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A SECOND REVISION OF THE SEASIDE SPARROWS

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INTRODUCTION

In November, 1943, I received a letter from Mr. George H. Lowery, Jr., Curator of the Museum of Zoology, asking me to study a series of Seaside Sparrows, chiefly from Louisiana. He wrote that Mr. T. D. Burleigh and he had spent a "considerable time" going over this series, mainly with the purpose of trying to separate *howelli* from *fisheri*. "Both of us have always been confused as to the characters to look for in the case of *howelli*." Presumably my assistance was requested because a quarter of a century ago my "maiden" effort in systematic work was a revision¹ of this difficult but exceedingly interesting species of sparrow in collaboration with Mr. J. T. Nichols, and we were responsible for the description of *howelli*.

In due course the box of 89 birds arrived, but it was not until this spring that I was able to begin serious study. I immediately became just as "confused" as Messrs. Lowery and Burleigh, and I could get nowhere! To present a brief summary of my impressions of this material, it was (1) the most beautifully prepared and competently selected series of Seaside Sparrows I had ever examined; (2) there were apparently two subspecies represented, the extremes distinguishable at a glance, one supposedly *fisheri*, the other supposedly *howelli*; (3) geographically the birds came from coastal regions of extreme western Florida, Mississippi, Louisiana, and from Sabine, Texas, a locality near the Louisiana-Texas line; (4) the series contained *proved breeding* birds, winter and fresh

¹ "A Revision of the Seaside Sparrows," *Abstr. Proc. Linn. Soc. New York*, No. 32, 1920: 18-30.

fall birds from the *same colony*, a fine series from Grand Isle, Louisiana, the type locality of *fisheri*; (5) *at least 20 per cent* of the specimens from Louisiana were of the supposed *howelli* type, and some of them had been labeled *howelli* by well-known ornithologists; (6) these specimens included *positively breeding* birds from various colonies, accompanied by other specimens shot the same day obviously *fisheri*! (Reference specimens: LSU nos. 3461, 3808; G. M. Sutton nos. 8201, 8198); (7) even more preposterous, a breeding bird from Sabine, Texas, was labeled *howelli* by Dr. Oberholser, and on the basis of its characters, it certainly was!

I submit that all this adds up to a complete absurdity. Something was wrong somewhere, and a thorough reappraisal of the characters of *howelli* was required. I accordingly was forced to seek help elsewhere. Thanks to the courtesy and friendly cooperation of Drs. Herbert Friedmann, of the United States National Museum, and John W. Aldrich, of the United States Fish and Wildlife Service, I received on loan the entire Biological Survey series of *howelli*, which had grown in 25 years from 22 specimens to 44. Reinforcements in the Museum of Comparative Zoölogy and a further shipment of material from the Louisiana State University brought the total number of specimens from northwestern Florida to High Island, Texas, to over 200. In addition, I have been able to examine adequate series of *sennetti*, a large series of *peninsulæ* and *maritima*, and representative series from South Carolina and Georgia. I take pleasure in stating that these notes would have been quite impossible without the material from the United States Fish and Wildlife Service, which I deeply appreciate, and most helpful and scholarly comment from and correspondence with Mr. Lowery.

Before presenting my conclusions on this material, I wish to summarize briefly what we have learned about Seaside Sparrows in a quarter of a century. The chief reason for doing so is the conviction that the facts to be obtained from specimens (the subspecific characters and the degree of individual variation) are now reasonably well known from adequate material. The facts require reinterpretation, and it is the careful and competent field work of various students, with a sounder knowledge of the life history and biology of these sparrows, that compel the reinterpretation.

1. In 1931, Oberholser² described *pelonota* from New Smyrna, Florida. I have visited the type locality, a muddy island covered with *Salicornia*, with a scattering of stunted mangroves, a totally different environment

from the tall grassy, or sedgy marshes of South Carolina. While the characters are slight, *pelonota* is unquestionably a valid subspecies, based on a small, local population.

