

# Late-Winter Distribution of the Ipswich Sparrow

W. T. Stobo\* and I. A. McLaren\*

*"The Ipswich Sparrow clearly fulfills its reputation as a bird of the outermost beach grass . . . The bulk of the population probably winters between Virginia and New Jersey. Parks outside this area . . . may have little relevance for the sparrow."*

This note summarizes results of censuses of the Ipswich Sparrow (*Passerculus princeps*) made along the eastern seaboard from South Carolina to Massachusetts between February 28 and March 11, 1971, and in Nova Scotia on March 27, 1971. Existing descriptions (e.g. Elliott, 1968) give the extent of the winter range, but little on relative abundances within parts of this range. Published Christmas Bird Counts give impressions of relative numbers, but are hard to quantify.

The censuses were made as part of a continuing study of the Ipswich Sparrow, monographic in intent. Our observations are published at this time because of their tentative implications for the preservation of this rare and interesting species.

## METHODS

It is difficult to devise statistically sound counts of a bird with such "stratified" environmental tastes. We could not choose in advance census areas at random from the bird's broadly defined winter range on "coastal dunes", or more precisely on sandy coastal areas where beach grasses predominate. To some extent we were guided by published Christmas Bird Counts. Most of these birds have been seen in coastal parks and preserves, where much of the remaining suitable habitat occurs. We excluded in advance or after cursory censuses the narrow, broken, overbuilt dunes that occur along the beaches of resort towns. These may be used in migration but seemed devoid of winter residents.

Strip censuses were made by one person walking through appropriate habitats, using hand-clapping or other means to cause birds to flush or vocalize. Both Savannah and Ipswich Sparrows were counted, but never did we feel in doubt about separating them. No attempt was made to determine the effective width of the census strips by determining flushing distance or by other means, nor were the effects of the weather taken into account. Lengths of the census strips were estimated by pacing,



timing, from road maps, or from car mileage on a parallel course. Where possible, each census strip was four miles long. Some areas did not have four-mile strips of suitable habitat, and the total had to be made up from two or more separate, often qualitatively different sections. We generally did not deviate much from a straight path, but where the chosen area was wide, time was divided between outer and inner parts. On some wide but short areas (for example, the unforested tips of islands) coverage

\*Biology Department, Dalhousie University, Halifax, Nova Scotia.



was made up by weaving through the area in adequately spaced paths.

Given the above methods, the censuses cannot be taken as measures of the absolute numbers of birds along a particular stretch of coast, but only as estimates of the relative numbers in equivalent areas of beach-grass habitat.

We felt that certain obvious habitat differences were of importance to the birds. We, therefore, classified each censused strip numerically in terms of *relief* (0 – virtually flat; 1 – little relief; 2 – some relief of about 25 feet or more), *cover* (0 – virtually unconsolidated; 1 – beach grass thin or scattered or both; 2 – beach grass quite thick and extensive, though not necessarily unbroken), and accessibility to *fresh water* (0 – none; 1 – restricted or local; 2 – extensive). Needless to say, even these broad categories required an element of judgment.

The areas censused are numbered and listed here in order of the latitude to the nearest minute of the central part of the census strip. Length of strip is given only where it was one of two or more shorter strips used to make up the standard, four-miles strip. An unfortunate exception is census strip No. 1, which totals only 3.4 miles. As it was devoid of birds, there would seem little harm in using it along with the other strips.

