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## DISTRIBUTION OF THE AMERICAN TREE SPARROW<sup>1</sup>

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THE preparation of maps depicting the distribution of an animal species is by its very nature a compilation of a great many papers and observations by others. During five months an average of twenty hours a week was spent in the stacks of the Cornell University Library, sifting out records from the extensive zoological literature buried therein. Records were taken from the numerous State and Provincial faunal works, and from hundreds of local lists. A total list of the references on which these maps of the winter and breeding ranges of the Tree Sparrow (*Spizella arborea*) are based would fill many pages, and the bibliography appended represents only those titles actually referred to in the text.

In regions from which little information about Tree Sparrows has been published an effort was made to secure it by addressing members of the American Ornithologists' Union who reside there. For the generous response to these inquiries the author wishes to extend her heartfelt thanks. Additional records or corrections will be welcomed.

### A. THE SPECIES

#### 1. THE WINTER RANGE

The winter distribution and abundance of the Tree Sparrow, in inhabitable country, have been fairly well determined. On the map I have outlined the normal range by broken lines and shaded to indicate comparative abundance as well as could be determined from such indefinite terms as "common" and "rare." Specific stations have been plotted only on the borders of its range and in States, especially in the mountainous districts of the West, where there are only scattered records. A number of stations, it may be observed, have been left outside the zone of regular occurrence. These have been single records, of one bird or a small group never before recorded in that region, indicating, I believe, stragglers rather than an extension of the range of the species. In a few cases sight records have been accepted, a practice which perhaps calls for explanation. When, however, observations were made by reliable men at close range, it has seemed only reasonable to include them. Not

<sup>1</sup> Prepared as a part of a doctoral thesis at Cornell University.

everyone can carry a gun. In the end, the acceptance or rejection of these records is of small moment; it is the normal range which is significant.

On the basis of this study I should like to recommend the following revision of the winter range of the Tree Sparrow as given in the 1931 A.O.U. Check-List:

*Spizella a. arborea*.—Southern Minnesota, Ontario, New England, and Maritime Provinces, south to eastern Oklahoma, northern Arkansas, Kentucky, and Virginia. Rare or accidental south of those points.

*Spizella a. ochracea*.—East of the Cascade Range from southern British Columbia, western Montana, South Dakota, and southeastern Minnesota, south to Nevada, northern Arizona, New Mexico, and central Texas.

