

## HURRICANES AND SUBSPECIFIC VARIATION

BY IVAN R. TOMKINS

Whether we incline to the systematist who lists all manner of subspecific differences and is willing to go to the effort necessary to distinguish them, and thereby find out some of the multitude of facts to be revealed by this system, or conform to the easier and somewhat less technical school which evades such effort, the fact remains that considerable variation does occur, whether recognized and named or not, and any light on how such variations come about is of value.

Variation has often followed isolation by strictly geographic barriers, as when an island of inhabitable territory is entirely shut off by unusable terrain. These barriers are often such as to affect one species only, and a somewhat similar species, perhaps of the same genus, may thrive over a much wider range. But the geographical factor in variation has been well covered before, and is not within the scope of this paper. It is only mentioned as an additional factor, assisting variants to thrive and become stable.

The coasts of the south Atlantic and Gulf states, have several races of the Seaside Sparrow (*Ammospiza maritima*) breeding within a narrow range of altitude, which may illustrate the theory of the effect of hurricanes as a factor working toward subspecific differentiation. The Seaside Sparrow breeds in the low marshes on the salt water, and is a weak flier. It also appears to return approximately to the same place each year to nest.

It is always hard to get far enough away from evolutionary changes to view them in proper perspective, but if the influence of the tropical storm is as great as it now seems, important changes in a species may occur within the limits of a man's lifetime. The periods of expansion and recession of any species are all a part of such changes, and these periods may present to us at times a fairly constant ebb and flow, but are always subject to being entirely thrown out of balance in either direction (towards scarcity or abundance) by certain violent events. Every serious student knows that no species is ever entirely stable, either as to number and range, or as to physical characteristics.

The occasional great storms that develop in the West Indies, and sweep over the marshes of the south Atlantic and the Gulf coasts, covering the breeding grounds of the Seaside Sparrows many feet deep with water, and with attending gales of often one hundred miles an hour, must wipe out much of the bird life in the marshes, particu-

larly the weak fliers, such as the sparrows, the long-billed marsh wrens, and the clapper rails.

What a part these elements play in the decimation of certain forms, and the consequent evolution of new ones cannot now be properly valued, and in fact only dimly glimpsed. It is obvious that if all but a single family group be destroyed, the new inhabitants will have inherited the characteristics, perhaps heightened by inbreeding, of that group, rather than the more average characters of the original widely spread stock.

Wayne, a few miles north of Charleston, S. C., took a few specimens as dark as the race *A. m. fisheri*, which breeds on the coast of Louisiana, and approaches the very dark Dusky Seaside Sparrow (*Ammodramus nigrescens*) from the east coast of Florida. It is now believed that these birds taken by Wayne were aberrant individuals which bred farther north, perhaps from a small family group of similar color. If members of such a group were the only survivors after a severe storm, a dark colored race might result after sufficient time to allow the natural expansion and stabilization.

Again, it is not entirely necessary that a storm should occur in the nesting season to affect such a change, and the breeding stock might be destroyed in fall or winter, several hundred miles from the breeding territory, provided that the birds from this territory should all winter together in one locality. Certain species do just this, and are as selective of the wintering as of the breeding grounds. In the Wayne collection, now in the Charleston Museum, are twelve skins of the Sharp-tailed Sparrow (*Ammodramus caudacuta caudacuta*), that are albinistic. For twenty-three winters he found birds of this same coloration in this same field. Very likely these partly white birds were from one family group that nested in one fairly exact area, and migrated to this same field each year.

The severity of the tropical hurricane is well known. The great storm of August 27-28, 1893, was credited by Wayne and others with destroying much of the bird life in unprotected places. Near Savannah during this storm, large schooners were left high up on the marsh islands, dredges floated across the Tybee Railroad tracks (which are about fourteen feet above mean low water), and at the Quarantine Station water covered the floors of some of the quarters, which were at least twenty feet above low water. These storms often cut a swath half a state wide across the coastal marshes, commonly in Florida though less often in the more northerly states.

Prior to the 1893 storm, little data was gathered and preserved that would now be of much use in determining just what happened to any one species. About the only usable material would be records of breeding abundance and skins of breeding birds. Such material as can be found in the old publications, as contrasted to present knowledge of the breeding range of the Seaside Sparrows of the Georgia and South Carolina coasts, seems to indicate that most of the breeding birds were destroyed, and are now in a period of much greater expansion than at any time within the memory of living bird students.

It is entirely possible that Macgillivray's Seaside Sparrow (*Amospiza m. macgillivrayi*), which was not recognized for so many years, has a somewhat different breeding range, than when described by Audubon, in 1834.

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#### SOME OBSERVATIONS ON BIRDS IN SOUTHEASTERN OKLAHOMA\*

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During the greater part of June, July, and August of 1934, the authors were with the University of Oklahoma Biological Survey Field-Party studying the heavily timbered regions of LeFlore and McCurtain Counties in Southeastern Oklahoma. It was during this time that the following observations were made on the Pileated Woodpecker, *Geophloeus pileatus pileatus*; the Road-Runner, *Geococcyx californicus*; and the Little Blue Heron, *Florida caerulea caerulea*.

We found the Pileated Woodpecker to be rather rare in the central portion of LeFlore County, although several were seen six miles west of Heavener along the Poteau River and a few others fifteen miles southeast of Heavener along Black Fork Creek in the vicinity of Zoe. Farther south, in the vicinity of Smithville, McCurtain County, they were more numerous and sixty miles south of Smithville on Mountain Fork River they were fairly abundant. None of these birds were seen more than one-half mile from the streams, and the greater number of them were observed along the water-courses.

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