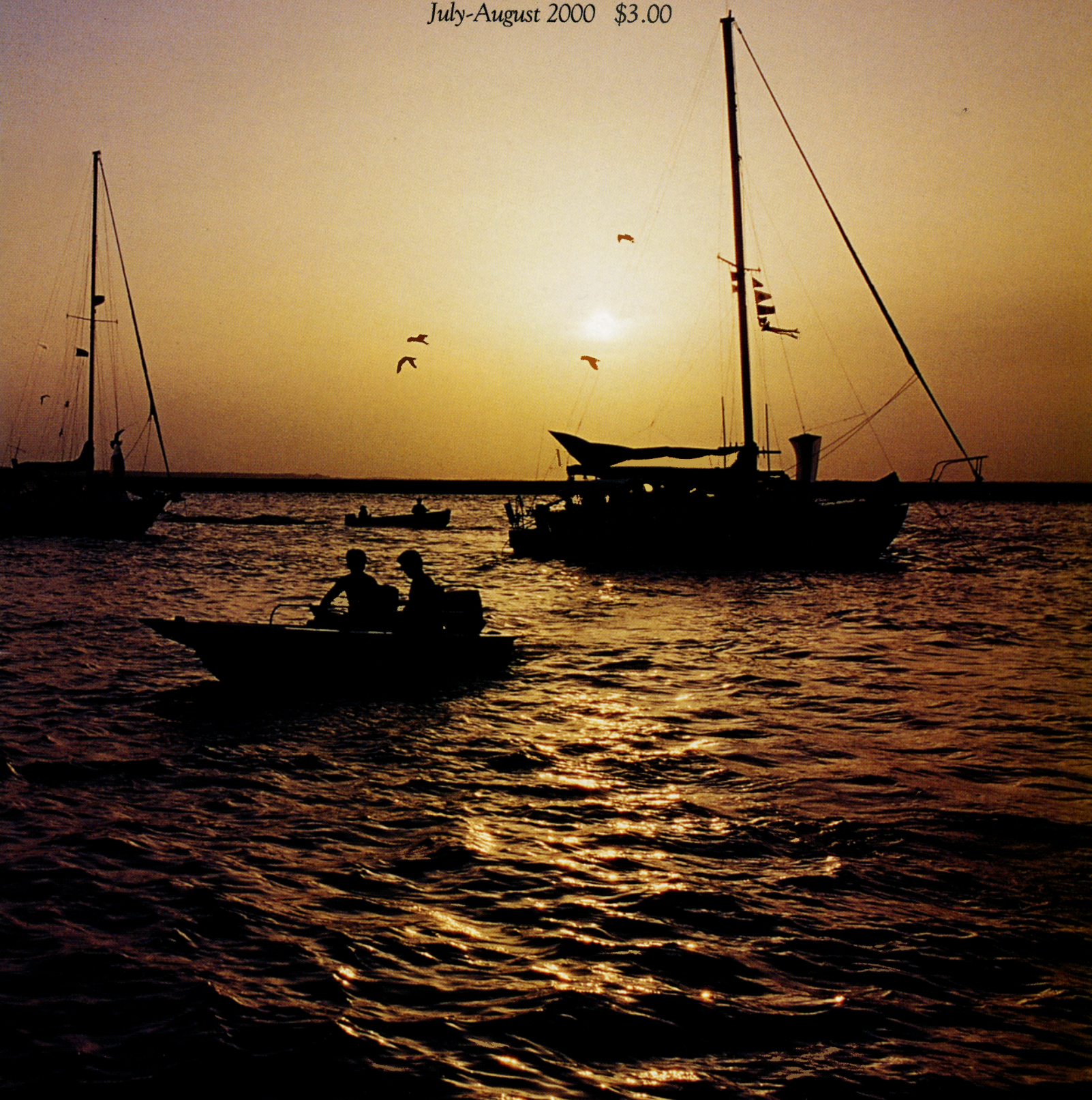


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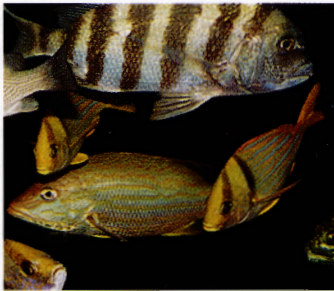
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STATE DOCUMENTS

Dedicated to the Conservation, Protection and Restoration of Our Wildlife and Natural Resources, And to the Education of Our People to the Value of These Resources.



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DIRECTIONS

DNR — Working for you, naturally.

The South Carolina Department of Natural Resources is the advocate for and steward of the state's natural resources.



The Department of Natural Resources develops and implements policies and programs for the conservation management, utilization and protection of the state's natural resources based upon scientifically sound resource assessment and monitoring, applied research, technology transfer, comprehensive planning, public education, technical assistance and constituent involvement. The Department of Natural Resources is pro-active in protecting the state's natural resources for use and enjoyment by future generations of South Carolinians.

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STATE DOCUMENTS

SOUTH CAROLINA IS BLESSED with incredible biological bounty.

Although ranked only number 40 among the states in land area, South Carolina is in the top ten in terms of biological and habitat diversity. In her article "Wet, Wild and Wonderful," which begins on page 12, Linda Renshaw asks and answers the question, "What kind of place could house a whole state's worth of habitats under one roof? Only the brand-new, world-class South Carolina Aquarium."

The mission statement of the aquarium, brainchild of Charleston's Mayor Joe Riley, declares it to be "a self-supporting educational institution dedicated to excellence in its display of the aquatic environments of South Carolina. The South Carolina Aquarium inspires wonder and appreciation for and fosters conservation of those environments for future generations." Through the aquarium's educational outreach efforts, our state's biological riches lie within the reach of every school child in South Carolina. Our children and grandchildren now have an opportunity to be exposed to the wondrous variety of life and the awesome natural forces that have made this unique part of the world the marvel that it is. We in the DNR welcome the South Carolina Aquarium as a committed partner in environmental education and conservation.

Recently, Canadian wildlife authority Shane Mahoney reminded me that it takes knowledge as well as passion to make conservation happen. He quoted Leonardo da Vinci as having said it a little differently: "A great love derives from a great knowledge of the thing loved." A more modern version states that we will love only what we know and we will save only what we love. If we are to be successful — and we must be — in conserving our natural wealth for our children's children's children, then we must commit to learning about our natural resources and to sharing that knowledge passionately with others. The South Carolina Aquarium offers an unparalleled opportunity for that learning, loving and sharing to occur.