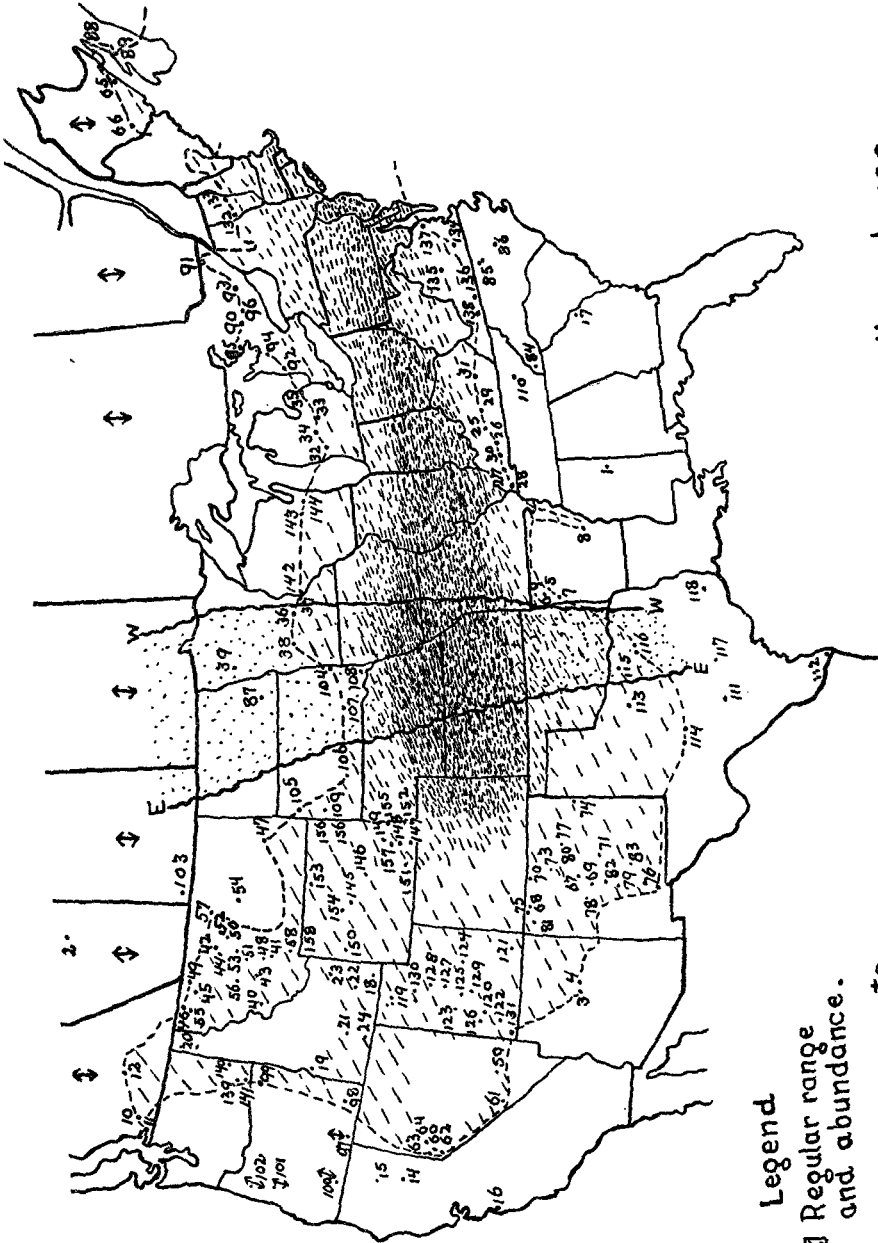
## 2. THE SUMMER RANGE

In summer the Tree Sparrow retreats beyond the reaches of civilization and the records are consequently meager. J. A. Allen (1871) restricted the breeding range of this species to the Hudsonian Zone, that vast expanse of stunted spruces and scrubby willows and birches contained within the isothermal lines of 57 degrees and 50 degrees Fahrenheit. These lines were also used by Merriam on the U. S. Biological Survey Zone Map of North America (1910). The few nesting records that there are for the Tree Sparrow, however, fall only in approximately the northern half of the Hudsonian Zone. From personal observation in the vicinity of Churchill, Manitoba, and from numerous records along the coasts of Labrador and the Bering Sea, I conclude that they nest abundantly beyond the limit of trees, as far as there is any scrubby growth, thereby overlapping the range of such arctic species as the Lapland Longspur and Willow Ptarmigan. With the above facts in mind I have attempted to fill in, on the map, the gaps between specific records as accurately as possible for country so little explored.

There are no records, it will be observed, south of British Columbia, in which Province the species nest only above 3,500–4,000 feet (Swarth, 1926). Although writers have long felt that it should be found nesting in the Hudsonian belts of our western mountains, no one has as yet been able to find it there. Early accounts in Minnesota, Maine, Massachusetts, etc., have been either definitely disproved or rejected for lack of sufficient evidence.


## B. THE SUBSPECIES


The question of subspecies is always a difficult one, due to the close similarity of the two forms and the large number of intermediates found throughout the middlewest. Recent re-examination of material from Minnesota, Iowa, and Missouri, by Dr. H. C. Oberholser, has led to the extension of the realm of *ochracea* almost to the Mississippi, while the eastern form, *arborea*, has been found as far west as western Nebraska and western Kansas.




Winter Range of *Spizella arborea*.

Legend.

 Regular range and abundance.

 Zone common to e. and w. subspecies.

 Migrant only.

Numbers refer to specific records in author's files.

During the breeding season, when the plumage is badly worn, it is even more difficult to make a distinction between the two forms, and the paucity of specimens has made it almost impossible to determine the boundaries. Preble's work (1908) in the Mackenzie, Slave Lake and Bear Lake regions has been particularly valuable here, indicating a distinct westward trend during the spring migration, the outlines of which, however, must remain chiefly guesswork until more extensive collections have been made.

#### C. STATEMENT OF RANGE BY STATES AND PROVINCES

While the foregoing concise account of the range of the Tree Sparrow is probably sufficient for general purposes, the following analysis by States and Provinces may be of interest to those who care for greater detail.