2. In 1931, Oberholser² also described *waynei* from Chatham County, Georgia, a relatively pale and olive race as contrasted with the dark blackish *macgillivraii*, which he regarded as the breeding bird of North Carolina and northern South Carolina. Birds of this type had been known for some time, and were variously interpreted as *maritima* from further north, or a pale phase of *macgillivraii*. Dark breeding birds from northeast Florida (Amelia Island) were referred to *pelonota*, thus giving the three subspecies logical ranges.

3. In 1932, A. H. Howell summed up years of field experience in his classic *Florida Bird Life*. He proved that all Florida subspecies were resident in their respective colonies, and that *howelli* was the resident race of extreme western Florida.

4. In 1937, Ivan R. Tomkins³ published a very fine and thoughtful paper on the status of *macgillivraii*, which I have read and reread. It implies that Oberholser's treatment of 1931 was an over-simplification of what is really a very interesting biological problem. His testimony, based on most competent field work, was that from Charleston south to Georgia only the *waynei* type bred, but northward and in northeastern Florida, dark, light, and intermediate birds all bred together. This agrees with the findings of Griscom and Nichols.

5. In 1938, Oberholser in the *Bird Life of Louisiana* referred all Seaside Sparrows east of the Mississippi to *howelli*, those west of the river to *fisheri*, but reported both from New Orleans.

6. Mr. Lowery's field experience in Louisiana emphasizes the essentially resident habits of the Seaside Sparrow there, and the positive breeding of the *howelli* type. I quote from one of his interesting letters: "Somehow or other I, too, have never been convinced that there is much shifting of populations in the winter. If such was the case, there would certainly be areas that would be devoid of birds at one season or another. On the contrary I have many colonies in mind that I visit from time to time through the year, and the populations in these colonies never seem to vary numerically in the slightest." Again, apropos of the breeding bird from Sabine, Texas, called *howelli*: "I remember very distinctly shooting

² *Proc. Biol. Soc. Washington*, 44, 1931: 123-127.

³ *The Auk*, 54, 1937: 185-188.

that bird. It was one of a pair, in full song, and obviously nesting. I believe I am familiar enough with the breeding actions of Seaside to know a pair on their nesting territory."

THE MIGRATIONS OF THE SEASIDE SPARROW

I have gone into some detail about the resident nature of Seaside Sparrows, as it affects a purely systematic problem. We have, admittedly, an exceedingly variable bird. In every subspecies where sufficiently large series exist, aberrant specimens are sure to turn up, which either will be indistinguishable in characters from some remote subspecies or will at least be "nearer" it than the one native in the area where the aberrant individual was shot. How are these birds to be identified? An older generation, with a more cut-and-dried concept of specific and subspecific characters, did not hesitate to refer them to the other subspecies, often with results that now appear ridiculous. Thus *macgillivraii* was supposed to migrate to the Gulf coast of Florida; this was denied by Griscom and Nichols, but has recently been reaffirmed by Oberholser on the basis of 3 specimens not seen by me. The late Arthur T. Wayne was indeed able to produce birds in his collection from coastal South Carolina "nearer" *peninsulae* and *fisheri*, respectively, and he was much annoyed when we deleted these two birds from the South Carolina list.

Where salt marshes are continuous, there is indeed the possibility that birds may wander a great distance, but no bird hugs more closely to salt water than the Seaside Sparrow. In a whole century the individuals that have been found 5 miles from salt water are few and far between and are in most cases casual waifs. It seems to me ridiculous therefore to suppose that any *peninsulae* or *fisheri* from southwest Florida and Louisiana, respectively, arose on high and flew hundreds of miles overland to the northeast, in an utterly wrong direction, to the coast of South Carolina. But it is a good rule that works both ways. If a sufficiently large series of *macgillivraii* produces occasional specimens like *peninsulae* and *fisheri*, why should not a sufficiently large series of *peninsulae* produce specimens like *macgillivraii*? Dr. Oberholser has seen three, but I do not believe that this really proves that Seaside Sparrows, hatched on the Carolina coast, flew hundreds of miles cross-country to southwest Florida.

