

County, to a cranberry bog in Huron County. I have found this species on the borders of wet prairies with Henslow's Sparrows, in hay fields and meadows with Grasshopper Sparrows, and in clover fields with the Dickcissel. The only requisite seems to be the presence of water nearby, whether it be a narrow drainage ditch or Lake Erie itself. In fact there is a tendency to group in large numbers along the lake. This is brought out by Mr. Thomas' observations at Camp Perry, which is on the lake, and my own on Maumee Bay.

It would, of course, be foolish to attempt to draw any conclusions from the records of three years but I am presenting these facts for the consideration of other observers. Perhaps this species has always been present through the state, but I cannot believe that such pioneer ornithologists as Dr. Kirtland and Dr. Wheaton, and, in later years, Dr. Lynds Jones and Mr. W. L. Dawson could have so consistently and unanimously overlooked a bird as comparatively easy to identify as the Savannah Sparrow.

TOLEDO, OHIO.

NESTING HABITS OF THE SEASIDE SPARROWS IN FLORIDA

BY DONALD J. NICHOLSON

The Seaside Sparrows are well represented among the extensive coastal marshes on the Florida Peninsula, which, taking all the curves and indentations, is about 3,000 miles of coast line. For miles along the Atlantic side, the Halifax and Indian Rivers parallel the ocean with a narrow strip of land between. In the river at places there are many islands and marshes with a network of creeks and sloughs running among them. Most of the marshes have heavy, extensive growths of *Salicornia*, or pickleweed, marsh grass, salt grass, and a sharp pointed grass or reed—a species of *Juncus*. In spots on Merritt's Island where the Dusky Seaside Sparrow breeds, and at Cape Sable where the Cape Sable Sparrow nests, there are large patches of bunch or switch-grass. Also among the *Salicornia* marshes small mangroves are found and are sometimes used for nest-sites by the Macgillivray's Sparrow. Among the bayous and mouths of the various rivers that flow into the Gulf, are favorite habitats of the Seasides of the West coast.

Florida has six breeding species and subspecies of Seaside Sparrows. The Macgillivray's and Dusky, both found breeding only on the Atlantic side; the Cape Sable Sparrow at the extreme southern end of the mainland at Cape Sable; and Scott's, Griscom's, and Howell's Seaside which range from Clear Water to Tarpon Springs north to the Alabama line.

MACGILLIVRAY'S SEASIDE SPARROW

It is not supposed that the Macgillivray's breed south of Matanzas Inlet, but on June 22, 1925, I found quite a large colony breeding in the salt marshes on the Indian River, opposite New Smyrna, Volusia County, Florida, which is the southernmost record known. Scattered colonies are found from New Smyrna north almost to Daytona, according to A. H. Howell, of the U. S. Biological Survey.

According to Arthur T. Wayne (*Auk*, Vol. XLIV, April, 1927, page 254) Pea Island, North Carolina, is the most southern breeding record, and it breeds from that point to the southern breeding range of *P. m. maritimus* to the north. He also states that there is another race entirely different from the *macgillivrayi*, which he discovered upon an examination of a series of skins, nests, and eggs taken at Cabbage Island, Warsaw Sound, near Savannah, Georgia, by Gilbert R. Rosignol, Jr., years ago. These Cabbage Island specimens are identical in color and size, with the Seasides which were referred to as *macgillivrayi* by Alexander Sprunt, Jr., in his paper (*Auk*, Vol. XLIII, October, 1926, pages 549-550) according to Mr. Wayne's findings.

Specimens of a number of the Seaside Sparrows which breed at New Smyrna, Florida, were secured by A. H. Howell, and pronounced in Washington as true *macgillivrayi*. It seems strange that the breeding colonies of Matanzas Inlet and New Smyrna, which are pronounced Macgillivray's should be nesting so far from others of this form; a jump from Pea Island, North Carolina, to Matanzas, Florida! Might it be possible that the members of the Biological Survey in Washington were mistaken? Mr. Wayne is now working on this puzzling distribution and I hope that he will soon publish his solution.

It was not known that the Macgillivray bred farther south than Matanzas Inlet region, and no Seasides were known to breed any farther south than Merritt's Island, the home of the Dusky, which is found in considerable numbers in suitable localities along the river's edge on the Island. I discovered a species of Seaside Sparrows nesting in the vast salt marshes on the Indian River opposite New Smyrna, on June 25, 1922. At the time, and for two years afterwards, I felt sure that I had found the Dusky; still there was a doubt in my mind, and this was settled by my friend, A. H. Howell, who secured specimens which he sent to Washington for identification, and which were found to be Macgillivray's.