1a Hilton Head, S.C., 32° 14', 2.7 miles; 1b Edisto State Park, S.C., 32° 31', 0.7 miles; 2a Huntingdon Beach State Park, S.C., 33° 30', 2.5 miles; 2b Myrtle Beach State Park, S.C., 33° 39', 1.5 miles; 3a Long Beach, N.C., 33° 53', 1.5 miles; 3b Fort Caswell N.C., 33° 53', 1.5 miles; 3c Del Mar Beach, N.C., 34° 25', 1 mile; 4 Ocracoke Island, south, N.C., 35° 03'; 5a Cape Hatteras lighthouse, N.C., 35° 13', 1 mile; 5b Buxton, N.C., 35° 16', 3 miles; 6 Salvo, N.C., 35° 30'; 7 Pea Island, north, N.C., 35° 43'; 8 Bodie Island, south, N.C., 35° 53'; 9 Duck, N.C., 36° 09'; 10 Seashore State Park, Va. 36° 56'; 11, 12, 13 Chincoteague National Wildlife Refuge, Va., 37° 53', 37° 55', 37° 59'; 14, 15, 16, 17 Assateague National Seashore, Md., 38° 09', 38° 13', 38° 15', 38° 15'; 18 Delaware Seashore, Del., 38° 35'; 19 Cape Henlopen, Del., 38° 46'; 20a Cape May, N.J., 38° 56', 1.5 miles; 20b Seven Mile Beach, south, N.J., 39° 02', 2.5 miles; 21a Brigantine Beach, south, N.J., 39° 23', 1.2 miles; 21b Brigantine Beach, north, N.J., 39° 26', 1.2 miles; 21c Beach Haven Hts., N.J., 39° 32', 1.3 miles; 22 Island Beach State Park, north and south, N.J., 39° 49'; 23 Island Beach State Park, middle, N.J., 39° 49'; 24a Jones Beach State Park, west, N.Y., 40° 35', 1.5 miles; 24b

Gilgo State Park, west, N.Y., 40° 37', 2.5 miles; 25, 26 Smith Point Coastal Park, N.Y., 40° 45'; 27a Hither Hills State Park, N.Y., 40° 59', 1.2 miles; 27b Montauk, N.Y., 41° 00', 1.5 miles; 27c Montauk Point State Park, N.Y., 41° 00', 1.3 miles; 28a Misquamicut State Beach, R.I., 41° 20', 0.8 miles; 28b Ninigret State Beach, R.I., 41° 21', 2.5 miles; 28c Green Hill Pond, R.I., 41° 21', 0.7 miles; 29 Gurnet Point, Mass., 42° 00'; 30 Wood End, Cape Cod, Mass., 42° 01'; 31 N. Truro, Cape Cod, Mass., 42° 02'; 32 Plum Island, Mass., 42° 43'; 33 Cape Sable Island, N.S., 43° 39'.

## RESULTS AND DISCUSSION

Figure 1 summarizes the counts in each census strip, together with numerical indices of relief, cover, and freshwater in the strip. Clearly there is enormous variation among individual counts. Figure 2 reduces this variance by grouping the counts into latitudinal blocks. The eye-fitted curve reflects a strong peak in abundance between Virginia and New Jersey, with more "stragglers" to the south than to the north. The birds could have begun some movement from the south into the middle part of their range, as Elliott (1968) suggests that migration begins in March. However, we saw little flocking, and no directed movement or other signs of migratory restlessness.

The habitat requirements of the Ipswich Sparrow can be considered first by comparing certain counts of this species and the Savannah Sparrow (*Passerculus sandwichensis*). Savannah Sparrows averaged more than three times as common as Ipswich Sparrows in all censuses combined, peaked somewhat farther south, and were virtually absent (2 individuals) north of New Jersey. A four-mile strip census (not listed on Figure 1) was made along grassy margins of salt marsh, a mile or two from the open sea, on Chincoteague and Assateague Islands, Virginia, close to the latitudinal peak on Figure 2. This habitat, which was structurally similar to nearby beach-grass habitats, produced 17 Savannah Sparrows, but was devoid of Ipswich Sparrows. On its normal habitat at the north end of Assateague Island, Maryland, where the Ipswich Sparrow was most abundant (censuses 16 and 17), records were kept of the numbers of each species on the outer, primary dunes, and on the back dunes, closer to salt marshes and woods, and scrubby in places. Totals of 26 Ipswich and 11 Savannah Sparrows were counted in the outer dunes, and 9 Ipswich and 25 Savannahs in the inner dunes. The difference in habitat pref-