Whit McMillan, the Aquarium's Conservation Education Manager, says, "We want visitors to leave here saying, 'Wow! I can do something about this!'" Part of that something can be joining with us in the DNR and a host of conservation-minded partners across South Carolina in our habitat-conservation initiative titled "It's Now or Never: Preserving Our Special Places." Please visit the aquarium and learn more about South Carolina's natural history, then act with us to conserve our natural and cultural heritage.

— Paul A. Sandifer
Director, SCDNR

EVENTS

Basketry and other traditional arts and crafts go on display

at **Jubilee: Festival of Heritage**, August 18-19.

JULY 22.

Women's Basic Kayaking Skills Workshop. Prosperity. A mini-clinic teaching women about different types of kayaks, gear, water conditions and maneuvers; demonstrations; a short kayak trip; bring sunscreen, life jacket, beverage and lunch; wear shoes/clothes that can get wet; fees — \$30, adults; \$20, youth; register by July 15. Contact Dreher Island State Recreation Area, 3677 State Park Road, Prosperity, SC 29127, (803) 364-4152.

AUGUST 5.

Little Mountain Reunion. Little Mountain. A road race, arts and crafts, a parade, food, entertainment and other activities. Contact Barbara Lindler, (803) 945-7311.

AUGUST 11-12.

Truck and Tractor Pull. Saluda. An annual sporting event featuring competition among amateur and professional drivers of the Southeast. Contact Pat Rodgers, 409 N. Main Street, Saluda, SC 29138, (864) 445-2104 or 445-2313.

AUGUST 13-14.

Peanut Party. Pelion. A family-oriented festival with arts, crafts, carnival rides, car show, road race, bicycle race, beauty pageants, parade, carnival, free entertainment, and lots of peanuts. Contact Charlie Haggard, 105 Patricia Avenue, Pelion, SC 29123, (803) 894-3596.

AUGUST 18-19.

Jubilee: Festival Of Heritage. Columbia. Traditional arts and crafts, basket weaving, blacksmithing, hands-on demonstrations for children, book signings, storytelling, historical tours, cowboy and soldier reenactments, educational lectures, and food. Contact Historic Society of Columbia, 1601 Richland Street, Columbia, SC 29201, (803) 252-7742.

AUGUST 19.

Pineland Stewards Land Management Seminar. Clemson. A free seminar on how to manage your land to increase wildlife and improve timber stands and how to use the Farm Bill to fund land



Sweetgrass basket.

management; free lunch; limited to first 100 people. Contact C. J. Davis, National Wild Turkey Federation, 770 Augusta Road, Edgefield, SC 29824, 1-800-THE-NWTF or (803) 637-3106.

SEPTEMBER 4.

Labor Day Festival. Chapin. Parade, beauty pageants, arts, crafts, carnival rides, live entertainment, and food. Contact Town of Chapin, P.O. Box 183, Chapin, SC 29036, (803) 345-2444 or 345-1100.

SEPTEMBER 14-16.

Lexington Fun Fest. Lexington. Arts, crafts, street dance, family entertainment and other activities. Contact Lexington Chamber of Commerce, P.O. Box 44, Lexington, SC 29071, (803) 359-6113.

SEPTEMBER 16.

Harvest Hoe-Down Festival. Conway. Arts, crafts, games, pony rides, a parade, and lots of food. Contact Nancy Allen, 6270 Tod-Ludlam Lane, Conway, SC 29526, (843) 365-9154.

SEPTEMBER 22-OCTOBER 1.

Moja Arts Festival. Charleston. Arts festival featuring national and regional artists, performers and vendors; art exhibits, poetry and storytelling, dance, children's activities, film, humanities lectures, gospel

concerts and crafts; Caribbean parade, band contest, inventions museum, heritage activities — stage performances, a marketplace featuring African and Caribbean fabrics, clothing, metal crafts, sculpture and traditional crafts, ethnic foods. Contact Moja Program Coordinator Elease Amos-Goodwin, Office of Cultural Affairs, 133 Church Street, Charleston, SC 29401, (843) 724-7305.

SEPTEMBER 23.

S.C.'s National Hunting and Fishing Day. Cohen Campbell Fish Hatchery, West Columbia. A one-day celebration with demonstrations on target and skeet shooting, a BB-gun range for the kids, introductory fishing seminars, fly fishing, cast netting, a kids' casting contest, kayaking, muzzleloaders and black powder firearms, fly tying, fish handling, cleaning and cooking, a marine touch tank and fish hatchery tours; outdoor skills and activities including archery, canoeing, wildlife cooking, duck calling, hiking, bird watching and wildlife photography; free; 8:30 a.m.-5 p.m. Contact Beck Carmichael, DNR, P.O. Box 167, Columbia, SC 29202, (803) 734-3941, www.dnr.state.sc.us, or Angela Viney, S.C. Wildlife Federation at (803) 256-0670.

Becoming An Outdoors-Woman Workshop: A Coastal Experience.

Marine Center, Charleston. Women 18 years or older can participate in this one-day workshop offering introductory level instruction in salt water-related classes such as fishing, shrimping, crabbing, kayaking, shell identification, offshore fishing and more; fee. Contact Sharon Wright, SCDNR, P.O. Box 167, Columbia, SC 29202, (803) 734-4072, or sharonw@scdnr.state.sc.us.

NOTE: Dates are subject to change, so call before traveling to an event. To list an event, send information three months in advance of the magazine's publication date to Tricia Way, South Carolina Wildlife, P.O. Box 167, Columbia, SC 29202-0167, (803) 734-3972 or e-mail TriciaW@scdnr.state.sc.us.

More Fat Lighter Fodder

I thought if I put this off long enough I would forget about it, but I've just got to put in my say on the issue of fat lighter, discussed in your November-December 1999 magazine. I recall that the old name for fat lighter was fat lightwood or light'd. Could some older readers back me up?
Tom Anderson Jr.

Aiken

How in the world did the word "lighter" come to mean lightwood? Lighter is the word for a barge-like vessel.

As a youth back during the days of the Great Depression in Chesterfield County, my family ran tar from great kilns of fat lightwood. The local natives corrupted the word to "lightered."

We placed 35 cords of fat lightwood in a kiln and ran 35 barrels (55 gallons) of tar. Many operators in those sand hills came in and leased the lightwood rights and ran tar. I have seen kilns of a hundred cords that took more than a week to burn.

The slow-growing longleaf pine is the source, and most of it eventually develops into heartwood. We had trees that had stood for ages after dying and my father cut them into lumber at his sawmill. This lumber was a wood eternal and, protected from fire, would last indefinitely.

When the Old Santee Canal was built between 1790 and 1800, they used fat lightwood

sills in some of the locks.