The strange part about the colony is its *isolation* from others of this species. The bird is only found embracing a range of possibly ten miles in length, and none are again found until you reach Matanzas Inlet, a distance of about forty miles; with much of this inter-

vening region apparently much the same, one would naturally expect to find them. It would not be easy to overlook them if they were here, as they pour forth their jerky little songs quite regularly, frequently rising in the air while singing, to a height of thirty feet above the marshes.

The nest found on June 25, 1922, contained four eggs well incubated. It was built in the lower limbs of a small mangrove bush growing among tall marsh grass, and situated a few yards from the river. The nest was placed in the fork of a branch, with the bottom hanging in mid-air, and composed of dead marsh grass lined with



FIGURE 4. Nest and eggs of Macgillivray's Seaside Sparrow, Halifax River, near New Smyrna, Volusia County, Florida.

finer grass and deeply cupped. Where the bush stood the tide covered the marsh for a depth of several inches. The bird was not seen to flush, but was seen scolding with its mate a few yards away. No other occupied nests were discovered, but two other old nests were found in dense *Salicornia* a few inches from the ground.

At this point the river is very wide, perhaps three-quarters of a mile. There are many islands, coursed with shallow sloughs and mud flats exposed at low tide. Some are covered with dense growths of *Salicornia* mixed with marsh grass and fringed with mangrove trees and here and there among the open spots are small mangroves several feet high surrounded by the undergrowth. In these open spaces the Macgillivray's nested in colonized form, and were quite numerous. The birds would rise every few feet, and drop into the grass again.

Some took quite long flights of two hundred yards before alighting. Even when watched from concealment these long flights took place.

One morning just after sunrise I arrived on the scene and they were in full song all about me. Some perched unseen in the tops of the *Salicornia* or grass, and often in a mangrove bush. Occasionally, a bubbling male would rise on fluttering wings, singing as he flew upward and, in his descent, alight in the grass and resume the song. I have watched a male change his singing station a number of times within half an hour, flying from twenty to over one hundred feet, and continue his buzzing song. Many males sing at the same time, and this continues all day, until after sundown, but there are periods during the heat of the day when all are silent. These lapses are short, and in about forty-five minutes some smitten male will burst out in song and the others will follow.

It was not until April 20, 1925, that I visited this colony again, and fortunately I struck them at the beginning of the season, and full sets were in order. I took five complete sets of three eggs each, and the following day took another set of three eggs, and found an incomplete set of two eggs. Six of these were built in marsh grass or *Salicornia* from ten to twenty-four inches from the ground. The other nest was built $2\frac{1}{2}$ feet up in a young mangrove. All nests were extremely well concealed, and it was necessary to part the grass in most cases to find them. I watched the bird from a distance fly to the mangrove nest and flushed her at a few feet. But in most cases it is pure perseverance that rewards one. Seldom a bird is flushed off the nest. They never drop to the ground and run, but always fly directly from the nest. All seven nests were built of the same material—dead marsh grass, lined with finer grass, neatly cupped, but varied in size considerably. Later in June I discovered another nest with four naked young, in a small mangrove bush, making three found in bushes.

On April 25, 1926, in company with William Leon Dawson, I visited the same colony and found them a trifle earlier. One nest contained a single fresh egg, another three young in pin feathers, and two other nests containing three incubated eggs each. All four were in the *Salicornia* or grass. Out of a total of thirteen nests examined up to this time only three nests held four eggs or young; but in the season of 1927, four nests with four eggs or young were found, also two nests with three eggs and a complete set of two eggs badly incubated.

Numbers of times I have found one or two eggs, or a nest ready for eggs, and left for complete sets, only to return to find them in-

variably destroyed; and the only logical conclusion is that the sparrows destroy the nests themselves, as it could not just happen in so many instances. In no case did I ever find a Macgillivray nest resting on the ground, and in the greatest majority of cases the nests were open-topped and not arched; but some of the nests found in marsh grass had a canopy or arch built of green or dead grass, or both, bent over and woven in sides of nest. In numerous nests discovered never more than four eggs or young have been noted, with three eggs in majority. Only four nests have been found in small mangroves, and all others in grass or *Salicornia*.