I am entirely aware that in an earlier exploring age the fact that species A migrated was proved (or indicated) by shooting a specimen in some

other part of the continent. But in the present decade there is a great deal more to migration than that. Observation proves (1) that the entire or most of the breeding population departs at a certain time; (2) they are usually found on some migration route twice a year; (3) that they reach their winter quarters at a certain time, remain a certain time, and are proved to depart northward at a certain time; (4) finally, in cases of doubt, the recovery of banded birds is an absolute proof of migration.

All species and subspecies of Seaside Sparrows are positively proved to be strictly resident on their breeding grounds, with two exceptions:

a. *A. m. maritima*. This race is *partially* migratory, in the sense that some individuals are resident at the extreme northern limits of the range. Massachusetts, for instance, is north of the normal range. But from time to time small colonies or stray pairs get established and become residents until killed out by a severe winter. Some years ago, a colony in the Barnstable marshes on Cape Cod survived several years. In the past three years a pair has been resident at Chilmark Pond, Martha's Vineyard, and another on Monomoy. Both Oberholser and Tompkins have remarked that the alleged winter occurrence of *maritima* in South Carolina and Florida has been greatly overdone, and I heartily agree. Tompkins points out that *maritima* cannot surely be distinguished from *macgillivraii* of intermediate and *waynei* types, as the amount of black on the shafts of the central tail feathers, a character brought forward by Oberholser, breaks down. Again, I agree.

b. *A. m. macgillivraii*. Tompkins brings forward evidence to show that there is some departure from and arrival of birds upon breeding grounds he has watched in South Carolina. His statements can, I think, be accepted with implicit confidence.

Turning now to the Gulf coast, *peninsulae*, *juncicola*, *howelli*, and *fisheri* are definitely present in their normal geographic ranges at all four seasons of the year. What are the chances that they also migrate east and west along the Gulf coast? I submit earnestly that it is most improbable. The reason why I stress the point is that confession is good for the soul, and I am responsible for starting this idea. The Griscom-Nichols revision of 1920 reported the following cases:

howelli—"typical" specimen at High Island, Texas, where *fisheri* is the resident race. The specimen from Goose Creek, Wakulla

County, Florida, which I shot myself, is really intermediate between *howelli* and *juncicola*.

fisheri—reported as "migrating" south at least to Corpus Christi, Texas; one specimen from Bayou Labattre, Alabama.

Howell gives⁴ other records of wanderers: *peninsulae* in the range of *juncicola*; *juncicola* in the range of *peninsulae*; and one specimen of *juncicola* from Amelia Island, northeast Florida (!). As the series of *juncicola* amassed by him was very much greater than the 13 original specimens seen by me, the known range of individual variation in *juncicola* has merely begun to approximate that of much better known subspecies. The last record in particular is no more credible than the specimens of supposed *fisheri* from South Carolina. He also records two specimens of *fisheri* from Tarpon Springs and Pensacola, both of which I have examined in the present connection. Further comment must await a reappraisal of the characters of *howelli* and *fisheri*.

THE CHARACTERS OF *A. M. FISHERI*

Turning now to the splendid series from the Gulf coast, and reverting to the summary of the outstanding facts presented in the second paragraph of the Introduction, two conclusions seem to me inescapable. The careful and discriminating field work of Messrs. Lowery and Burleigh prove incontestably that *fisheri* is dichromatic. Second, *howelli* is either the pale phase of *fisheri*, or else requires a new diagnosis. It is impossible for *howelli*, as now understood, to breed right across Louisiana to eastern Texas in colonies of *fisheri*.

The subspecies *fisheri* was based on a small series from Grand Isle, Louisiana. The original diagnosis of the race proves to be a description of the dark phase. The two phases are sufficiently distinct, so that extreme specimens would be distinguishable in life.

a. *Dark phase*—with heavy black streaking on pileum and back, with a corresponding reduction of the olive and brown tones; breast bright ochraceous buff, usually with sharp, fine black streaks. (Reference spec. LSU nos. 3466, 4717).

b. *Light phase*—paler, especially above, where the olive and brown tones predominate, and there is a marked reduction of black streaking;

⁴ *Florida Bird Life*. J. J. Little & Ives Co., New York, 1932.

in extreme specimens there may be no black streaking on the crown at all (reference spec. LSU no. 6162); below the yellow breast band is usually paler, and always lacks sharp, black streaks. Actually the light phase can be further subdivided into two variations, (1) the upper parts grayer and more olive (reference spec. LSU no. 6066), (2) the upper parts browner, (reference spec. LSU no. 6162).

c. The subspecies *fisheri* resembles *macgillivraii* in producing numerous individuals which must be classed as "intermediate."