Those old sills are still as solid today as the day they were installed.

When the state line was re-surveyed in 1928, the surveyors found an old "state line tree" that had a mark made when the line was first run in 1735. The tree had sprouted in 1573 and was standing alive in 1928. It was over three feet in diameter with a thin layer of sap wood that sustained its life. It was located near Fair Bluff, NC, and was replaced by a 600-pound granite post named "Replacement." A piece of this tree, with the survey's chop, can be seen in the S.C. Archives today.

C.B. Berry
North Myrtle Beach

Can't Always Get There From Here

I enjoyed the January-February issue of your magazine very much. However, one of the things I love about your magazine is the way you identify the locations of all the wonderful photos. Many of the photo locations in this issue were not given. If I see a beautiful mountain stream I might want to visit, or see an old barn that looks familiar, I'd love to know where it is! Keep up the good work!

John White
Greenwood

Editors' Note: Many of our readers indicated in a recent survey that a top reason for reading SCW is to learn about

places to go in South Carolina. We do try to identify photos by location, when appropriate. Some areas are beautiful and pristine because they are unknown, and some are not accessible because they are unsafe or are on private property. Even if some can't be seen in person, the special places shown in SCW photos can be enjoyed by so many through the pages of the magazine, with no impact on the resource.

You're Right!

On page 50 of your March-April issue there is an article on projects that have received stewardship awards. Being a frequent visitor to, and great admirer of, Huntington Beach State Park, as well as a Georgetown County resident, I am certain that the park is located in Georgetown County and not Horry County, as the article states.

Sherri Estridge
Pawleys Island

Natives Love It Here

I read the article in your magazine's March-April 2000 Roundtable about a new native azalea, named by the DNR's Mike Creel. Native azaleas have been a hobby of mine ever since I worked at Callaway Gardens in 1977-78. I did not have a permanent spot of land on which to grow them until 1996. It was then that I became a landowner on the banks of the Black River in Georgetown County. The "natives" love it here. I have two hybrid species and a couple

of plumleaf and viscosum plants. Piedmont azaleas grow all over the neighborhood. I truly enjoyed the article and hope to see more about this topic in the future.

Margaret Hutto
Georgetown

It Was A Pleasure

Congratulations on your March-April 2000 issue. But this is to praise your staff in another way. What courtesy and genuine good manners they demonstrate when they work on pieces that involve individuals! It was an enjoyable experience to deal with down-to-earth, intelligent and dedicated professionals. Perhaps this is one of the secrets to the magazine's success. Thanks for this great gift to all lovers of the natural world and an even greater credit to the state we love.

Jim Kibler
Maybinton

Editors' Note: We have it on good authority that the pleasure was all ours. The article, "Beyond the Boxwood Path," March-April 2000, about your work to restore the house and grounds at Hardy Plantation, partly because of your willingness to help, turned out very nicely.

At Issue

Greetings from a subscriber of a great magazine. I look forward to it at each issue.

Although I am an avid reader of your great stuff, I must let you know how disappointed

IN OUR NEXT ISSUE . . .

THIN BARRIERS between ocean and coast, Cape and

other such islands change dramatically over time, divided by channels and alternately leveled and built up by storms. Get an intimate view of Cape Island through the eyes of former SCW staff writer Pete Laurie, who revisits this place where he began his career with the DNR for our September-October issue. Twenty-six years after he helped scientists dissect a whale carcass on Cape's beach, Laurie comes full-circle. Look for his descriptive account of this rugged place, where old memories return on the salty breeze.



PHILLIP JONES

PLUS . . .

Refresh the soul on a hike around Jones Gap and Caesars Head state parks with naturalist Bill Marrell and his young grandson . . . meet some critters who have particularly emphatic ways of saying "Stay away!" . . . feel the paradox of the lovely danger of fog . . . get the basics of firearm safety . . . and test your knowledge of safe gun-handling.

I am to see a glaring error in the just-received May-June 2000 issue. You state the first summer of the 21st century begins this month. Please don't misinform your readers about such a basic scientific and historical fact. The fact is, as I surely hope you know, that the 21st century begins January 1, 2001. This isn't hard! That is, if you can count — 999 years doesn't make a century. 2000 is the final year of the 20th century.

Please keep up the good work, but please don't confuse issues that the media has already confused enough.

J. Frank Byrd
Aiken (by e-mail)

Editors Note: Oh, what's a year or so when we're talking about a millennium? We're sure you are aware of the considerable controversy that surrounds the Y2K phenomenon. We were going for a laid-back approach with the article to which you refer ("Summer Reflections"), something to suit the sometimes immobilizing heat of summer in South Carolina, and decided to just go with the flow.

Wonderful Web

As a South Carolina Lowcountry native who has lived outside the state for 20 years, I love reading SCW when I get a chance. I haven't been a subscriber for the past five years, but after seeing your Web site and recent stories covering the beloved Boykin spaniel, I am going

to subscribe again.

Thank you for a beautiful, inspiring magazine for all us Carolinians, near and far.

K. Jackson
Philadelphia (by e-mail)

Memories

My fondest childhood memories are of accompanying my father on his rounds as game warden of Allendale County, sixty-some years ago. Articles and photos in SCW often vividly enhance those memories, and I look forward eagerly to each issue.

About ten years ago, more or less, you published an excellent piece about my late uncle, writer and naturalist James Henry Rice, and his role in establishing South Carolina's Wildlife Department. I kept the issue for some time, but it somehow was lost. With such scant information, and at this late date, is there any possibility of obtaining a reprint of the article? I assure you it would be greatly valued.