DUSKY SEASIDE SPARROW

I had never seen a Dusky until May 2, 1926, when I was on a trip accompanied by Mr. Dawson on Merritt's Island, about fourteen miles North of Cocoa, Brevard County, Florida. The nature of the country is somewhat different from that around New Smyrna. The territory where a nice colony was found bordered the Indian River, and was covered with dense patches of *Salicornia* close to the water extending back many yards and beyond this in the drier parts, were patches of switch grass, a rush-like species of *Juncas*; and here and there in spots the thick luxuriant salt-grass grew. The sparrows nested as readily in the dry places as the moist ground, and if anything, preferred to nest on dry ground. This sort of country stretched for miles, as far as the eye could reach along the river, and through this ran sloughs, creeks, and bayous.

Soon as we reached this place we saw several of the birds flying about, and their songs appeared to us a little different from those of the Macgillivray's, and the two songs would have to be heard together to notice any appreciable difference. The best description of the song that I can give is the following: It is preceded by two metallic notes in the same pitch resembling *Dick, Dick*, and followed by a buzzing which is hard to describe. Different males have different songs, and some have four or five different songs. Another phase of the song is a series of bubbling, zig-zag notes similar in character to the song of the marsh wrens. So similar are the songs of the Macgillivray and Dusky Seasides, that we could not tell which bird it was until we had observed the Dusky at close range, and found them decidedly darker than the birds of the New Smyrna district.

Dawson was the first to discover a nest with four young in the pinfeather stage, by seeing the parent fly directly to the nest. It was built in a lone bunch of switch-grass, ten inches above the ground, and extremely well concealed. The parents did not scold as we ex-

aminated the nest. This was the first nest of this rare species that I had ever seen. Not to be outdone by a brother ornithologist, in a strange country, I soon located a second nest with four young about the same age, and in a similar situation.

The birds did not come near and were not seen. These two nests were the only ones found and we felt well rewarded in our first attempt. I did, however, find a young bird just out of the nest, by watching the parent patiently. The parent held in her bill a large green worm fully an inch long, and fed it to the young, after holding it about ten minutes scolding, and too cautious to reveal her mission. I caught the young after a lively chase, and after securing several excellent pictures, set it free.

It was quite evident that the first nesting was about over, as no new nests were seen. It is apparent that the Dusky and the Macgillivray begin nesting about the same time, and fresh eggs may be expected by April 20.

I figured that the birds would rear another brood in about six weeks and from the following account will be seen how well my surmise was calculated.

On June 20, 1926, I again visited this interesting colony, and found the marshes fairly sizzling with their peculiar songs. Birds were heard in every direction, from the grass-clumps, *Salicornia*, rushes, and salt-grass and very infrequently, a male would rise in full song to a height of twenty to forty feet, dropping back to the grass on quivering wings.

After an all-day search in the scorching hot sun, looking in every possible place for nests, I succeeded in finding two sets of four eggs and a nest with three eggs. The first one was found by raking the short dead salt-grass with the toe of my shoe, and came near upsetting the first nest with eggs that I had ever found. The bottom of the nest did not quite touch the ground, but very close to it.

The next nest was built in the dead top of living *Salicornia* twelve inches above the ground, and the bird flushed at eight feet alighting in the grass ten feet away. She soon flew some distance away. The third nest was well concealed in a slim bunch of switch-grass (only about ten inches wide) out in the open. It contained three fresh eggs. The male scolded fifty feet away.

Desiring a nice series of the eggs of this little known species I again returned on June 27, 1926, and was well rewarded. Upon this



FIGURE 5. Typical nesting grounds of the Dusky Seaside Sparrow bordering the Indian River on Merritt's Island, Brevard County, Florida.



FIGURE 6. Nest and four eggs in Salicornia of Dusky Seaside Sparrow on Merritt's Island, Brevard County, Florida.

date the second broods were in full blast, and I was fortunate enough to locate fourteen nests, summarized as follows:

- One nest with two eggs.
- One nest with one egg.
- Two nests ready for eggs.
- One nest with three small young and one egg.
- One nest with one young and two eggs.
- Six nests with four eggs each.
- Two nests with three eggs each.

None of these were found upon the ground, and the average height above the ground was twelve or fourteen inches, except one nest found on June 20, which was within two inches of the ground. I am of the opinion that the birds of this particular colony *do not* build upon the ground. These fourteen nests were built in either dense growth of *Salicornia*, in isolated bunches of switch-grass, or in patches of *Juncus*.

