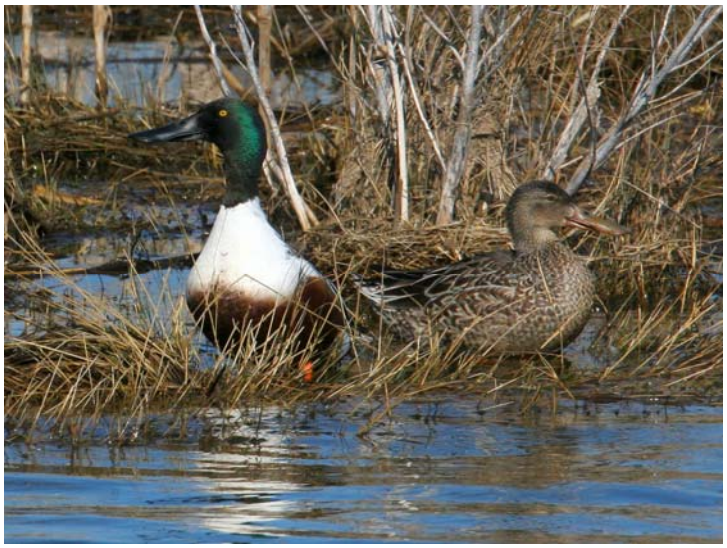
Saltmarsh Sharp-tailed Sparrows overwinter in the Lower Cape Fear



This pair of Northern Shovelers belongs to one of our many species of winter ducks

Brunswick Wildlife
Bird Migration Basics (and Miracles)
(Part 2 of 2 Parts)

In part one, we covered migration basics and now we move on to the impact of weather and how birds navigate.

Weather affects the daily timing and progress of migration. Natural selection favored birds that anticipate seasonal change and go early before conditions turn bad. For example, insectivorous passerines leave in late summer when the weather is good and food still abundant.

Birds may be forced down to avoid rain, clouds, fog, and/or strong winds. Cold fronts are generated by low pressure systems called extratropical cyclones. As a cold front passes, the wind direction shifts in a counterclockwise direction, eventually producing a favorable north or northwest wind.

Extratropical Nor'easters and hurricanes (tropical cyclones) are major low pressure systems that also impact migration. Worse case scenarios, called "perfect storms", occur when a hurricane merges with an extratropical cyclone. Hurricane Hazel and the Perfect Storm in late October 1991 are great examples.

Studies indicate that birds are able to detect pressure changes and thereby anticipate weather changes. They feed more intensively as storms approach and may have to remain longer at a stopover site to rest and replenish fat stores lost due to adverse weather.

For navigation birds use sensory contacts…hearing, visual landmarks, and odor. Very low frequency sound (infrasound) such as waves breaking on shore may be heard by birds from a great distance.

Navigational capabilities are partly innate and partly learned. Birds have innate knowledge of the direction and duration their migration should take. Juveniles have the ability to arrive on schedule within their ancestral wintering range but lack a specific site so they locate an appropriate site and imprint on the area. During first migration, juveniles for some species migrate separately and without the help of parents and other experienced birds.

Birds exhibit site fidelity for breeding, stopover, staging, and wintering sites, normally returning to the same migratory sites year after year after imprinting on them. So on its second migration, a bird generally returns to a specific site. They take a more direct route and generally find the exact site even if displaced in route by a storm.

Birds have several compass systems to guide their flight. Using their "sun compass" birds choose direction based on the position of the sun, time compensated for the rotation of Earth using an internal circadian clock.

Birds have celestial orientation capabilities. Nocturnal migrants determine their position relative to true north by the rotation of constellations like Cassiopeia, the Big Dipper, and the Little Dipper around the position of the North Star (Polaris).

An avian magnetic compass is based on birds' ability to sense the Earth's magnetic field. Another compass mechanism involves patterns of polarized light which rotate around the North Star. At sunset this pattern gives birds the direction to begin their flight.

Together the sun compass, patterns of polarized light, and the stellar compass may offer a combined compass system available twenty-four hours a day.

How these compass systems interact with each other is not fully understood. Birds use multiple capabilities as backups to each other to determine compass direction. Researchers believe an integrated, cross-calibrated system using all navigational mechanisms may exist.

A compass without a map does not work because both position and direction is needed. Scientists believe that variations of odors, the magnetic field of the earth, and infrasound may serve as a basis for the map. There is, however, some controversy and much research to be done.

Our "poster birds" this week are species that overwinter in the Lower Cape Fear. The Marbled Godwit is a large shorebird that mainly breeds in our northern grasslands plus southern Canada's grasslands. Ruddy Turnstones, dwarfed by the godwit in the photo, may easily be seen at Waterfront Park. By early May when they head north, turnstones are almost in full breeding plumage.

Approximately fifteen species of sparrows join North Carolina's four resident species for the winter. The Saltmarsh is one of two sharp-tailed sparrow visitors. They may be found

throughout area salt marshes; however, my favorite locations are near the boat ramp at Ft. Fisher and off the Sunset Beach causeway.

Birds may sometimes be identified just by their silhouette. Even squinting into the sun, the bill of a backlit Northern Shoveler is unmistakable. These guys are "dabbler ducks" versus "diving ducks" and are generally easy to find at Sunset Beach's Twin Lakes and Wilmington's Greenfield Park.

John Ennis

A Marbled Godwit towers over a pair of Ruddy Turnstones