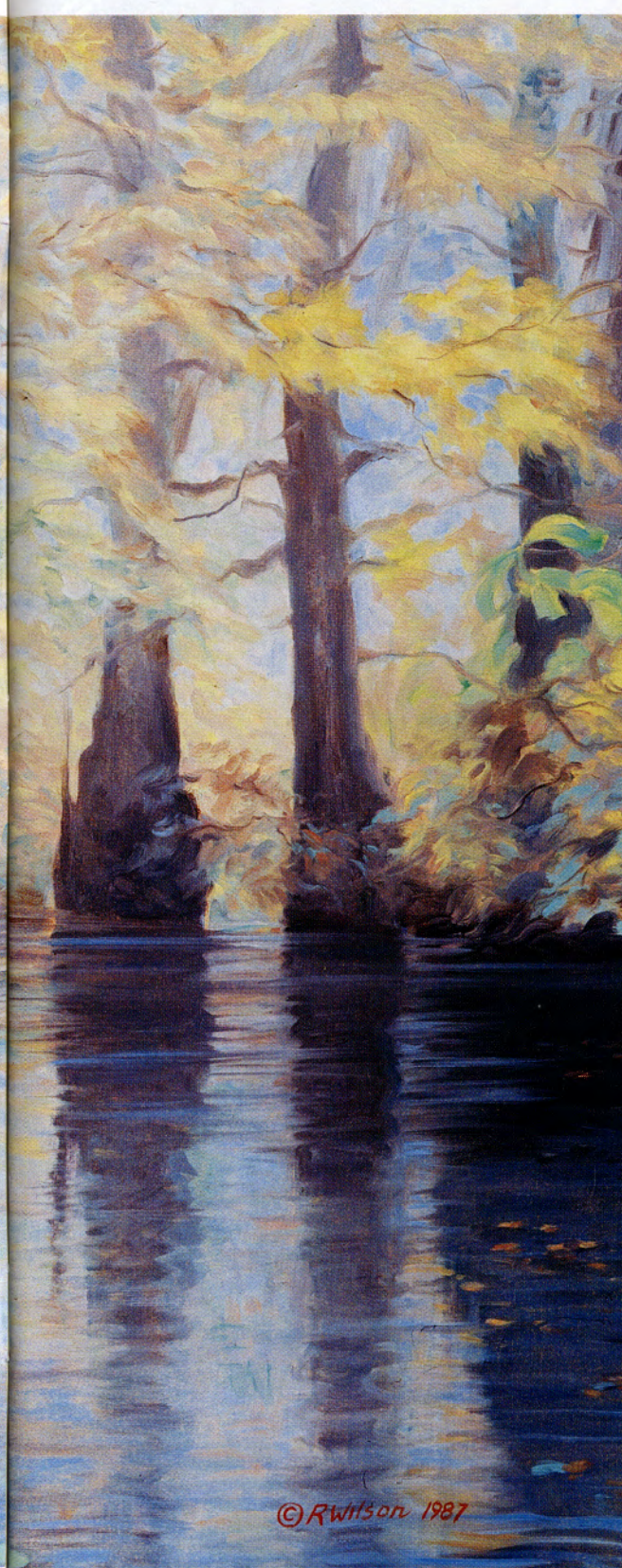
Richard Maner
Louisville, Ga.

Editors' Note: That article ran in May-June 1991.

South Carolina Wildlife welcomes your comments. Send letters to SCW magazine, P.O. Box 167, Columbia, SC 29202, or e-mail to Carolinef@scdnr.state.sc.us. Please include your name, address and daytime telephone number. We reserve the right to edit letters for length and clarity. 🐾

Surrounded by the familiar forest that today bears his name,

Francis Marion made history as a soldier and woodsman . . . and a name for himself.



Trail of the Swamp Fox

by Douglas H. Bennett

One visit to the far reaches of the Francis Marion National Forest shows how this setting could dominate a story. Thick, black stews of swampy wetlands can quickly change to solid walls of underbrush, secured by briars. Landmark trees all begin to look alike. Few paths navigate the heart of this landscape, save those made by the swamp's wild residents. The forest's impenetrable stretches give rise to tales of dangerous wildlife and courageous heroes, surviving only through experience and keen woodsmanship, that sixth sense born of years spent afield.

This landscape certainly plays a prominent role in the story of one such real-life hero — Gen. Francis Marion of the American Revolution. When I think of this man, I am reminded of the swampy forest lands between Georgetown and Charleston where I grew up. He lived in this wilderness for more than five years, relying on the land for survival while he practiced guerrilla warfare. This forest, and his understanding of it, saved him time and time again from the British.

As I grew up in the South Carolina Lowcountry, oft-told stories of this legendary figure rose both from my lessons on the land and from my more formal education. In fact, I first became acquainted with Francis Marion, better known as the Swamp Fox, as a child and a student of all the natural landscape could teach me. My father and I frequently hiked in the 250,000-acre tract of land just north of Charleston named after the Swamp Fox, the Francis Marion National Forest. I remember the first day the legend of Marion came to life for me. All it took was a pile of bricks in the middle of a small clearing at the edge of a swamp.

When I was about ten years old, a local forest ranger told my father of an old house site between two swamps deep in the forest. He thought it best not to have us go by ourselves, which I think to this day was a good decision. If it weren't for the ranger guiding us in, we would never have found it.

© R. Wilson 1987



After moving through thick woods for hours and crossing a boggy swamp, we emerged on a small, thin rise that acted as a dry rest before the land plunged back into another swamp stretching as far as I could see. We moved into a small, lumpy clearing covered in grass that, to the untrained eye, would appear simply as that: a small, grassy spot in the middle of the forest. But in the Francis Marion Forest, even small clearings are highly unusual. And grass usually loses when in competition with layers and layers of pine needles. We knew it must have been man-made.

Pulling back some of the grass, the ranger exposed pieces of red brick held together by bits of oyster shells pressed into mortar. In Colonial days oyster shells were crushed and used as filler in concrete and mortar, so the site was almost certainly from the Revolutionary period. The age and remoteness of the site sitting on the edge of the swamp acted as seeds in my ten-year-old imagination and the small, unlikely clearing took on mythic proportions.

We had no idea what the site was. It could have been a house or even just a storage building. But it might have served as one of Francis Marion's hideouts deep in the swamp. I pictured heavy-booted men, rough and weathered,

ready to mount lines of horses. Traveling by night, they would ride through the swamp to fight the British anywhere in the Lowcountry. At the time, I didn't have any real understanding of how Francis Marion operated during the Revolution, but this secret place brought his legend to life for me, and surprisingly I was not far off.

The forest between Charleston and Georgetown bears Francis Marion's name for good reason. Although he operated all around the lower half of South Carolina, toward the end of 1780, Francis Marion set up headquarters near Georgetown and just north of the present-day forest. From this base he struck out at the British, cutting land supply and communication lines between Charleston and the rest of the British forces to the north. So it was true that Marion had operated in the area of the house site where I, as a ten-year-old, had stood. He would have risen out of the swamps wraith-like, attacking the British and disappearing, driving fear deep into their dreams. Extremely talented at hit-and-run guerrilla warfare, Marion possessed an ability to move through the Lowcountry forests that was not simply instinct; it was learned.

Settlers and Native Americans alike shared the land, and Francis Marion was a close neighbor of the Indians, a group

Snow Island, believed by many to have been used as a hideout by Revolutionary hero Francis Marion, lies at the juncture of the Pee Dee and Lynches rivers. Marion and his men evaded the British, cleverly fording and ferrying across the waterways they knew well.

renowned for their understanding of the land. They helped Marion's grandparents, members of the Huguenot faith, survive the early settlements. The Indians' knowledge of the land would have been ingrained in Marion's everyday life, and he actually fought with, and against, various Indian tribes well before the Revolution. Just as Marion's legend is part of my own Lowcountry education, the American Indians and their skills in the wild would have been part of Marion's.