In the switch-grass were found the cleverest and most artful nests which were marvels from a standpoint of concealment. The nests were constructed of the same grass, and attached to the stems. When standing within a few feet or even directly over the nest, some of these nests could not be detected. A neat little trick, practiced in a number of instances, was the habit of scattering a few wisps of grass *carelessly* but directly, over the nest proper, thus shielding it from view from above and giving it the decided effect of an incompleting nest, so deftly and craftily was this done. Looking directly down upon such a protected nest I was on the point of passing on, but by removing the obstruction four speckled eggs were revealed. This custom, perhaps, serves a two fold purpose; first for protection against marauders, and to shield it from the sun. On the same day I came upon a nest that I had found, on a previous trip, in the process of construction, and upon returning to it, found it apparently in the same condition as when first discovered; but remembering the trick I lifted the grass and there were four fresh eggs.

The tendency to build arched nests seems stronger in the Dusky than in Macgillivray's, and a greater number of arched nests have been found. The most beautiful nests of the Dusky are built in burned-over clumps of switch-grass where the green fresh grass has grown about a foot high. In such sites the green grass is bent over to form a canopy with the entrance over the rim of the nest. These are ex-



FIGURE 7. Nest and four eggs of the Dusky Seaside Sparrow in rushes on Merritt's Island, Brevard County, Florida.



FIGURE 8. Nest and four young of Dusky Seaside Sparrow in switch-grass on Merritt's Island, Brevard County, Florida.

tremely hard to find. I once found a nest built in a red-wing's nest, which the sparrows had arched.

All nests built in *Salicornia* or switch-grass were made of grass, deeply cupped, and lined with finer grasses. Nests found in rushes were made of dead pieces of this coarse round-stemmed grass, lined with fine grass.

The breeding season continues for about five months, beginning in April and lasting until early August. On July 13, while searching for Black Rails I discovered two nests of this sparrow each with two fresh eggs. And on July 20 a few males were heard singing.

The eggs of the Macgillivray's and Dusky Seaside Sparrows are quite similar in size and shape. Most specimens are elongated with blunt ends, while some sets are more or less rounded. The eggs are more richly marked in the Dusky, with bolder markings of rich chestnut, and are often capped at the large end. Specimens of both species are as a rule finely sprinkled with light browns, greys, and lavender, and some sets are indistinguishable. The sets of larger numbers are in favor of the Dusky, and I believe Oscar Baynard, who found the type set, reported sets of five eggs.

The behavior of the two species around the nests is quite similar but I believe the Dusky travels farther for food, and was seen to make quite extended flights.

There is a species of ant that builds its nest in the grass, and after several heavy rains I found that it had built nests in the same grass clumps with the sparrows in three instances. The birds were compelled to desert their eggs. The nests were alive with ants, though the eggs were unharmed. Rats and Crows must play a part in the destruction of these eggs, as I found several destroyed, with broken egg-shell in the nest. It is my belief that the sparrows also destroy their own eggs, for I have four or five times found nests with one or two eggs and upon returning always found them broken up.

CAPE SABLE SEASIDE SPARROW

The Cape Sable Sparrow was only recently discovered by A. H. Howell, of the U. S. Biological Survey, while working on his latest book, "The Birds of Florida." It is entirely different from any other Seaside Sparrow and is considered a full species. The type specimen was taken at Cape Sable, Munroe County, Florida, and is extremely local in distribution, with a total range of about nine miles long and a mile wide, and is found nowhere else.

H. H. Bailey, of Miami, was the first man to discover the nest of this very rare bird. His nest contained three eggs, taken in the

early part of May. No other nests had been found until 1926, when Edw. J. Court, on his trip to southern Florida, succeeded in finding a nest with eggs, which was the second in existence to my knowledge.

While on an expedition to the southern part of Florida with Wm. Leon Dawson in April, 1927, I was fortunate in finding three occupied nests, and collected a fine set of four eggs, which I have in my collection, making the third set known to science.

As nothing has ever been written about the habits of this new sparrow it might be well to relate my experience in detail.

The topography of the Cape Sable region is peculiarly different from the other parts of Florida, and many strange tropical trees abound in the big black mangrove swamps that are not found elsewhere in the State. In spots where one would expect to find wet low lands, a kind of desert vegetation abounds, such as cactus, century plants, and thorny trees and vines. Along the shore line of the Bay of Florida, is a fringe of mangrove trees, and just back of this is the peculiar vegetation spoken of above. Beyond this is a low, flat savanna covered with extensive patches of switch-grass, and, in places, acres of salt-grass, mingled with brackish shallow ponds. On the other side of the savanna are dotted clumps of black mangrove, cabbage palms, and other varieties of trees; and beyond is the heavy dense mangrove swamp. Back of the windbreak and in the savannas is where these sparrows make their home, shielded from the strong winds that sweep over the Gulf. In September, 1926, this entire region was in the throes of the most terrific hurricane Florida ever experienced, and the water washed over their haunts six and eight feet high. Where they went and how they survived through the storm that lasted three days I do not know.

