 1933, the city started to destroy much of the underbrush and cover on Interpont, and consequently drove off four male Song Sparrows. Two of these had settled only a few months before; they disappeared entirely. The other two had nested on Interpont in 1932; one of these moved across the river, a distance of perhaps 50 yards, but in May returned to his old territory; the other moved 180 yards south.

The female has a strong tendency to return to the place where she nested the previous year, but it often happens that she must settle elsewhere, because some other female has pre-empted her place. She does not try to drive away such a rival, but usually joins some male in the near vicinity, although occasionally she is found at some distance.

One female (K28) nested for two years in almost the same place (see fig. 12), but the third and fourth years lived 800 yards to the south. Her first home was in a pretty, tangled wild spot, while the last was on a dump, containing little but rubbish and weeds. And when I first found her, there were still several unmated males singing patiently in the vicinity of her former nesting place!

In forty cases involving thirty-one banded females I know the nesting territory two years in succession. In thirteen cases the bird returned to exactly the same place, in seventeen to an adjacent territory, in six cases she settled from 160 to 225 yards away, in two cases 330 yards, in one 500, and in one 800.

The question of the nesting places of the young birds in relation to their birth places is of especial interest. So far no young bird has taken up his father's territory nor even a neighboring territory. Twelve resident males settled from 100 to 800 yards from their birth places, the median distance being 335 yards. Six summer resident males took up territory at the following distances from their birth places: 175, 250, 300, 300, 335, and 1550 yards.

Two resident females nested 300 yards from their birth places. Eight summer resident females nested at the following distances: 150, 240, 300, 360, 450, 500, 880 and 1440 yards.

In other articles (Nice, 1931 and 1933*b*) I have given maps showing the territories of the males and females in succeeding years and of the young in relation to birth place. In the present paper the history of four families will be shown, the same families whose genealogies were given in a paper recently published (Condor,

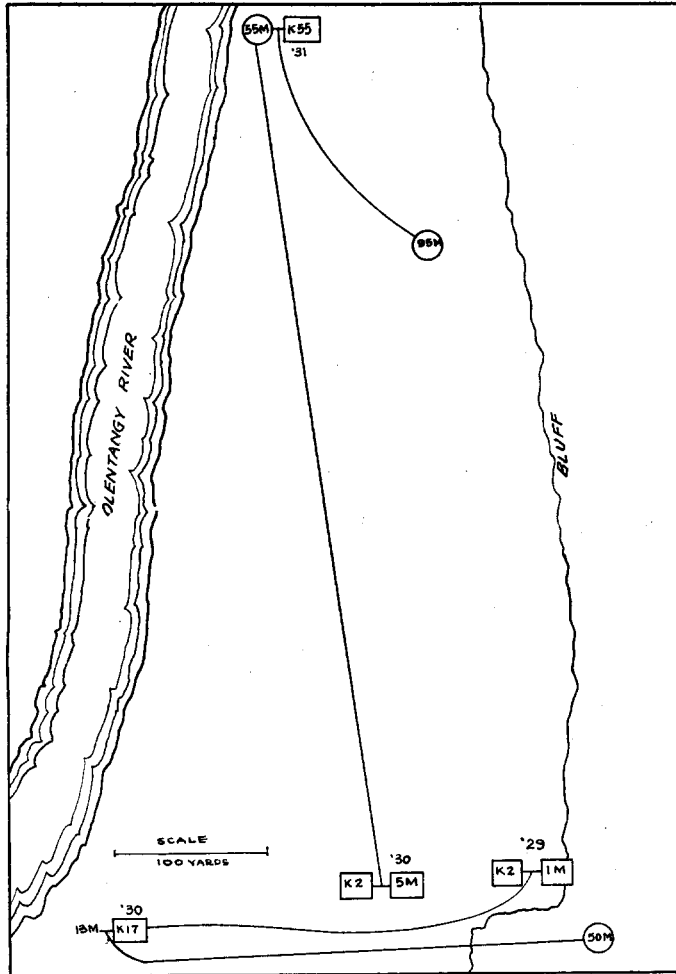


Fig. 9. K2 and her Descendants. A circle signifies a resident, a square a summer resident. An unenclosed number means that the bird's status was unknown. The date gives the year of mating.

35, 1933, p. 221). These maps show the territories of twelve young in relation to birth place—six resident males, two summer resident males, one resident female, and three summer resident females. They also show the territories of six females two years in succession, two females three years in succession and one female four years in succession.