Where no authority is cited the remarks on the status and abundance represent a summarization of the literature for the State. Migration dates are given whenever available. Unless otherwise stated the form referred to is the eastern subspecies, *arborea*.

Specific stations in border States, indicated by small figures on the maps, were too numerous to include in this paper, but will gladly be supplied to anyone interested who will address the author.

#### 1. THE WINTER RANGE

ALABAMA.—Accidental. Howell (1928) says: "E. W. Graves reported it as common on Sand Mt., now believes it a misidentification." The *Bird-Lore* Christmas Census for 1915 includes a report of seven Tree Sparrows seen at Anniston on December 24, by Mr. R. H. Dean, in charge of the Weather Bureau at that point, and who claims familiarity with the species at La Crosse, Wis. In correspondence he emphatically defends the authenticity of his sight record.

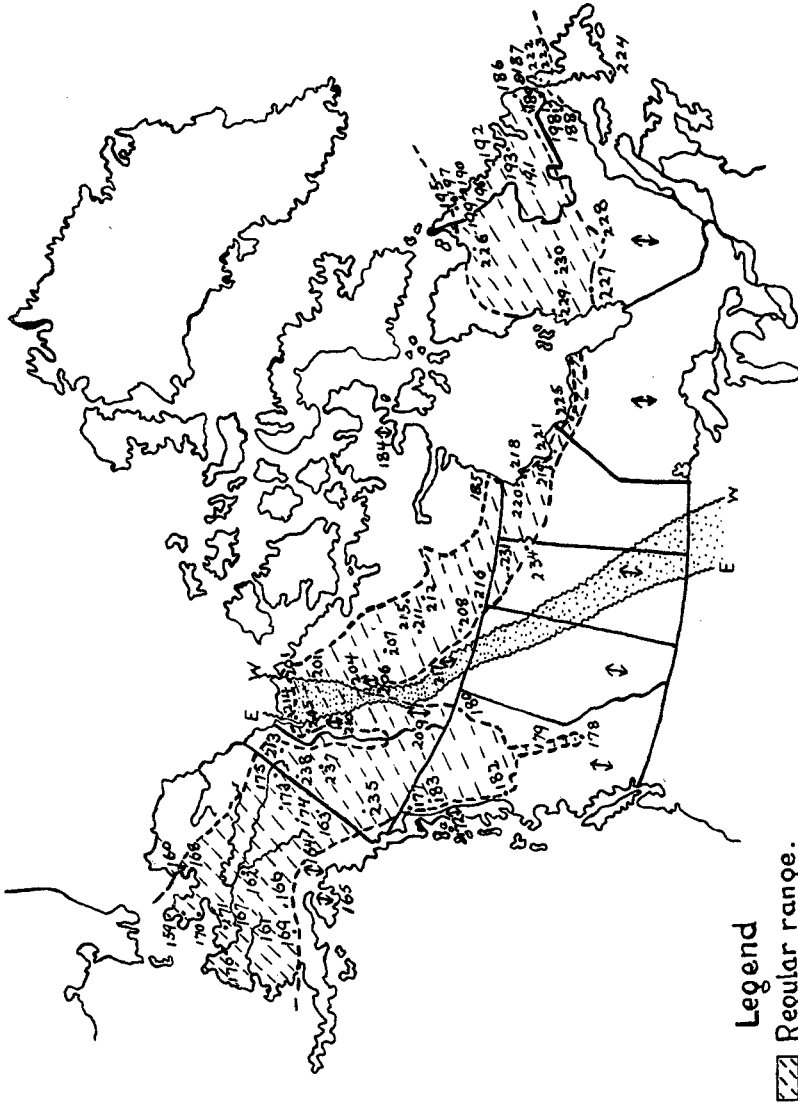
ALBERTA.—An abundant migrant in April and October, with only one winter record (Farley, 1932). Probably *ochracea*.

ARIZONA.—Rare. Swarth (1914) cites only two records (by Kennerly and Bendire), one near Tucson which is seriously doubted by present day field men in the region. A few records have been made since, indicating scanty but regular occurrence in northern parts of the State at higher altitudes. The form is *ochracea*.





ARKANSAS.—Rare throughout the State, with regular occurrence in northwestern part. Average migration dates based on four years' records by Baerg (1930): November 1 (October 18) to March 27 (April 3). In the eastern part they are found only around Helena (Pindar, 1924).

