

A closer look at South Carolina's principal advocate for natural resources



In a previous career, I was the Naturalist at Hunting Island



State Park, one of 47 State parks in SC. I was awed daily with the environment of the ever-changing barrier island and the many species that called it home. I became intrigued with the dynamics of the salt marsh, the varying habitats of the maritime forest, the fragility of the sand dunes, and the impact of the human element that influenced the island's ecology on a daily basis. It was truly amazing to understand how everything was interconnected, how the different ecosystems affected each other, how the life cycle of plants and animals continue to evolve and how we, as a species, help and hinder nature's progress.

I worked with the South Carolina Department of Natural Resources (SCDNR or DNR) on a weekly basis, assisting with resource management, delivering educational programs to students and visitors and keeping proper records for various research projects. DNR's mission is to serve as the principal advocate for and steward of South Carolina's natural resources. South Carolina Parks, Recreation and Tourism's (SCPRT or PRT) mission is to Grow South Carolina's economy by fostering sustainable tourism economic development and effectively market our state to increase visitation and improve the quality of life for all South Carolinians. So, the purpose of each department differs; yet the vision of both equally promotes quality of life in South Carolina for present and future generations.

So it was important that both agencies work together to improve understanding of the wise use and safe enjoyment of healthy, diverse, sustainable and accessible natural resources.

Recently, Dr. Al Segars, DNR's steward of the ACE Basin, invited me to participate in a few research projects currently underway in coastal SC. Of course, I obliged, eager to get my hands dirty and reminisce with my previous career.

The three projects I'll discuss in this article are just a few of the many, many tasks assigned to a multitude of departments within SCDNR. To understand the full magnitude of DNR's responsibilities, just visit their website, www.dnr.sc.gov. It's not just a group giving marine tickets for unsafe boating practices. Oh no... South Carolina's premier agency for protecting our coastal, midland and mountain regions diligently operates a variety of conservation initiatives. Their commitment to land, water and wildlife in South Carolina is admirable and worth your attention.

Part I: A Fish Tale



A couple of weeks ago, I had the privilege of participating in a DNR research project in the ACE Basin with Bill Roumillat, a biologist with the Inshore Fisheries Research Section of the Marine Resources Research Institute. Roumillat's research emphasis includes biology of fishes, histologically verified fish reproductive ecology and fish behavioral ecology. His current research projects include life history investigations of estuarine fishes, red drum fisheries dynamics and autochthonous fish sounds as related to fishery dynamics.

It was a picture perfect November day in the ACE Basin. ACE is an acronym for the Ashepoo, Combahee and South Edisto rivers that make up one of the largest undeveloped estuaries on the east coast of the United States. Roumillat, myself, Weatherly Meadors, a graduate student in Marine Biology at the College of Charleston and Mitch Helms, Interpretive Program Manager at Hunting Island State Park left the research facility at Bennett's Point early to begin sampling at the start of the ebbing tide. We cruised out in a "Florida mullet boat" and approached the first station while Roumillat and Meadors gave instructions on how to operate the trammel net.

Helms and Meadors set the 200 yard long, 8 foot deep net in an arc against the marsh to seal off the area. They artificially disturbed the water with large poles to imitate predatory activity and then hauled the net to retrieve the sample. The first set was typical: spots, flounder, spotted trout, black drum and even a blue crab. We counted and identified the species and measured fork and total lengths, then released them back in the water.

The second set was the money hole. Any fisherman would have loved to be casting the rod in this spot. In addition to the species mentioned above, we netted seven red drum, each measuring 40 inches and above. We measured and tagged them and also took a couple scales from the pectoral fins to determine age and released them back into the water.

We sampled a total of nine stations that day. The process became laborious, and I figured out quickly how Roumillat stayed in shape. He's been sampling estuaries along the coast from the ACE Basin to Winyah Bay since 1991. His research helps other biologists at the lab conduct studies on various species with relationship to abundance, reproduction and eating habits and migra



tory patterns, among other interests.

The Red Drum or Spottail Bass, the most highly prized inshore gamefish in the state, is strictly regulated. Since designation as a gamefish in 1985, the regulations applied to the harvest of this species have been altered eight times by the legislature. Depending on research findings, some years show major decline in juvenile and/or adult fish. With the advent of bag (creel) and size limits, there has been a gradual increase in the estimated number of red drum caught and released alive in the fishery.

And, with the help of cooperating anglers, close to 45,000 red drum have been tagged since 1989. Approximately 7,000 of these fish have been recaptured. The angling public has provided biologists with valuable information on movement, seasonality trends, growth rates and general population dynamics of this highly sought after gamefish.

Redfish Tips: Captain Dan Utley reports the incoming tide is best to fish since the water has started to cool. Also, the winds have calmed a bit making the water start to clear; so artificial baits like Gulp Shrimp in the New Penny color are working great. Fish the grass edges on the rising water and also back in the grass as the water gets higher. On low tide, Redfish are also starting their schooling pattern and can be caught with 1/4 ounce jigs and a Gulp Shrimp or Gold Spoons. The best time of the year for sight fishing Redfish is right around the corner.



