

Tiny Technology Helps Track a Tiny Bird

By Susan Wojtowicz

Technology is amazing. In the Northeast Region, technological advances are allowing the U.S. Fish and Wildlife Service to learn more about animal behavior to better protect animals. One example is nano-technology and the saltmarsh sparrow.

These are tough times for the tiny migratory bird. Its only homes, salt marshes along the Atlantic Coast, are increasingly scarce because of development and rising sea levels. With diminishing habitat, saltmarsh sparrow populations have been decreasing in recent decades. To determine how best to help the sparrows, researchers need to understand how the birds use the marshes upon which they rely. Unfortunately, this information is limited.

What we do know is that the sparrows migrate along the Atlantic Coast, from Maine to Florida, stopping almost exclusively in saltmarshes. They forage for food on the ground and while climbing in grasses – eating insects, small snails, spiders, marine worms and other invertebrates. Unlike many songbirds, males do not have breeding territories; instead, they roam the marshes looking for females, who typically have one brood of two to six hatchlings per year.

Beyond that, many questions are unanswered.

“Very little is known about this species’ migratory pathways or migratory behavior, making conservation of the right habitats difficult,” says Kate O’Brien, a refuge biologist working to conserve saltmarsh sparrow habitat at Rachel Carson National Wildlife Refuge in Maine. “Because we are responsible for their survival during all phases of their life cycle, it is important for us to understand more about their behavior, how they are using the marshes, and which locations are most important for their survival.”

Because a saltmarsh sparrow weighs about as much as eight pennies, tracking individual birds has been difficult. However, researchers from several Northeastern refuges and partners are using tiny technology to find out what these birds are up to.

The Motus tracking system uses nano-tags, extremely lightweight miniature radio transmitters. All nano-tags transmit at the same frequency, but each tag has an identifiable pulse. A network of towers along the Atlantic Coast picks up the pulse when a tagged bird flies within 12 kilometers of a tower.

Saltmarsh sparrow project partners include Rachel Carson, Parker River and Stewart B. McKinney Refuges, the Rhode Island Refuge Complex, the universities of New Hampshire and Connecticut, and the Saltmarsh Habitat and Avian Research Program.

What does this mean for the saltmarsh sparrow?

The Service is not sure yet. Data are just beginning to come in. However, scientists are already discovering amazing things. For example, preliminary data show that a few saltmarsh sparrows flew from Rachel Carson Refuge to the Connecticut coast, more than 150 miles, in just one day.

As nano-technology reveals more about the behavior of these tiny birds, the Service will be able to answer questions it only hypothesizes now.

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CAPTION:

Because saltmarsh sparrows are small, tracking individual birds has been difficult. Traditional tracking devices are too large and heavy. Now researchers in the Northeast are using nano-technology to track the birds' migratory habitats and behaviors. (photo by Brian C. Harris)