The ability of the Swamp Fox and his men to move through the forest seems trivial until we try it ourselves. The area that is now called Francis Marion National Forest has every type of terrain possible in the Lowcountry. A thinly spaced pine forest with its soft carpet of needles can be replaced in a hundred yards by a dense canebrake and then just as quickly by a swamp of cypress trees and jet-black water.

The best way to make your way through woods that have no established trails is to find the invisible trails. The animals, especially deer, always seem to know the easiest way through the forest, and when you stare at the

woods long enough, faint paths will become visible through the brush, in the pine straw, or even in the dry swamp. Seemingly random trees and dense brush all around can suddenly transform within a few steps into a narrow, clear opening leading into the woods.

These trails can vanish like vapor, seeming to appear and disappear at a glance. I have traveled down deer trails through a thick pine forest and dropped into a dry-bed swamp, only to turn around and have the trail I just used disappear. Patterns in the woods become so complex that you can stand twenty feet away

from a trail and not be able to see it. No landmark stands out except in the case of a large tree or a large swamp, or even a single deer print. But after a hundred trees that look more or less the same, the original landmark offers no guidance.

It is in this complex landscape that Francis Marion and his men navigated these same vaporous trails by day and night.



"MARION CROSSING THE PEE DEE" BY WILLIAM TYLEE RANNEY
COLLECTION OF THE GREENVILLE COUNTY MUSEUM OF ART, GIFT OF DR. AND MRS. DEWITT HARPER

They often used established trails and roads in their movements across large expanses of land, but when traveling out of their encampment near Georgetown, or when the enemy was pursuing them, Marion and his men never used established trails. They cut through the forest, swimming their horses through deep swamps where the British would not follow.

Though they used these woods and waters with legendary agility, Marion and his brigade are not mythical creations. They were men of flesh and blood, raised in the Lowcountry landscapes they made into fortresses. Born to this area, they



"FRANCIS MARION" BY ROBERT WILSON

Patriot, military strategist, impassioned leader of his men — the Swamp Fox left agrarian life to take up arms against the British, using the skills learned in South Carolina's woods and wetlands to confound the Redcoats. Marion's remains lie not far from the national forest that bears his name, marked by a stone erected by the S.C. General Assembly nearly a century after his death.

knew it well and used that to their advantage many times as they fought battles under constant hardship.

To his British adversaries, Marion must have seemed larger than life, like a spirit who could summon to his aid all the horrors of the swamps — the black waters, the mosquitoes, the noisy, distracting cadence of frogs. I can only imagine the dread those British soldiers must have felt knowing Marion was near. A cracking branch in the middle of the night likely sent adrenaline pumping through their veins.

The South Carolina Lowcountry would have been completely foreign to the soldiers shipped from Great Britain. The wild land and its inhabitants, such as the water moccasin and copperhead snakes, would have been hellish creations, and Marion's birthright, the summer heat, would have borne down relentlessly onto sweat-soaked uniforms. Soldiers' hands would slap frantically on the backs of sticky necks, praying for relief from the biting swarms, just hoping to survive and return home, escaping the humid, heat-choked coast of Carolina.

The Swamp Fox not only survived but also flourished in this alligator- and snake-infested swamp and mosquito-ridden forest. In truth, he and his men probably didn't think much about their natural surroundings beyond how they could use them to their advantage. But because he successfully used these resources, demonstrating skills as both a soldier and an outdoorsman, we remember him today. Across the nation, twenty-nine towns and seventeen counties bear his name, literature and art have memorialized him in dozens of books and portraits, and popular culture has heaped more recognition on his achievements with a recent feature film based on his life, *The Patriot*, released this summer and starring Mel Gibson in the title role.

Now the forest is still and quiet with no Revolutionary heroes lurking in the dark shadows. But Marion's legend remains on a rise at the edge of the swamp. Stories of him and of his brigade lie with bricks held together by oyster shells and mortar under a thick carpet of grass in a small clearing. 🐾

A mechanical engineer from Georgia Tech, Douglas H. Bennett grew up on James Island. He currently resides in Iowa where he is pursuing a double masters degree in English and interdisciplinary graduate studies.

Francis Marion

- ◆ Born 1732 at Goatfield Plantation in Berkeley County.
- ◆ Parents, Gabriel and Esther Cordes Marion, were first-generation Carolinians.
- ◆ Military career began January of 1756 in the militia company of upper St. John's Parish.
- ◆ Fought against the Cherokee Indians in 1756.



PHILLIP JONES

- ◆ In 1773, purchased his home, Pond Bluff, near Eutaw Springs on the Santee River (an area now beneath Lake Marion).
- ◆ Fought in the Revolutionary War from 1775 to 1782.
- ◆ Awarded the rank of brigadier general for his service.
- ◆ Served in the state senate and as a delegate to the convention where he helped write the Constitution of South Carolina.
- ◆ Died 1795 and buried in the family cemetery on his brother's plantation at Belle Isle.

WET, & WILD WONDERFUL!



◆ *What has both wings and fins,
both feathers and scales,
and more than 93,000 (square!) feet?*

by *Linda Renshaw*

photography by *Phillip Jones*

River otters twist and roll as I watch, sleek bodies tumbling playfully in a coldwater pool fed by a splashing waterfall. Surrounded by hardwoods, tiny songbirds and steep granite, I'd swear I was in a mountain cove . . . if I couldn't step through a doorway and find myself face-to-face with a piedmont landscape, complete with striped bass and only a few yards from a growing, teeming salt marsh with a spectacular view of Charleston Harbor!

What kind of place could house a whole state's worth of habitats under one roof? Only one: the brand-new, world-class South Carolina Aquarium, which opened this spring in historic Charleston, the culmination of years of hoping and dreaming and planning and laboring. The aquarium is unique, say its backers, offering visitors an unmatched opportunity to learn about South Carolina's aquatic ecosystems, from the

heights of the mountains to the depths of the sea.