BRITISH COLUMBIA.—Chiefly migrant, though both winter and breeding records are at hand. The form is *ochracea*, with "General distribution in valleys of mainland, except perhaps on more northern coast" (Brooks and Swarth, 1925).

CALIFORNIA.—"Presumably an occasional midwinter visitant to the



**Legend**

-  Regular range.
-  Zone common to e. and w. subspecies.
-  Migrant only.
-  Numbers refer to specific records in author's files.

**Breeding Range of *Spizella arborea***

elevated northeastern section of the state, subject to severe winters" (Grinnell, 1915). The form is *ochracea*.

**COLORADO.**—One of the most common winter residents in the plains and valleys, from mid October (late September) to March and April (May 1) (Cooke, 1897). The vertical range has been given by Drew (1885), as follows: Common in winter up to 7,000 feet; in spring, up to 9,500 feet; none in summer. Bergtold (*in litt.*) felt that it was the most abundant winter bird in the State up to 9,000 feet, but that the distribution depended upon the amount of bare ground and weed patches regardless of altitudes. Sclater (1912) found it less abundant in the southwestern part of the State, but far from rare. The form is *ochracea*.

**CONNECTICUT.**—A very abundant migrant, chiefly in November and March; less abundant, though common, winter resident throughout the State (G. M. Allen, 1909). Migration dates are: October 20–30 (October 10) to April 12–25 (Sage, et alia, 1913).

**DELAWARE.**—Abundant winter resident, consistently reported in the *Bird-Lore* Christmas Census.

**DISTRICT OF COLUMBIA.**—Abundant winter resident, though sometimes rare. M. T. Cooke (1921) and Simpson (1917) give the following migration dates: November 8 (October 3) to March 27 (May 11).

**GEORGIA.**—One authentic record, probably accidental, of three individuals seen on February 25, 1921 (Bagg, 1922).

**IDAHO.**—Rare, with scattered records in the southern part of the State. H. F. Rust (*in litt.*) has only one sight record in twenty-five years of field work, and knows of only three specimens from the Panhandle region. R. L. Hand (*in litt.*) states that he has never seen the species in thirteen years. The form is *ochracea*.

**ILLINOIS.**—Abundant throughout the State. Most common from October 15 to April 1 (Ridgway, 1889); latest record on May 14 (Nehrling, 1896). The Forbes and Gross (1925) survey shows the relative abundance of Tree Sparrows in the different parts of the State, as compared with Juncos, thus:

Southern part: 24 per square mile; Junco, 187 per square mile.

Central part: 27 per square mile; Junco, 34 per square mile.

Northern part: 38 per square mile; Junco, negligible number.

**INDIANA.**—Abundant throughout the State (Butler, 1898); October 14 to April 10 (Fleetwood, 1933); extreme records, October 8 (Baumgartner, 1931) and April 19 (McAtee, 1905).

**IOWA.**—Both subspecies common throughout the State; of specimens examined by Oberholser twenty-three proved to be *arborea*, and twelve were *ochracea* (DuMont, 1934). Beal (1925) considered Iowa to be the center of abundance in the winter season. Less abundant in mid-winter in northern part of State (Anderson, 1907). Extreme records, September 20 (Spiker, 1924) and May 6 (Spurrell, 1921).

KANSAS.—Abundant winter resident, including both subspecies and many integrades (Bunker, *in litt.*). The subspecies *arborea* is abundant in the eastern part and rare in the western part; *ochracea* is abundant in the western and central parts, and rare or casual eastwardly. End of October, to middle of April (Linsdale and Hall, 1927).

KENTUCKY.—Common in the northern part, and uncommon or rare in the southern part. October 12 to March 21 (Blincoe, 1925).

MAINE.—A common migrant, with a few wintering regularly in the southern part of the State (G. M. Allen, 1909). O. W. Knight (1908) gives county records on which the map is based, and also migration dates, as follows: Spring, March 20 to April 5 (May 16); Fall, early September (September 4), but mostly in October.

MANITOBA.—Abundant migrant, with no winter records; breeds in northern part. The following migration dates for the southern part of Manitoba are from Criddle (1922), based upon twenty-five years of observation: Spring, March 24 (March 12) to April 6 (May 15); Fall, September 26 (September 9) to November 6 (November 15).