THE STATUS OF *A. M. HOWELLI*

This subspecies is as yet inadequately known, and there are not enough specimens from Alabama. The following statements are, however, entirely warranted by the 46 specimens before me.

1. The alleged larger bill of *howelli*, as compared with *fisheri* and *juncicola* proves untrue.

2. The type series from the Alabama coastal islands is a mixture of winter and worn breeding birds, the latter of no use in a revised diagnosis, once the bill size is worthless. The series from Mississippi (Horn Island and Grand Batture Island) are mostly exceedingly worn breeding birds, and are identifiable only by the exercise of imagination; one or two specimens have enough feather tips left so that I "believe" they represent birds in the pale phase with dull, pale buff breasts. Confidence in my ability to identify worn specimens of critical subspecies has declined in a quarter of a century!

3. The original description of *howelli* applies to a bird in the light phase with a dull, pale buff breast, devoid of sharp black streaks.

4. The very few specimens in proper plumage are absolutely indistinguishable above from the light phase of *fisheri*.

5. They are readily separable, however, from 90 per cent of the specimens of *fisheri* in the light phase in being a much duller, paler buff on the breast. But they are inseparable in this respect from extreme individual variations of *fisheri* (reference specimens LSU nos. 2504 and 6066 and Burleigh no. 10,000, as to under parts only).

6. Texas records of *howelli* are all based on *fisheri* in the light phase.

The question arises whether a dark phase of the supposed *howelli* exists. The evidence is inferential in the sense that no breeding bird from Alabama in a dark phase exists. Actually, however, the type series includes a dark bird, winter killed, from Bayou Labattre, Alabama. It was regarded as a winter vagrant of *fisheri* by Griscom and Nichols, 1920, and redetermined by Oberholser as *howelli*. Upon reexamination, I describe it as indistinguishable above from the general run of *fisheri* in the dark phase, but with the pale buffy chest of the *howelli* type. Nine specimens are before me from the Pensacola area, extreme western Florida. Many years of field work there by Mr. Francis M. Weston prove that the Seaside Sparrow is rare and local, and it is apparently absent for years at a time. Six of these specimens resemble the type series of *howelli* from Alabama. One in the Biological Survey Coll. (no. 299333) is recorded by Howell as *fisheri*, and I cannot distinguish it from *fisheri* in the light phase. Mr. Lowery sends me two other specimens from Pensacola (LSU nos. 3731 and 3732) which have an illuminating history. Actually they came from a colony east of the city, discovered by Mr. Weston in 1938. Somebody who was badly mixed up, told him they were *juncicola*, but they were subsequently determined by Oberholser as *howelli*. One of these birds (no. 3732) is inseparable from typical *fisheri* in the dark phase, possessing a rich buff breast band with sharp black streaking; the other has dull streaking below and a paler buff chest, the supposed character of *howelli*. Inferentially these four specimens represent the missing dark phase of *howelli*; I have already given my reasons for declining to dismiss them as winter vagrants of *fisheri*.

To sum up, two points should be clear: (1) the total number of unworn or serviceable specimens of *howelli* is clearly too few to bring out the probable degree of variation or the percentage occurrence of the two phases; (2) only one possible character for *howelli* remains; the great majority of specimens *may* prove to have paler buffy, diffusely streaked chests, whereas only 4 out of 60 *fisheri* possess this character. Geographically this is not only plausible but probable. Actually *howelli* is geographically intermediate between *fisheri* and *juncicola*, and the latter subspecies possesses only a feeble tinge of buff on the chest. The same point can be made for the dark birds from Pensacola. If they are thought of for a moment as coming from a geographically intermediate locality between the supposed pale *howelli* of Alabama and the very black *juncicola* with little or no buff below, from St. Marks, Florida, their

characters would be intermediate, and such birds could be lost in a series of *fisheri*.