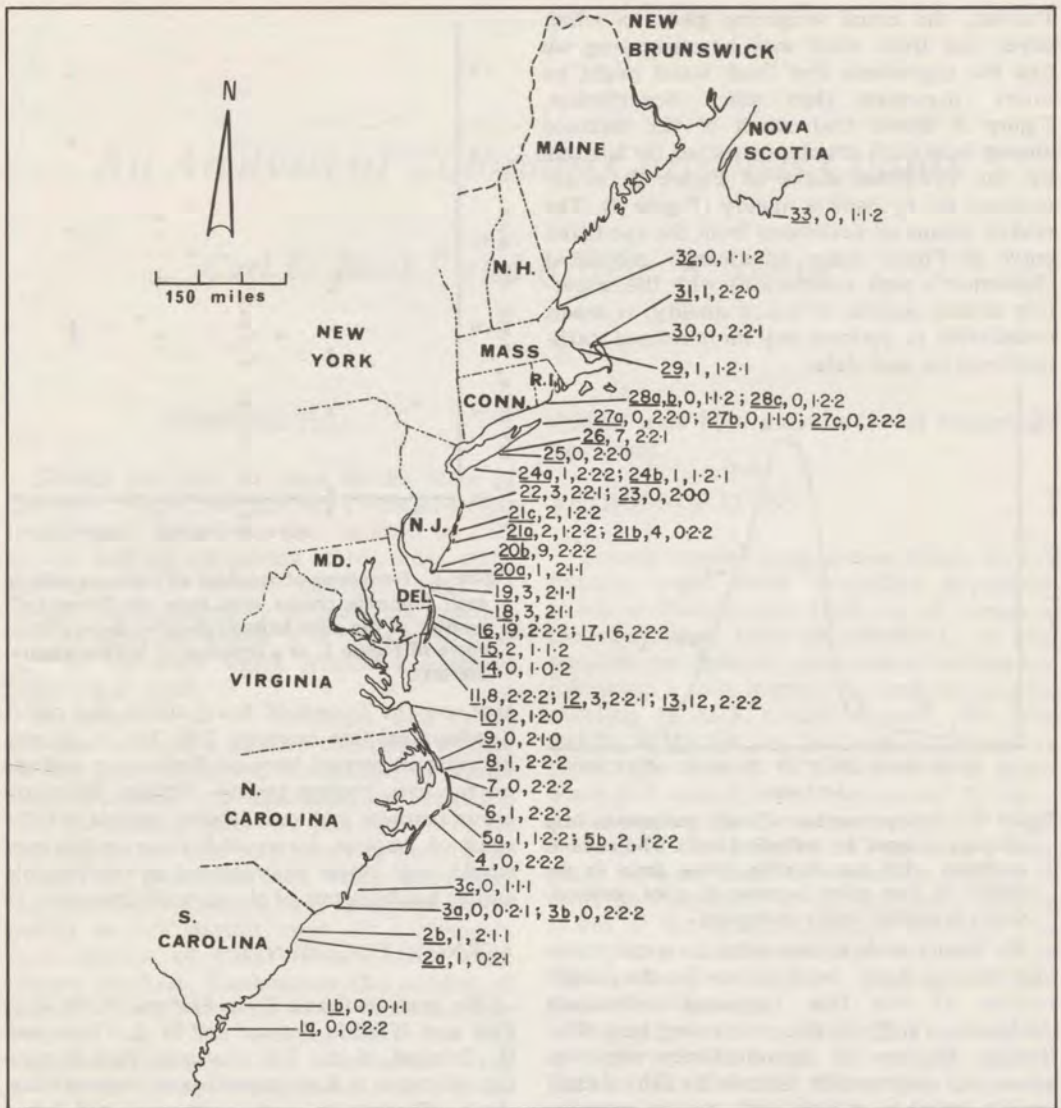


Figure 1. Geographical position, numbers of birds seen, and indices of habitat quality on strip censuses for Ipswich Sparrows. The numbers are to be read thus: 15, 2, 1-1-2 means that in census strip

No. 15, 2 Ipswich Sparrows were seen, and the indices of relief, cover, and fresh water of the habitat were 1, 1, and 2 respectively (see text).

ference is highly significant ( $X^2 = 14.5$ , d.f. 2,  $P < 0.001$ ). The Ipswich Sparrow clearly fulfills its reputation as a bird of the outermost beach grass.