These maps show the direct descendants in each line, and the mates of these descendants if any offspring are known to have survived, or if anything is known of the previous or subsequent history of these mates, in which case the earlier or later territories are shown.

There are doubtless more surviving descendants than I have knowledge of; first, because only in 1930 did I follow the nesting season through to its end (having left Columbus, June 6, 1931, and June 14, 1932); second, because I do not find all of

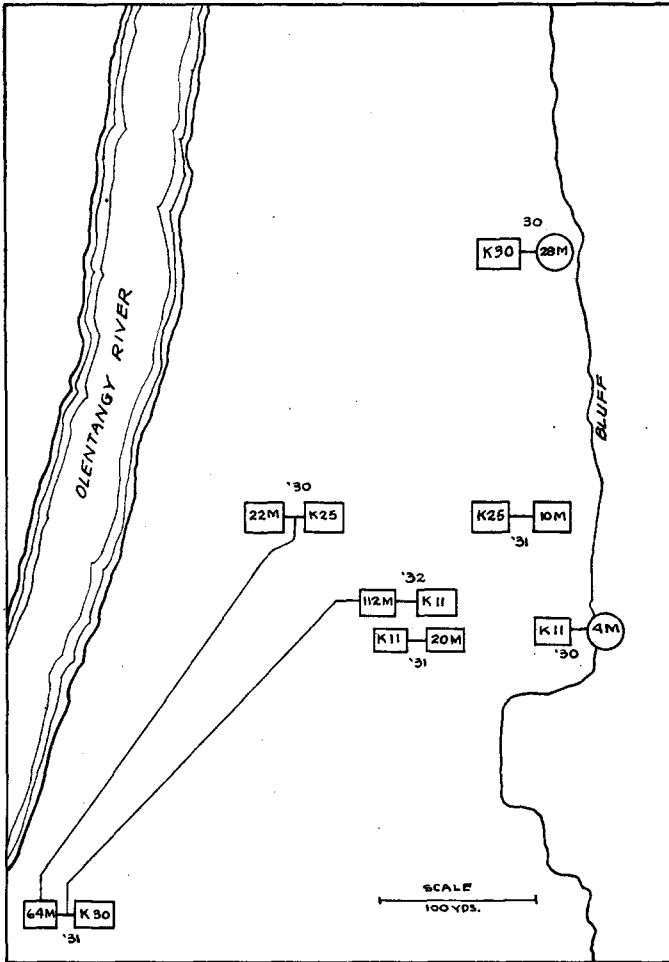


Fig. 10. 22M, his Son and Grandson.

the banded nestlings that survive to breed. Although I take a number of censuses in winter and spring over the regions adjoining Interpoint, it is impossible for one person to examine every Song Sparrow within a radius of a mile, and one bird of each sex has been found almost this distance from its birth place. Each year I find about twice as many survivals of males banded as nestlings, as of females, showing that the latter, as would be expected, cannot return as faithfully to the vicinity of their birth places as do the males.

Figure 9 shows the descendants of K2, a summer resident female that had two summer resident mates, a summer resident daughter, resident son and two resident grandsons. One bird (55M) died during his second summer. His son (95M) in his first winter sustained a broken leg that never healed properly; he was deserted by his mate before nesting began and did not survive his second winter. Another (K17) raised only the first of her three broods and did not return a second time. The only bird shown on the map that is still alive is 50M. Twice I have banded great grand-