Oberholser's claim that *howelli* ranged west through Louisiana to the Mississippi must now be disposed of. The few specimens seen by me from eastern Louisiana are clearly *fisheri*, and one from New Orleans, collected by Burleigh, April 19, 1935, in the Biological Survey collection, is in the dark phase. Beautifully prepared specimens from various parts of the coast of Mississippi collected by Mr. Burleigh are before me. The majority of them from western and central Mississippi are not only *fisheri*, but some are in the dark phase. Those from eastern Mississippi, very near to the type locality of *howelli*, are *fisheri* in the light or "intermediate" phase, but it seems to me the percentage of individuals with pale buffy breasts increases eastward.

Final decision of the status of *howelli* requires putting on record some extreme variation of *fisheri*. I have already listed three specimens of *fisheri* with remarkably little or pale buff below, thus resembling the supposed *howelli*. It now remains to add that all three are remarkably gray above, one having almost a hoary or canescent cast; they are gray and olive above, rather than the olive and brown of the normal light phase *fisheri*. It follows that the known range of individual variation in *fisheri* not only matches the supposed paler *howelli*, but produces a few individuals even paler than any known *howelli*.

My conclusion consequently is that the recognition of *howelli* serves no useful purpose. Its one possible color character is that the majority of individuals have pale buff breasts with pale diffuse streaking, a rare variation in *fisheri*. Even if the collection of adequate series should confirm this fact beyond doubt, the bird occupies a relatively small intermediate geographic area, and the character is intermediate between that exhibited by *fisheri* on one side of it and *juncicola* on the other.

It follows that the range of *fisheri* should be extended east to Pensacola, Florida, including the States of Mississippi and Alabama.

NOTES ON *A. M. SENNETTI*

Our knowledge of *sennetti* of the Texas coast really lags behind that of any other subspecies at the moment. In the first place the north coast of Texas is occupied by *fisheri*, where colonies are known from Sabine and High Island. It is of interest to note that a large series from High Island are all in the light phase. An aberrant individual from western

Louisiana (LSU no. 4714) is remarkably olive above, thus foreshadowing the greener character of *sennetti*, but is clearly *fisheri* below. It most certainly is not real *sennetti*.

Messrs. McAtee, Burleigh, Lowery, and Stoddard record⁵ *sennetti* from the Alabama and non-Peninsula Florida region on the basis of a specimen collected October 2, 1927, at Pensacola by Weston and identified by Oberholser. They merely repeated the record in *The Auk*.⁶ This specimen is now Biol. Surv. no. 299150, and has recently been forwarded for examination. I am unable to endorse Oberholser's determination. The bird proves to be a juvenile in worn plumage, particular below, where the buffy wash, so characteristic of the juvenile plumage, has largely disappeared and is only faintly indicated on the chest, sides, and flanks. The upper parts are brownish gray with conspicuous black streaking on crown and back; there is the faintest suggestion of an olive tinge. The chest is covered with fine black streaks, which are extensively developed on the much less worn sides and flank feathers.

No one can fairly quarrel with the statement that worn juvenile Seaside Sparrows do not lend themselves to identification, when adults in fresh plumage are often exceedingly critical. There are only three recognizable types of juvenile plumage, when sufficiently fresh.

1. Upper parts darker, with black streaking more pronounced. Includes all the darker Gulf coast and southern races.
2. Upper parts lighter brownish gray, with black streaking less pronounced. A faint olive tinge may be present.
 - a. With fine streaks on chest and flanks below. Includes *maritima*, and light phases of *macgillivraii* and *fisheri*.
 - b. Under parts unstreaked or with streaks on sides and flanks only. Includes *sennetti*.
 - c. A strong buffy wash both above and below is specially characteristic of a clear majority of specimens of *maritima*, but rapidly disappears with wear. This buffy wash is always at a minimum in *sennetti*.

⁵ *The Wilson Bull*, 56, 1944: 156.

⁶ Vol. 56, 1939: 193.