My first view of the new aquarium had come nearly two years earlier, on a sunny midsummer day cooled by a fresh breeze off the harbor. Feeling foolish in a hard hat and borrowed tennis shoes, I followed project manager Tom Stever as he pointed out non-existent walls, a three-story ocean tank, and various exhibits I could see only through his mind's eye. Later, in the Hasell Street temporary quarters, longtime Charleston mayor Joe Riley circled a roomful of project models, his enthusiasm obvious and contagious. Here would be the blackwater swamp exhibit; trees will grow out the top of the "land" side of the building, from within the Mountain Aviary; there will hang the grand stainless-steel mobile, above the escalator in the Great Hall; here would be the enormous ocean tank, offering the tallest unobstructed view of any aquarium in North America. And here, with its stupendous view of the harbor, would be the world's only "indoor" living salt marsh, inhabited by wading birds and other wetland creatures and complete with a tide that ebbs and flows.

Subsequent visits showed the vision becoming a reality beyond my wildest imaginings, with Sheetrock and hefty acrylic windows added, sophisticated life-support systems installed, natural vegetation grown and transplanted, and more than 10,000 animals collected and settled into new homes. As a showcase for the Southeast Appalachian watershed, the new South Carolina Aquarium stands as a wonder of glass and terrazzo, towering columns of fish-filled waters, and galleries that carry visitors across the state in just a couple of hours — with a message of conservation underlying all.



Set at the east end of Calhoun Street along the Cooper River, easily accessible by main thoroughfares entering Charleston, the South Carolina Aquarium offers an ample parking facility, a park and plaza, and an impressive sight to approach. With treetops and a glass depiction of water's journey from mountains to sea, and harbor beyond (two-thirds of the building projects over the water), the aquarium immediately says, "The natural world has come to the Holy City."

Developed by the City of Charleston under the guidance of Mayor Riley, the aquarium grew in concept from a 22,000-square-foot marine science museum in the early 1980s to today's 93,000-square-foot education center. Riley says what he and other state and local leaders set out to establish was a "profound, world-class educational and environmental-awareness resource, to instruct people of all ages in a wonderfully exciting and interesting way and make every person who visits it a more-committed environmentalist." In short, Riley says, "We wanted each visitor to the aquarium to leave with a new set of environmental goose bumps."

Never doubt that they have succeeded. With 178 miles of coastline, 20 percent of the Atlantic Coast's existing salt marsh, eighteen major lakes, and more than 8,000 miles of rivers and streams, South Carolina and its aquatic diversity provide a natural teaching venue. Nearly two decades went into framing this diversity into an opportunity for public enjoyment and education.

Establishing a board of directors, raising funds, acquiring property, developing partnerships, and bringing staff aboard consumed years. The aquarium is a non-profit, self-supporting institution, with the building owned by the city and the facility operated by a board of directors, headed up by James L. Ferguson, retired chairman of General Foods. In 1997, Christopher Andrews was hired away from the National Aquarium in Baltimore to take on the job of executive director of the South Carolina Aquarium. Born in the United Kingdom, Dr. Andrews



brought sound credentials and experience in husbandry and operations.

"The board is made up of great leaders who take the idea of environmental stewardship very seriously," Andrews says. "They carried the project through some difficult times — their business savvy and commitment mean the aquarium will have a great impact not just on the community, but on the entire state and its schools."

Andrews assembled a staff with characteristics he describes as "passion plus experience plus ability — and the willingness to live on the budget of a non-profit." One who has been with the aquarium longer than any other is Rhet Wilson, who began as project coordinator in 1984. Wilson, the aquarium's director of education and head cheerleader, says that once construction seemed a certainty and staff hiring started, work proceeded quickly. "Our team included staff and exhibit designers from all over the country who needed a dose of South Carolina's landscape and wetlands," she says. "So we took a watershed journey, following the path of water from the mountains to the

sea. We were guided by some of the state's finest naturalists, many of whom work for the state Department of Natural Resources. Led by these people who know the land and water like the back of their hands, we learned about the courses of rivers and characteristics of the ocean shores. We studied maps while drifting on reservoir lakes and sat in swamps in evening rain. And those who were able went below the sea to learn its secrets. We became a team with shared images to guide the final details."

Specimen-collecting began in 1997, with animals placed in an 8,000-square-foot holding facility on King Street. Director of Husbandry and Operations Bruce Hecker