MARYLAND.—Abundant throughout the State. November 16 to April 12 (Eifrig, 1904).

MASSACHUSETTS.—A common migrant and less common winter resident (Forbush, 1929). October (September 9) to late April (May 28) (Allen, 1909). Greatest abundance, October 25 to November 25 and March 20 to April 20 (Chapman, 1901).

MICHIGAN.—An abundant migrant, and regularly a common winter resident in the southern part of the State (Barrows, 1912). The following migration dates based on averages of fifty years' records are given by Wood and Tinker (1934): October 19 (September 20) to April 16 (May 5).

MINNESOTA.—An abundant migrant, and regular though not abundant winter resident in the southern part of the State, reaching its northern limit in Isanti County (Roberts, 1932). Formerly it was believed that the subspecies in this State was *arborea* only. Recently thirty specimens were sent to H. C. Oberholser, and were found to be both *arborea* and *ochracea* in about equal numbers (T. S. Roberts, *in litt.*). Migration dates: Earliest, September 16; latest, May 15; immense numbers in October and early November, and in late March and early April (Roberts, 1932).

MISSOURI.—An abundant winter resident throughout the State. Nehrling (1896) says of it: "More abundant than anywhere else in the United States, especially in severe weather." The dominant form is *arborea*, but *ochracea* has been found to occur along the western border of the State, probably commonly (R. Bennett, *in litt.*). Migration dates for Columbia: Arrive regularly during the third week in October, and leave about the last week in March, though a few stragglers remain until April; extreme dates, October 14 and April 15 (*ibid.*).

MONTANA.—“An abundant migrant and common winter visitor in valleys and on prairies throughout the state. . . . Occurs in the grasslands or brush areas in the mountains in migrations, but not in winter” (Saunders, 1921). From the reports of Cameron (1908), Silloway (1903) and Weydemeyer (*in litt.*), it appears that the Tree Sparrow is found more or less uncommonly in midwinter in the western part of the State, but only as a migrant in the eastern part. The form is *ochracea*.

NEBRASKA.—Abundant as a winter resident. Both subspecies occur, *arborea* chiefly in the east, and *ochracea* over the entire State, with some intermingling of the forms. According to Bruner, Wolcott, and Swenk (1904) the birds appear during the first week of October and remain well into April.

NEVADA.—Only seven definite stations have been reported, but Ridgway (1877) has described the Tree Sparrow as “generally distributed through valleys of the western depression of the Great Basin.” Linsdale (1936) feels that they are “probably of more regular occurrence than the few records indicate.” The form is *ochracea*.

NEW BRUNSWICK.—A regular winter resident, irregularly common (Chamberlain, 1882). Moore (1904) says: “Most common along river valleys, two or three together.”

NEW HAMPSHIRE.—A common migrant and uncommon winter resident in southern portion; in winter as far north as White Mt. valleys (G. M. Allen, 1909). Late October and November (October 8) to April 24 (G. M. Allen, 1903).

NEW JERSEY.—An abundant winter resident throughout the State. Mid-October and November to April 26 (May 8) (Clausen, 1929).

NEW MEXICO.—Not abundant but of regular occurrence over most of the State. “One of the latest migrants, rarely before middle of November, north in March” (Bailey, 1928). The form is *ochracea*.

NEW YORK.—An abundant migrant and common winter resident, becoming increasingly abundant southward. Absent in winter in Adirondack region. Migrations occur chiefly in late March and first three weeks of April, from the end of October through November. County records on which the map is based are from Eaton (1910).

NORTH CAROLINA.—Straggler, only five sight records for the State; should perhaps be removed to the hypothetical list.

NORTH DAKOTA.—An abundant migrant, with only one winter record. Coues (1878) feels that it is probably more abundant than is realized, since it retires to the deep shrubbery in severe weather. The form is chiefly *ochracea*. The migration dates are: September 30 (September 21) to October 17 (November 16), and March 20 (February 27) to April 24 (May 6).

NOVA SCOTIA.—Listed as a fairly common winter resident by Downs (1866), and Macoun (1909).

OHIO.—“Abundant and generally distributed in winter” (Hicks,



1932). The migration dates are: Second week of October (first week) to mid-April (May 23) (Jones, 1903).