It follows that worn specimens are virtually indistinguishable below, and resolve into darker and lighter birds above. The only absolute character known is the unstreaked chest of *sennetti*. Consequently, the specimen from Pensacola cannot be *sennetti*. There is a probability, or at least a possibility, that a juvenile *sennetti* with streaks on the chest might turn up at any time. Even so, there would be no basis for naming this Pensacola bird *sennetti*. It cannot be distinguished from one specimen of juvenile *maritima* before me, or any darker southern subspecies in the light phase. In a strict systematic sense it cannot be named, as it possesses no diagnostic subspecific character. Why not assume, then, in default of cogent evidence to the contrary, that it was hatched and reared at Pensacola and represents *fisheri* in the light phase?

At the moment *sennetti* is known only in the light phase, but a dark phase should be sought by competent collectors. I hazard the guess that the worn adults and young taken at Tivoli in August along with *sennetti*, and reported by Griscom and Nichols as *fisheri*, will prove to represent it. Its characters cannot be determined from these worn August specimens. But reasoning by analogy and experience with other subspecies, it would occasion no surprise if the dark phase of *sennetti* should prove practically indistinguishable from some specimens of *fisheri*.

The Texas Seaside Sparrow formerly ranged from Galveston Island to Port Isabel, near Brownsville. Local observers report it as extirpated at Brownsville, Arkansas Pass and Galveston Island by civilization, naval installations and oil wells. Only two or three pairs survive in one marsh back of Rockport. Messrs. Lowery and Burleigh have found some good colonies in Nueces Bay in recent years, but parts of this bay have been devastated since the war.

As a matter of fact an ample number of specimens of *sennetti* exist in collections. The virtual absence of a dark phase cannot be fairly ascribed to the accident of inadequate study of a little-known subspecies. The interesting biological possibility arises that the dark phase of *sennetti* is dying out.

Mr. Lowery sends two particular specimens from Nueces Bay which prove once more the extreme variability of any Seaside Sparrow (LSU no. 1671 and Burleigh field no. 6489). Both have a pronounced yellowish cast above and below, the latter especially having so much dull yellow on the side of the face that it suggests a Sharp-tailed Sparrow in this respect.

NOTES ON OTHER SUBSPECIES

The northern Seaside Sparrow, *maritima*, is really a northward extension of the light phase of *macgillivraii*. I agree with Tomkins that normal *maritima* cannot be distinguished from "intermediate" *macgillivraii*; I am unable to find a reliable criterion. Extreme olive specimens of *maritima* cannot be distinguished from "*waynei*."

Tomkins' fine paper⁷ on *macgillivraii* needs little comment here. The name applies to the dark phase; *waynei* Oberholser is nothing but the light phase. Both are common, and both along with intermediate birds breed in North Carolina and Amelia Island, northeast Florida. While I note with great interest Tomkins' remark that only the light phase (*waynei*) breeds in Georgia, Outram Bangs collected worn breeding birds in the dark phase at St. Marys, Georgia, in 1877 and 1896. Possibly we have another case here of the local dying out of the dark phase. I note that the A. O. U. Check-List Committee does not add *waynei* to the list in the Supplement in the July issue of *The Auk*, in my judgment correctly.

A. m. pelonota Oberholser is a small, local population of *macgillivraii* in the intermediate phase from Matanzas Inlet and New Smyrna. Its chief character is its smaller size. It is added to the list in the recent Check-List Supplement, but I doubt if its range should be extended north to the northern end of Amelia Island.

A. m. peninsulae (Allen) possibly does not exist in two phases, in this respect resembling *maritima*. Individual variation approximating *juncicola* is to be expected, but Howell's records of *juncicola* and *macgillivraii* from the range of *peninsulae* may represent the rare dark phase; also Burleigh no. 5813 from Port Richey, now in the Louisiana State University Museum of Zoology. The specimen from Tarpon Springs identified by Oberholser and recorded by Howell as *fisheri* has been reexamined. It was originally labeled by Griscom and Nichols as *howelli* ± *fisheri*, nearer the former. In no case can it be called *fisheri*; while devoid of black streaking above, it is *very brown* rather than gray or olive, and consequently does not match the light phase of *fisheri*; below it resembles *peninsulae* in the diffuse streaking, but has a bright buff breast band like *fisheri*. It is consequently an anomalous and aberrant variation, which cannot be referred to any subspecies.