Within its chosen habitat, it may be accepted that the Ipswich Sparrow uses the food and cover afforded by adequately thick beach grass, and we often noted the birds in the vicinity of fresh water ponds and pools. The occurrence of birds among outer dunes may reflect in part a

predilection for relief, advantageous perhaps for shelter and observation. These comments may be taken as rationalizations of our classification of census strips by combining the numerical indices (Figure 1) of cover, relief, and fresh water, to give an overall index of habitat suitability, ranging in theory between 0 and 6.

Obviously conditions and bird distributions varied markedly within census strips, so that a single index for each strip may be inadequate.

Further, the equal weighting given to relief, cover, and fresh water may be misleading; we had the impression that fresh water might be more important than relief. Nevertheless, Figure 3 shows that much of the variance among individual counts, corrected for latitude by the eye-fitted curve of Figure 2, is accounted for by habitat quality (Figure 3). The ranked means of deviations from the eye-fitted curve of Figure 2 are significantly correlated (Spearman's rank correlation) with the respective ranked indices of beach quality; it seems undesirable to perform any more refined statistical tests on such data.

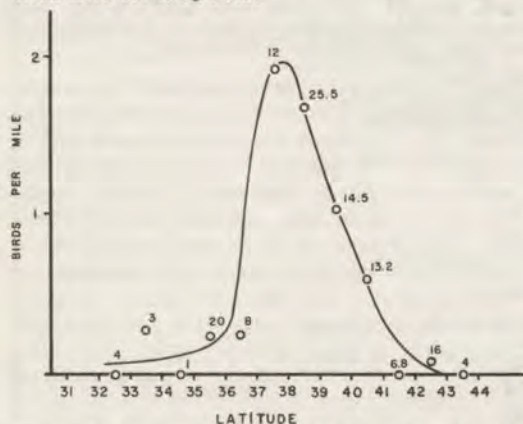


Figure 2. Average number of birds per mile in strip censuses grouped by latitude blocks. The curve is eye-fitted, with consideration being given to the weight of each point (number of miles censused, shown as number beside each point).

We finally wish to comment on some tentative "management" implications for the preservation of the few thousand individuals (McLaren, 1968) of this interesting bird. The Ipswich Sparrow is reproductively very vigorous, and may readily saturate its Sable Island nesting grounds, which with proper management need not be fated to disappear (popular account in McLaren, 1969). The bulk of the population probably winters between Virginia and New Jersey. Parks outside this area, such as the magnificent National Seashore of the Outer Banks of North Carolina, may have little relevance to the sparrow. Within its area of concentration, existing parks and preserves, however admirable for other purposes, may or may not be suitable for the Ipswich Sparrow. For example, too much of Island Beach State Park in New Jersey may be devoid of fresh water, even if the cover were restored (see indices and censuses 22, 23 on Figure 1). On the other hand, some undeveloped, only partly protected and somewhat ravaged ends of islands in the

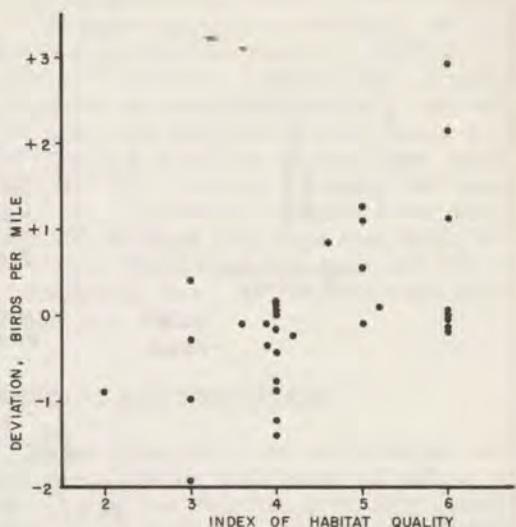


Figure 3. Deviations of numbers of birds per mile in each four-mile census strip from the "expected" number at the same latitude given by the eye-fitted curve of Figure 2, as a function of habitat quality. See text.

area, on the fringes of heavy urban and resort development (see censuses 20b, 21a, b, c) may be quite important because fresh water collects on the low, broken terrain. Finally, the numerous roadless and uninhabited islands off the coast of Virginia, inaccessible to us on this trip, would bear closer examination as the possible winter headquarters of the Ipswich Sparrow.

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