OKLAHOMA.—A winter resident of varying abundance, more common in severe weather (Nice, 1931). The subspecies *arborea* is found in the eastern and central parts, while *ochracea* occurs in the western part.

ONTARIO.—An abundant migrant, regular but not abundant as a winter resident in the southern part. Early October to late April (McIlwraith, 1894).

OREGON.—Never abundant; chiefly migrant, but a more or less regular winter resident east of the Cascades (Gabrielson, *in litt.*). The form is *ochracea*.

PENNSYLVANIA.—An abundant winter resident throughout the State. Migration dates listed by the Delaware Valley Ornithological Club (1932) for 1928–1929 are: mid-November (September 18) to mid-April (May 8).

PRINCE EDWARD ISLAND.—An abundant migrant, with a few winter residents (Bain, 1885). No specific records are given.

QUEBEC.—Migrant only. Macoun (1909) calls it a winter resident, but gives no explicit records. The migration periods at Montreal are: October 25 to November 7 and April 7 to April 28 (Macoun, 1909).

RHODE ISLAND.—An abundant migrant and less common winter resident (Forbush, 1929). Howe and Sturtevant (1899) record it from November 14 to April 11.

SASKATCHEWAN.—An abundant migrant. One winter record in the Frenchman Valley (Potter, 1929). The subspecies is probably *ochracea* (Taverner, *in litt.*).

SOUTH CAROLINA.—Accepted since the days of Audubon and Coues as the southern limit of the range without explicit records. Wayne (1910) and Sprunt (1932) refute the occurrence of the Tree Sparrow in South Carolina, as neither they nor other recent observers have even seen one in any part of the State.

SOUTH DAKOTA.—An abundant migrant and the most abundant winter resident in the southern part of the State. Both subspecies occur. Early October to May (Agersborg, 1885). Most abundant in November and April (Visher, 1913).

TENNESSEE.—“Very rare winter visitant” (Ganier, 1933). Rhoads (1896) refers to a specimen in a collection of a Tennessee man, but without locality data. A sight record is given by Johnson *et al.* in the *Bird-Lore* Christmas Census for 1929.

TEXAS.—Commonly recorded in small flocks in the northern part of the State in winter. The subspecies is *ochracea*.

UTAH.—A fairly common winter resident in the valleys of northern and central Utah, and occurs sparingly in suitable situations throughout the State. At Provo from October 20 to April 1 (Cottam, *in litt.*). “Common winter resident to the Great Basin” (Ridgway, 1877). The subspecies is *ochracea*.

VERMONT.—A common migrant and common winter resident in southern and lower lands; October to April (G. M. Allen, 1909).

VIRGINIA.—Not abundant, but a regular winter resident, uncommon southward; consistently reported in the *Bird-Lore* Census from the northern part of the State.

WASHINGTON.—An uncommon migrant and winter resident in the eastern part of the State; has never been taken west of the Cascades (Dawson and Bowles, 1909). The form is *ochracea*.

WEST VIRGINIA.—A common winter resident throughout the State. (Doan, 1888).

WISCONSIN.—An abundant migrant, and common winter resident in the southern part of the State, October and November to March and April (Kumlien and Hollister, 1903).

WYOMING.—Common; most numerous in spring and fall (W. C. Knight, 1902). Is seen in flocks of ten to twenty-five as a winter resident at lower elevations—below 7,000 feet (McCreary, *in litt.*). The migration dates at Laramie (average of eight years) are: October 17 to November 10 and March 11 to April 7 (*ibid.*). The form is *ochracea*.

## 2. THE BREEDING RANGE

ALASKA.—*Spizella arborea ochracea* is well distributed over central Alaska, as far south as the Alaska Range, east of Bering Sea tundra (Dice, 1920); it is especially numerous along the coast of Bering Sea and all along the Yukon (Nelson, 1887). Records are less common north of the Arctic Circle. The birds arrive about May 1 in western and central regions, nests being found from the coast level up to 1,500 feet (Twitchell, *in litt.*).

ALBERTA.—Both subspecies occur as migrants. Dr. Francis Harper tells me that he believes both subspecies (or intermediates) migrate through the Athabasca region in the fall, but only the eastern form in the spring. The subspecies *arborea* was believed by MacFarlane (1908) to breed at Fort Chippewyan but the record is below the limits set in an extensive survey of the region by Harper (1931).