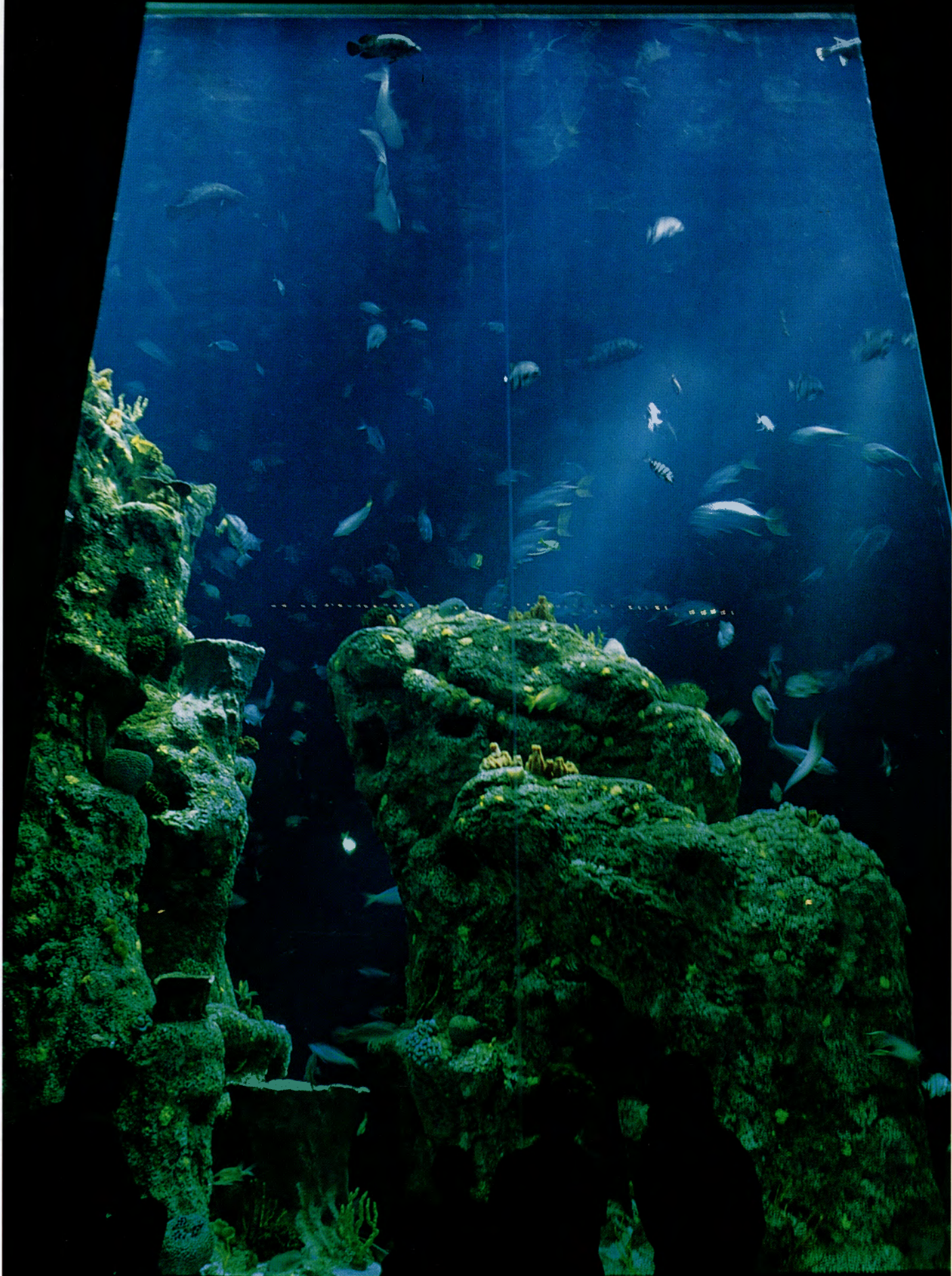


◆ Curious supporters of the South Carolina Aquarium followed construction progress from planning to holding-facility husbandry to tree-planting. Finny residents settled in weeks before the doors opened, and finishing touches included buffing the Great Hall's terrazzo floor, which depicts the state's coastline (previous pages).



says the aquarium benefited from partnering, a concept important to its success. "Public aquariums share a strong bond of common missions and disciplines," says Hecker. "Individuals in similar fields know each other and help each other. When we were just getting started, we worked alongside Tennessee Aquarium staff to hone our teamwork skills in collecting techniques and brought home stonerollers, darters, logperch, shiners, sunfish, bass, catfish, quillbacks and longnose gar."

With guidance and cooperation from state and federal officials, aquarium workers collected animals from, among other places, the Edisto River, Cypress Gardens, Charleston Harbor and the open ocean and also traded with other aquariums. Among the specimens acquired are rainbow and brook trout, catfish, largemouth bass, darters, bluegills, white perch, shiners, striped bass, pygmy sunfish, eels, and dozens of other freshwater fish. Saltwater species include sharks, shrimp,



- ◆ Countless animals of many sizes, shapes and colors move constantly around their underwater homes, and a sense of almost-mesmerizing serenity envelops watchers. The Great Ocean Tank's floor-to-above-ceiling viewing invites close encounters, set to whale sounds echoing through the gallery. Volunteers stand by to help identify the inhabitants.



flounders, crabs, red drum, puffer fish and sea robins. Hecker says they used small boats and “circle” hooks on short lines to catch fish, hooks known to catch-and-release proponents as easy to remove without harm to the animal.

Probably the most spectacular acquisition was not a fish, but “Calhoun,” the 350-pound green sea turtle donated by Monterey Bay Aquarium. Estimated at forty to seventy years old, he arrived nearly a year before scheduled opening, and his delivery was quite a feat — via Federal Express! Unfortunately, the turtle, embraced by the community as the aquarium’s “flagship” exhibit animal, drowned shortly before the opening.

Turtles, many of them endangered, such as the sea turtles, convey important conservation messages. Two years ago, biologists and teachers created the Turtle Talks outreach program with a Department of Education grant. Through these classroom activities, South Carolina students learn the characteristics and habitats of the state’s turtles as well as the conservation issues affecting the animals. Stacia Fletcher, school programs manager, says, “From painting turtle thumbprint creations to meeting a spiny softshell turtle ‘in person,’ the experiences students have through our Turtle Talks encourage

their natural curiosity. They learn about the interdependence of the living species in a healthy ecosystem and want to take action to promote habitat conservation. We’ve reached 30,000 children so far, and last fall Turtle Talks earned a special Volunteer Award from the State Department of Education.”

This program is but one example of the aquarium’s focus on education. Chris Andrews says, “South Carolina Aquarium is the first aquarium in the country to open with a complete Education Master Plan in place.”

He continues, “The aquarium’s role in preserving the special nature of South Carolina can be summed up in three aquarium E’s: Economics, Education and Environment. The aquarium will have a major and very positive regional economic impact, estimated at \$550 million in the first five years. Hundreds of jobs will be created around the aquarium, with 120 at the aquarium itself. Education is the heart of the aquarium’s message. Every

South Carolina school group that participates in the aquarium’s curriculum will be admitted free of charge, but school visits must be meaningful. So, teachers and students must pay a price of admission: their classes must participate in our curriculum before they visit, during their visit, and



after they return to their schools. Education efforts will reach beyond school groups to raise levels of understanding for every visitor regarding local, regional, national and international environmental issues. Exhibits and programming will appeal to local people and visitors alike, providing opportunities for them to become part of the solution to our environmental challenges. Three more ‘E’ words also describe what the aquarium offers: Engaging, Entertaining and Exciting.”



Some 10,000 living organisms await inside the aquarium to carry out that promise, distributed among sixty exhibits in galleries representing the five major regions of South Carolina's part of the Southeast Appalachian watershed — the Blue Ridge Mountains, the Piedmont, the Coastal Plain, the Coast and the Ocean. More than five hundred animal species swim, hop, creep and fly there, including otters, birds, turtles, fish, snakes, other reptiles and amphibians, aquatic invertebrates and insects. Curator Steve Vogel says his charges include the creatures that don't have fins. "Along with the songbirds in the open-air Mountain Aviary and the wading and shore birds in the Saltmarsh Aviary, we have alligators, numerous frogs, toads and peepers, venomous and non-venomous snakes, and invertebrates such as crabs and spiders. Understanding the techniques for meeting their natural habitat needs is an ongoing process, but keeping them healthy and behaving normally makes the real challenge."

About a hundred plant species, including twenty-five different varieties of trees indigenous to South Carolina regions, grow throughout the galleries. The aquarium has its



- ◆ *Open to the air, the Mountain Aviary and the Saltmarsh Aviary transport visitors from the Upstate to Charleston Harbor. Both habitats feature windows to allow even the smallest youngsters a glimpse of those who dwell there, including the playful river otters. Set at toddler height, special kid-friendly exhibits, such as the hatching alligator, convey lessons about animals and their habitats.*



in, mixed and monitored to mimic natural habitats. Water had to circulate in the tanks for several weeks before receiving animals, to allow natural growth of microorganisms and vegetation that would simulate the habitats.