⁷ *Loc. cit.*

A. m. juncicola Griscom and Nichols is a great development of the black phase, with diffuse blackish streaking below, and only a faint tinge of buff on the chest. In extreme specimens it is almost as black above as *nigrescens*. No light phase is reported, but I am confident it exists. On December 31, 1915, I shot a bird at East Goose Creek, Wakulla County, Florida, which Griscom and Nichols regarded as intermediate, nearer *howelli*. This specimen and another recorded by Howell as *howelli* may prove to represent the light phase.

A real lacuna in our knowledge of Seaside Sparrows exists in northwestern Florida between Pensacola and Wakulla County. Proceeding westward from Wakulla County, the coast of Franklin County from St. Teresa and Carrabelle to the eastern end of Apalachicola Bay is a steep white sandy beach devoid of marshes and Seaside Sparrows. A colony on the bay side of St. Vincent's Island (west side of Apalachicola Bay) is reported by Howell as *juncicola*. Still further west in St. Andrew's Bay, only 3 Seaside Sparrows have been collected. Two are recorded by Howell as *juncicola*, one as *howelli*; these identifications must be regarded as provisional. Still further west is the much larger Choctawhatchee Bay, which is apparently unvisited. If colonies are permanently present in this area, their exact identification remains to be determined. If Seaside Sparrows are normally absent, this is the best section on the Gulf coast for continuous field work to determine the presence or absence of some type of vagrant migration.

A. nigrescens (Ridgway) is a small local population in an extreme development of the dark phase. It possesses two absolute characters in the heavy black streaking on a white ground below and the loss of the yellow postocular stripe. It has, consequently, real claims to specific distinctness. A modern school of thought would unhesitatingly reduce it to subspecific rank, on the indisputable grounds that the differences between any Seaside and any Sharp-tailed Sparrow are the real specific criteria with which Nature has supplied us.

A. mirabilis Howell, while a most interesting and surprising discovery, has no real claims to specific distinctness, certainly none of equal weight with those of *nigrescens*. It is a small, local population in an extreme development of the light phase. While it is the greenest of Seaside Sparrows, duller specimens cannot be distinguished above from the most olive *sennetti*. It has the most yellow around the eye of any Seaside Sparrow, with the exception of the aberrant specimens of *sennetti* discussed above.

It is lighter below than any race of *maritima*. These are all differences of degree, none are absolute. Indeed it could be argued that the whiter under parts of *mirabilis* deprive *nigrescens* of one of the latter's absolute characters!

HABITAT NOTES

In the original Griscom and Nichols review of 1920, attention was timidly drawn to a possible correlation between the density of the habitat and the coloration of the various subspecies. A quarter of a century of botanizing in the marshes throughout the range of the species confirms my belief that there is something in it, though the proposition can scarcely be proved to persons not thoroughly familiar at first hand with our salt marsh floras. Roughly speaking the facts may be summarized as follows:

1. The densest and tallest salt marsh vegetation occurs in the south Atlantic States and the Gulf coast, and we find in them the subspecies in which a dark phase is abundant or predominates.

2. The densest marsh vegetation in North America is the great solid stands of *Juncus roemerianus* on the Gulf coast of Florida, where we find the very black *juncicola*. Curiously enough, the two birds recorded as *howelli*, possibly representing the light phase of *juncicola*, were shot in the Iva bushes on an outer beach island.

3. The race *peninsulae* lives in exactly the same association further south. If the majority of specimens represent the light phase, as I believe, it is the darkest of the subspecies in regard to this phase.

4. Howell has recorded the fact that the type series of *howelli*, thought of as a lighter bird in the pale phase, were found in the Iva bushes on an outer beach island, as every one surely knows, a much more open, less shaded environment.

5. No one can question the fact that the paler northern *maritima* lives in a less dense and lower type of salt marsh, and shows a marked preference for the Iva bushes on the borders of the creeks.