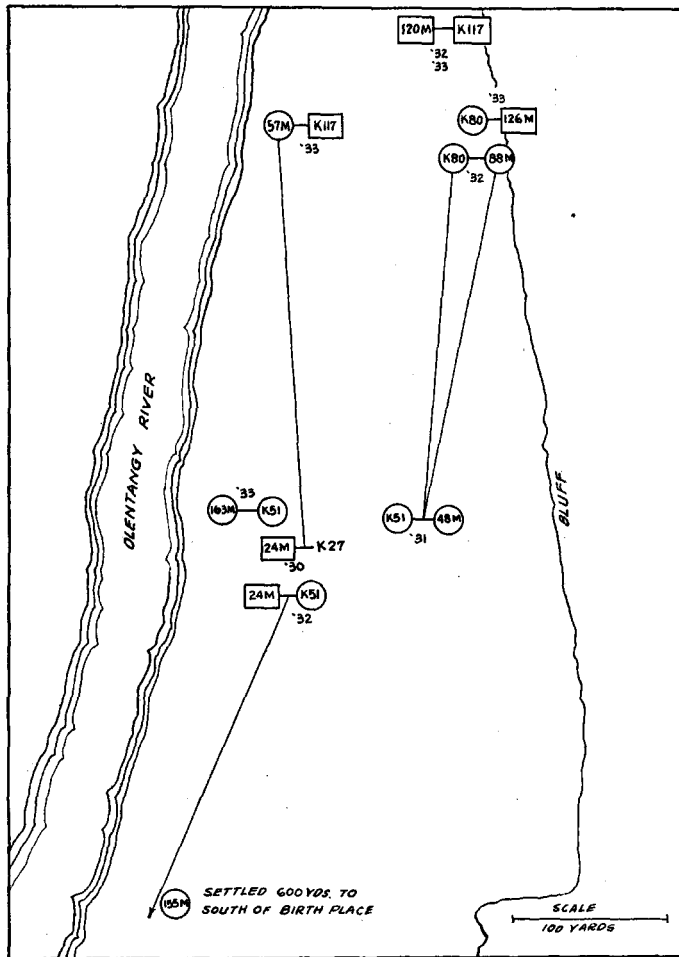


Fig. 11. K51's and 24M's Descendants. See fig. 12 for 24M's and 126M's mates in 1932; K117 rejoined 120M in 1933, but after his death joined 57M.

children of 1M and K2; five of 50M's young in June, 1931 (none of which survived to my knowledge), and three on May 17, 1933.

On figure 10 the territories are given of my only straight summer resident line for three generations—22M, his son and grandson, and other nesting places of the mates of each of the males. The second (64M) nested two seasons, but in 1932 raised no young before we left. The third (112M) also raised no young that year before

my departure; this year, although he has had two mates, both of them disappeared early in the season and since then he has been a widower. Of the birds shown on this map, besides 112M, 4M, now at least six years old, and 10M, four years old, are alive at the present time.

On figure 11 we have no third generation, but a number of half brothers and one case of full brother and sister. A summer resident (24M) has had two resident sons that settled in opposite directions from home. Number 57M is an interesting

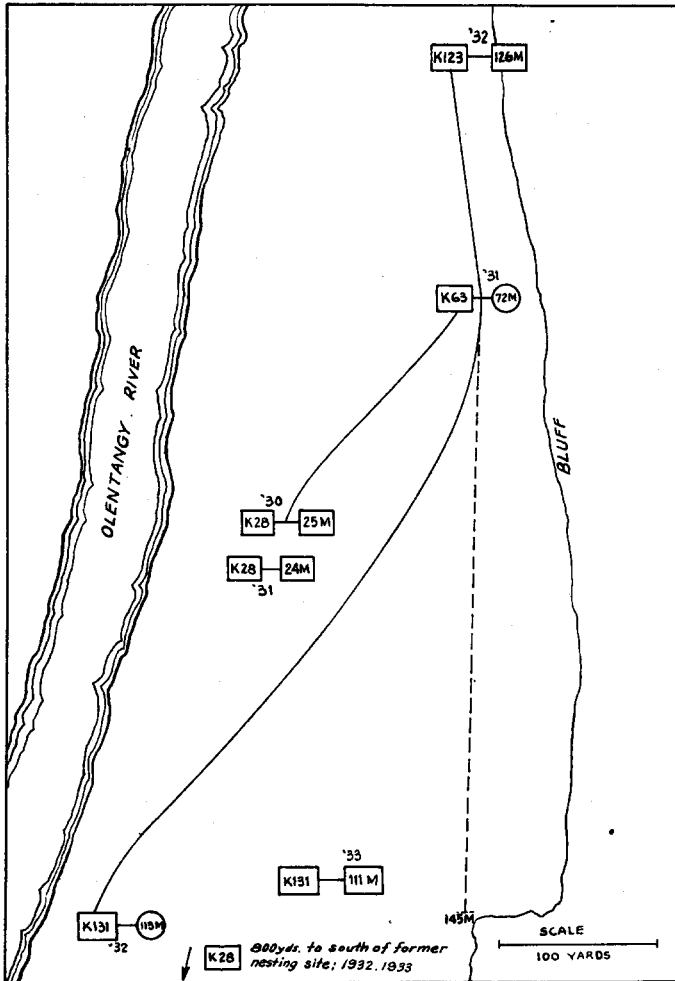


Fig. 12. K28: her Descendants and Residences during four Seasons. Nesting place of 145M unknown; trapped in place indicated, October 4, 1932.

bird, because he has always been retiring, almost never singing, yet he has survived to the age of three years and has raised young at least once and probably several times. His present mate (K117) remated with her last year's mate (120M), but, upon his death, joined 57M.