ANTICOSTI ISLANDS.—It is still unsettled whether the Tree Sparrow breeds here, though it may to some extent (Lewis, 1924).

BRITISH COLUMBIA.—*Spizella arborea ochracea* is a fairly common summer resident at high elevations in the interior (Brooks and Swarth, 1925). Anderson (1915) sets the altitude at 3,000–4,000 feet.

KEEWATIN.—Found abundantly on the coast in extreme southern part (Preble, 1902). Probably breeds throughout the interior in the Hudsonian Zone, though there are no explicit records on which to base the exact limits.

LABRADOR.—“Common in Hudsonian forests as far north as there is any scrubby growth; seldom found in barren coastal zone, in tundra

district of northern third of district, or in Canadian forests to the south . . . Center of abundance in middle third of the northeastern coast, from Port Manvers to Hamilton Inlet, south of that in a narrow strip where there is scrub country between the barren coast and wooded interior" (Austin, 1932). Last seen on the southern coast on October 12; arrives May 15 (Cooke, 1916).

MACKENZIE.—Abundant wherever scrub occurs north to the Barrens (Blanchet, 1925). Both subspecies are found, *ochracea* being the predominant one from Anderson Valley westward (Preble, 1908).

MANITOBA.—Breeds abundantly in extreme northern part, in Hudsonian Zone and as far as there is any scrubby growth (Preble, 1902). Found nesting abundantly in the timber and open river flats among thickets of birch and willow in vicinity of Churchill, at Seal River, thirty miles north of Churchill, but not found on barren Cape Churchill, thirty miles east of Churchill (personal observation).

NEWFOUNDLAND.—Rare breeder in higher hills, where it was recorded by Palmer (1890) and Arnold (1912).

NEW BRUNSWICK and NOVA SCOTIA.—None in the summer (Baird, Brewer, and Ridgway, 1905).

ONTARIO.—An abundant migrant, winter resident in southern part, breeding in extreme northern part.

QUEBEC.—Migrant in southern part, breeding abundantly north of latitude 53 degrees (Macoun, 1909).

SASKATCHEWAN.—Abundant breeding records from extreme northern parts—probably *ochracea*. On the basis of the species' requirements elsewhere, I am inclined to doubt Coubeaux's statement (1900) that it is an "abundant summer resident throughout the country" as far south as 50 degrees to 53 degrees north latitude.

YUKON.—Probably breeds abundantly, but there are very few explicit records. The form is *ochracea*.

UNITED STATES.—There are various reports by early writers of the breeding of the Tree Sparrow in Minnesota, Maine, Massachusetts, etc. These records are now either disproved or rejected for lack of sufficient evidence. Some authors still feel that there is a possibility of its breeding in high mountains near timber line, but as yet there is no proof. There is one report of the finding of a nest with eggs at Meridian, N. Y., by E. G. Tabor (1889), the female also being collected as she left the nest. While it seems improbable that a careful observer should misidentify a bird which he has in hand, yet it is also unbelievable that this boreal species should nest so far out of its range. Moreover, the description of the nest and eggs does not tally with any that I have seen or read of. For example, there was no feather lining to the nest; and the eggs showed "several short scratches of seal brown similar to the scratchy lines on a Baltimore Oriole" egg. Mr. Tabor does not state where the skin or nest were deposited and they cannot now be traced.

## SUMMARY

From a study of available records and personal investigation the following conclusions have been drawn:

1. The normal winter range of the eastern subspecies does not extend as far south as stated in the A.O.U. Check-List (Fourth Edition, 1931), reaching its southern limit, except for rare and accidental records, in Virginia, central Kentucky, and northern Arkansas.

2. The western form in winter is found between the Cascade Range and the Mississippi River, with all shades of intergradation of the two subspecies found in the States just west of that river.

3. In summer both forms extend far west of the winter range, *ochracea* inhabiting Alaska, British Columbia, and the Yukon region, while *arborea* ranges from the Anderson River eastward to Labrador.

4. The breeding range extends northward beyond timber line to the limit of scrubby growth, southward only to the northern third of the Hudsonian Zone as outlined by Merriam's map. No records south of the mountains of British Columbia have been substantiated.

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