6. The paler *pelonota* lives in low patches of glasswort (*Salicornia*) among stunted mangroves. It does not experience really dense shade from one decade to the next.

7. Two extreme developments of the light phase, *mirabilis* and *sennetti*, live in much poorer cover, exposed to sunlight, and the latter in a particu-

larly hot and arid climate. The Cape Sable Seaside Sparrow lives on a salt prairie in patches of low *Spartina patens*. The vegetation of the salt marshes of Texas is low, scanty and open; patches of grass and sedges that are two feet high of any extent or area are few and far between.

8. The outstanding exception is the very black *nigrescens*. It is true that I have found it common in great patches of reeds and sedge eight feet high on Merritt's Island, and it occurs in dense stools of *Juncus*. But it has also been found in open tracts of *Spartina patens* and *Salicornia*.

SUMMARY

1. All Seaside Sparrows are proved to be resident or at least partially resident in their respective ranges, even the northern *maritima* wintering as far north as Massachusetts. They are casual away from salt water.

2. The amount of individual variation in most subspecies is simply extraordinary, and its degree depends entirely on how many specimens have been collected, and how large the series amassed for study.

3. The view is urged that long overland flights are most improbable, and that even coastal migrations of any distance are most unlikely in any of the southern resident subspecies.

4. The practice of recording aberrant and non-typical specimens as vagrants of other subspecies, on the ground that they are "nearer" the other subspecies, is to be deplored as biologically unsound. It is suggested that in so variable a group all such records be expunged, until validated by the recovery of banded individuals.

5. The subspecies *fisheri* proves to be the most variable of all Seaside Sparrows. The original diagnosis was based on the dark phase; a light phase is common, and intermediate birds exist. It ranges from northeastern Texas to Pensacola, Florida.

6. The subspecies *howelli* is regarded as the light phase of *fisheri* and is reduced to synonymy.

7. The subspecies *pelonota* is regarded as a barely recognizable minor population in northeast Florida.

8. The subspecies *macgillivraii* does not require a new diagnosis, but *waynei* Oberholser is invalid, being nothing but the light phase. This

race breeds commonly in southeastern North Carolina⁸. The conclusions of Tomkins are accepted.

9. The northern subspecies *maritima* requires a new diagnosis, as it has previously been compared only with the dark phase of *macgillivraii*. About 97 per cent of the individuals cannot be distinguished from the intermediate phase of *macgillivraii*; 3 per cent resembled the greener light phase. It has no characters of its own, and is consequently the poorest race in the usual systematic sense. It should, however, be recognized on the following counts: (1) the black phase is absent; (2) the "intermediate" phase of *macgillivraii* is the least common, and the light phase is common, instead of very rare. Moreover *maritima* has an isolated breeding range south to Cape Charles, Virginia; no Seaside Sparrow breeds from Back Bay to southern North Carolina. Final proof of the migration of *maritima* south into the range of *macgillivraii* will depend upon banding. No reliable systematic criterion can be found.

10. The characters of all the remaining Seaside Sparrows can be expressed in terms of the dominance or predominance of one phase or the other of the ancestral sparrow. The most extreme variations are local populations on the periphery of the range, e. g., *nigrescens*, *mirabilis*, and *sennetti*.

11. The maintenance of *nigrescens* as a distinct species can be defended, as it possesses certain "absolute" characters; reasons are given for reducing *mirabilis* to a subspecies of *maritima*.

12. Reasons are given for the possible or probable existence of a dark phase of *peninsulae* and *sennetti*, and a light phase of *juncicola*. Nothing is to be gained by the further shooting of odd-looking birds in winter. Proof will depend upon a competent search for and the collecting of breeding birds, before they become too worn.

13. A gap in our knowledge of Seaside Sparrows exists on the Gulf coast of western Florida.

14. Finally, resident ornithologists are urged to copy the field studies of Tomkins in South Carolina and Georgia. To what degree do other southern subspecies migrate? Over a period of years is there any fluctuation in numbers or local occurrence of one phase or the other?

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⁸ Burleigh, *The Auk*, 54, 1937: 460.