Red Drum (*Sciaenops ocellatus*)

General Description – Iridescent silver-gray with a copper cast, darker above; one or more oscillated spots on upper sides from below soft portion of dorsal fin to base of caudal fin. Mouth inferior and horizontal, teeth set in bands on both jaws. Chin without barbels, smooth pre-opercular margin.

Average Size – 18 inches, 2.6 pounds; South Carolina State Record: 75 pounds (1965); maximum age: approx. 38 years (a few individuals as old as 60 have been reported in other states).

Habitat

Adults: Utilize nearshore and inshore bottom habitats, such as tidal creeks, oyster reefs, and beaches, typically over sandy or sandy-mud bottoms; may also congregate in nearshore groups.

Juveniles: Inhabit estuaries near shallow tidal creeks and salt marshes, commonly at marsh grass edges or in the vicinity of oyster reefs; reside in deeper river channels during winter. Subadults inhabit larger tidal creeks, rivers, and the front beaches of barrier islands.

Reproductive Cycle

- Adults mature by 3 – 5 years of age; approximate length at maturity: males – 28 inches, females – 33 inches.
- Spawn during late summer and fall. Spawning aggregations occur near estuary inlets and passes along barrier island beaches. Males produce drumming sounds using muscular contractions to vibrate the swimbladder, to attract females.
- Larval red drum use vertical migrations to ride high salinity tidal currents into tidal creeks and shallow salt marsh nursery habitats.

Foraging Habits

- All sizes of red drum are predatory foragers on or near the bottom; inshore foraging (juveniles) typically occurs at marsh grass edges.
- Adults: Feed primarily on menhaden, spot, anchovies, blue crab, and speckled crab.

- Juveniles: Feed on opossum shrimp, grass shrimp, juvenile spot, and mud minnows, mud crabs, and fiddler crabs. Subadult diet is similar to adult fish. Larvae feed primarily on zooplankton and small invertebrates.

Availability/Vulnerability to Harvest

- Present in South Carolina waters year-round. Distribution is predominantly temperature dependent: juvenile fish progress from marshes and tidal creeks to overwinter in deeper inshore waters; larger adults overwinter offshore and return to nearshore waters during spring.
- No commercial red drum fishery currently exists in South Carolina; potential for recreational harvest is significant since legal size fish inhabit inshore and nearshore waters during a large portion of the year.
- Conservation concerns: degradation and loss of estuarine habitats; lack of information on South Carolina spawning locations; maintenance of optimal numbers of subadult and spawning size fish.

Abundance of Species

Most red drum caught in the SCDNR trammel net survey are between 9 and 30 inches (the current slot is 15-23 inches) and are younger than 4 years old. Therefore, abundance presented here is heavily influenced by successful recruitment. Bigger fish become mature and move into deeper waters, where they might live for 20 or 30 years. A separate long-line survey is used to study these older fish.

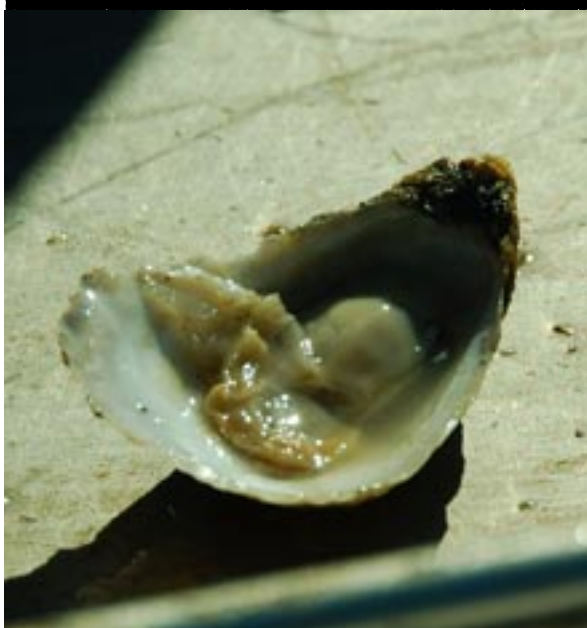
Fishery Status

Red drum is a highly prized recreational species. It acquired game fish status in 1987, making it illegal to harvest commercially. Over the years, changes in regulations and conservation ethic have led to a fishery in which the majority of fish are released alive.

The recreational catch data is provided by the National Marine Fisheries Service (NMFS), which conducts phone and angler-intercept surveys to monitor angler activities and catches. For more information, see www.st.nmfs.noaa.gov/st1/recreational.

Part II: The Migration of the Red Knot

Soon after being hired as the Naturalist at Hunting Island, I became a birder. Not knowing anything about birds before my career, it wasn't long before I understood the fascination. The misconception about "birders" is that they immediately know a species upon sight or sound. Well, the professional birders may; but most people who enjoy the hobby simply sight birds through binoculars and identify unfamiliar varieties with a bird book. I do it all the time with my Sibley's, the bible of bird identification!



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Wednesday, 07 December 2011 13:26 - Last Updated Wednesday, 07 December 2011 13:41



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