Only one resident female (K51) has survived three years. In 1932, as 24M's mate, she was the mother of a resident son (155M). The year before, with a resident mate, she had a resident son and daughter that wintered together and mated in the spring. Their young from the first nesting were banded, but did not survive. 88M died later that season, and this spring K80 mated with 126M. The birds shown on this map that are now alive are K51, K80, 57M, and 155M, besides 126M, 163M, and K117. Yet the only offspring raised by these four pairs before June 14, in 1933, were four young of 155M; a disastrous flood and various enemies emptied all the other nests.

Figure 12 shows an interesting bird (K28) and her descendants. The surprising change of residence of this grandmother has already been mentioned. Another notable event in this family was the survival of three young from one brood of five, the two sisters, K123 and K131, both nesting on Interpont in 1932, while their brother possibly nested to the east, in town. (He was found in the place indicated October 4, 1932, but never since.) Last spring I banded the young of K28 and a few days later two families of her great grandchildren, but none of these was found later.

Both K28 and K131 returned this spring, but the former must have come to her end in May. So K131 is the only direct descendant living today so far as I know, although of the other birds shown on the map, 111M and 126M are still alive. All of K131's attempts at nesting this year have so far come to grief, except for one poor little nestling rescued from the path of the plow and at present entrusted to the care of a pair of House Wrens (*Troglodytes aëdon*).

If all the young were banded every year, there would be more chance of getting a fourth generation of breeding birds on my charts; at present my hopes for additions to these four genealogies rest on eight nestlings. The brief histories of these families show the great risks run by young and old of this species and the slender hold on life of any one individual.

Summary.—*Melospiza melodia beata*, in central Ohio, is a strongly territorial bird.

Territory is obtained and defended by a specialized technique involving song, display, and combat.

Summer resident males remain on their territories throughout their stay, and resident males and females do so throughout the year, although not defending their territories except from February to the end of the nesting season.

Some of the resident males settle on their territories during the first fall.

Song Sparrows are never fat in the fall, but most of them gain in weight during the winter.

Winter flocks are never family parties, nor, in this region, wholly neighborhood groups.

Males are notably faithful to their territories, while females return to their former nesting places if possible.

The distance from the birth place that 28 young birds of both sexes have settled, varied from 100 to 1550 yards, the median being about 320 yards.

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RECENT OCCURRENCES OF THE AMERICAN EGRET IN THE SAN FRANCISCO BAY REGION

By EMERSON A. STONER

A slow but steady increase has been noted by bird observers during the past nine years in the numbers of American Egrets (*Casmerodius albus egretta*) in the San Francisco Bay region. Grinnell and Wythe in their "Directory to the Bird-life of the San Francisco Bay Region" state under this species that the most recent record in the Bay region prior to 1925 was "a single individual observed in January, 1880, in San Rafael, Marin County" (J. Mailliard, *Condor*, 13, 1911, p. 50). The observation for 1925 referred to is one made by the writer (*Condor*, 28, 1926, p. 175) of twelve seen on the Suisun marshes between Benicia and Cordelia, on November 16. A prior record, of a single individual, has since been reported by T. I. Storer (*Condor*, 33, 1931, p. 34) who saw "one bird on marsh near Teal Station southwest of Suisun" on October 13 and 25, 1924. This latter record, then, is the first recorded observation of an American Egret in the San Francisco Bay region since 1880—a period of forty-four years.

Egrets apparently staged their comeback in the Suisun marshes before appearing in the more southerly portions of the Bay region. The first observation recorded in the *Condor* for the southern part of the Bay region, or the San Francisco Bay proper, is "during January and February (1928) near the works of the Portland Cement Company at Redwood City" (*Condor*, 30, 1928, p. 202). The American Egret was not added to the Life List of the Audubon Association of the Pacific until 1930, when an observation of three on September 14 was reported from Baumberg, Alameda County (Gull, October, 1930). Records published in the *Gull* in addition to the Baumberg record show occurrences at Lake Merritt, Oakland (Gull, November, 1930), near Redwood City (Gull, March, 1931), Bay Farm Island, Alameda County (Gull, May, 1931), and San Mateo and Dumbarton bridges (Gull, December, 1932, and January, 1933). Observations in this same general area are also recorded in *Bird-Lore's* "The Season" and under minutes of the Cooper Club