The country is still about as wild as ever, and five families would cover an area of twenty miles.

Dawson, and two other members of the party with myself, arrived at the Cape on April 9, 1927. That night sleep was almost out of the question, for the sandflies and vicious, bloodthirsty mosquitoes came near killing us. Three nights were spent in such misery, until one of the natives told us to use a deserted house and build a smudge of black mangrove wood. This we did, and slept in comfort. It had not rained in four to five months, and the water supply came from rain water housed in open cisterns filled with bugs and flies. We did not care to drink this filth and were obliged to go 150 miles for twenty gallons of water. This, after we had traveled 315 miles to get to the territory.

On April 10 I started out for the sparrows not knowing exactly where to find them, and was following directions, given by my friend Howell, which are always hard to fathom in strange country. I soon sighted a scope of country that looked promising, but had to swim a canal with my clothes on to reach it. In twenty minutes I had sighted my first Cape Sable Sparrow, which rose and flew hurriedly away and lit in the grass. Soon another flushed and I could hear their weak calls among the grass. Coming to several scattered bunches of switch-grass near a shallow pond, I thought I would give it a search and in a few minutes was staring down upon my first set of four eggs of this very rare sparrow.

There was no bird in sight nor did I see one leave the nest, and there was no indication that sparrows owned this nest, so quiet and indifferent were the birds. I left the nest for fifteen minutes and returning flushed her off the nest at ten feet. She flew directly from the nest and perched on top of the grass fifteen feet away, giving a weak chirp and no other sound. Soon she disappeared seeming indifferent to the fate of her nest.

This nest was situated sixteen inches above the ground in switch-grass, about midway; and made of dead grass lined with finer blades of grass neatly cupped. Over the top of nest enough grass was placed to conceal it, though it could not be strictly called an arched nest. It gave the impression of a nest just begun. A clever stunt much used by the Dusky Sparrow. No more nests were found that day, and the number of birds seen was far less than the birds found in the colonies of Macgillivray's and Dusky Seaside.

Again on April 13, 1927, I returned with Dawson and the other two parties, determined to find more nests. I found three nests, while the others were not so fortunate and had to content themselves with examining mine. The first nest was built in the short salt-grass several inches above the ground, built of the same material, lined with fine grasses. It was only found by accidentally parting the grass and contained three young about two days old. The parents were quite solicitous, scolding with a loud chipping note, accompanied by jerks of the tail. The two preceding species also had this habit. A second nest was located by observing the parent fly into a dense clump of switch-grass three different times. Twice I searched well but could not find a nest, but the third time was rewarded by finding the nest with three young of the same age as found in the other nest. A deserted nest that had been occupied earlier in the season was found several inches above the ground in dense patch of salt-grass.

As I was alone the day I found the set of eggs and could not swim and carry my Graflex, and not daring to leave the set for fear of destruction, I did not secure any pictures.

On May 2 or 3, 1928, while searching for the eggs of the Swallow-tailed Kite, I saw and heard a male Cape Sable Sparrow in full song about forty miles north of the supposed limit of its range. The exact location was six miles northwest of a small village called Pinecrest, in Munroe County, Florida. The bird was seen among the tall bunches of switch grass, on a savanna surrounded by pine forests, possibly eight or ten miles from the Gulf. Ordinarily, water stands on this open spot, but the severe drouth in Florida for the last two years caused this area to become dry and dusty. This bird was not secured, and of course identification was not positively established, but it could hardly have been any other species and was evidently breeding. Further investigation may reveal a wider range for this species than is now known.

The nesting habits and customs are quite like the preceding species, and the eggs were like those of other Seasides. The songs seemed to me weaker, and slightly different in tone but uttered in the same characteristic fashion. Flight songs were also noted.

This sparrow nests much earlier than any other Seaside Sparrow as several fledglings were seen on the wing on April 13. These young must have come from nests built about March 15. I might say in conclusion that nests of these three species are among the most difficult to find, so well are they hidden.

The three subspecies of Seasides inhabiting the Gulf Coast I have never seen, and know nothing of their habits.

ORLANDO, FLORIDA.