Such a project was, understandably, expensive. Andrews says the total cost was \$69 million, in line with other facilities of its size and mission around the country, with \$47 million committed by

own greenhouse and plant nursery, located on donated land in Mt. Pleasant. Plant materials are only acquired from nurseries that employ ethical growing techniques, and plants are grown under close-to-natural conditions with very little input of chemicals.

Horticulturist Michael Thomason says the trees, shrubs and other plants in the Mountain Forest and Saltmarsh exhibits will provide habitat and food sources for various birds, insects and other animals in the exhibits. "Life-support systems for the plants in the aquarium required the installation of an intricate cooling and drainage system before trees, shrubs and grasses could be planted. Large cranes lifted the biggest of the trees, twenty-five feet tall, into place."

The building that holds all this life is impressively designed and constructed. More than 15,000 cubic yards of concrete were poured for the aquarium, equivalent to a block of concrete nine feet tall and as big as a football field. If the rebar used in the aquarium were stretched end to end, it would reach from Charleston to Charlotte. Life-support systems deal with nearly a million gallons of water, fresh and salt, that has to be piped

several public sources, including the city of Charleston, Charleston County, state and federal government, and \$22 million from private sources. Those who contributed a million dollars or more include the Robert and Janice McNair Foundation, SCANA Corporation, Piggly Wiggly Carolina Company, and BellSouth Corporation.

"The \$10 million from the state will be 'paid back' by providing free admission to South Carolina's school classes, and the \$10 million from county funds (hotel and accommodations taxes) should be more than realized through visitation," says Andrews.

With a million visitors expected each year, the opportunities to educate and inspire are nearly limitless. The school groups that come, bringing about 30,000 students in the first year alone, will visit within the framework of a plan carefully devised with input from other aquariums. The planning team also sought the advice of two hundred educators, asking them what they wanted from the aquarium. Students can use the gallery exhibits, Education Center, Discovery Lab, Education Stations, and on-site classrooms.

- ◆ *Teachers and their classes who participate in the aquarium's education curriculum enter the facility free and enjoy VIP treatment in the Discovery Lab and on-site classrooms. Aquarium staff firmly believe that fun learning activities can inspire appreciation for the state's aquatic environments, leading to a support for conservation that money can't buy.*



Wilson says, "School groups that have made their arrangements ahead of time and have done their homework with our curriculum will visit the aquarium free of charge. To help them get the most out of their visit, we provide them training and study materials so they can prepare in their classrooms, then we meet them at the door to ensure their visit is a true learning journey, not just a 'field trip.'"

The aquarium's education efforts have earned respect. In October 1999, the S.C. Department of Natural Resources Board passed a resolution in support of the aquarium's emphasis on education and outreach. Paul Sandifer, director of the DNR and a member of the aquarium board, says, "The DNR's board members commend the aquarium for its commitment to improving public environmental education. Such goals are consistent with our agency's stewardship efforts, and we will continue to support the aquarium's programs."

Special family and visitor programs, including the activities and entertainment offered those waiting in line for admission, expand the options for education. Conservation Education Manager Whit McMillan works with the public, saying the

aquarium aims for a family learning environment. "We provide information about habitats and conservation issues, but we always advise action," he says. "We want visitors to leave here saying, 'Wow! I can do something about this!'"

Beyond-visit efforts to publicize issues of environmental importance are also in the works. The aquarium will serve in many ways as a catalyst for environmental awareness, one of which is its sponsorship of a Watershed Series of public events. At the first of the series, held last December, National Geographic Society Explorer in Residence Sylvia Earle discussed her acclaimed "Sustainable Seas" research. The aquarium also has two conservation initiatives that focus on environmental issues and inspire conservation action: "Seaworthy" addresses marine issues, such as protection of highly migratory species like billfish, sharks and tunas, and "Sweetwater" examines issues that affect the state's freshwater habitat, such as land use and water quality. "We hope to help the public understand the issues at stake," says Andrews. "Often we will simply present the issues to the public; at other times we may take a strong position."

Regardless of their point on the conservation learning curve, visitors from toddlers to octogenarians will love to come to the aquarium. The facility truly blends indoors and outdoors, resulting in an experience never to be forgotten.

There's water, water everywhere. Entering guests pass a granite mosaic wall depicting the ACE Basin, bathed in trickling droplets, then move up an open-air ramp to the Riverside Terrace, offering a 270-degree view of the Cooper River and Charleston Harbor. Viewing scopes and focus panels provide spotting tips.

At the far end of the Great Hall, light streams through the two-story painted glass window, and the terrazzo tiled floor bears a 300-foot outline of South Carolina's coast. A 150-foot-long glass wall overlooks the new Fort Sumter tour boat facility, operated by the National Park Service and scheduled to open in 2001, bringing the outdoors inside.

Up an escalator lie the second floor exhibit galleries, where a forest wetland welcomes visitors. Nearby is the entrance to the Mountain Aviary's open-air habitat, with waterfalls, rocks and cool-water creatures, then it's on to the Piedmont Gallery, which not only depicts the habitats of the region's rivers and reservoirs, but also addresses the costs and benefits of the hydroelectric dams that have changed this section of the state.

Visitors who take their time touring benefit. Natural sounds enhance the experience, and printed material supports all the exhibits. Wilson says, "There have been many studies done on how much people are willing to read. We've taken great care to make our exhibit labels elegant, succinct and accurate. Photographs support the text, and we have in place touch tanks, flip graphics, models, and a corps of hundreds of volunteers to make every visit an interactive experience."



Nearly two-thirds of the state lies in the coastal plain, and the exhibits in that region's gallery reflect the transition-zone habitats and inhabitants of brownwater and blackwater swamps. This is the first aquarium to re-create the unique Carolina bay habitat, with an open exhibit screened to allow visitors to hear the sounds of the frogs inside. Animals and plants within include turtles, salamanders and fishing spiders, along with pitcher plants and white-topped sedge.

The 2,500-square-foot open-air Saltmarsh Aviary anchors the Coastal Gallery, with marsh grasses growing at a height to suggest the view from a small boat. Beyond lies the harbor, at one with the marsh. Other exhibits depict rice culture and mud flats and a tribute to Charleston's Mosquito Fleet.

The Ocean Gallery represents habitats off the coast, from rocky reefs to sand plains, surface waters to deep, open seas, showcased in one awesome container. Filled with 322,000 gallons of water and viewed from two levels, the Great Ocean Tank must be seen to be believed: constructed of 27-foot-tall acrylic panels made in Japan (15 inches thick, 17 feet wide and weighing more than 23 tons), craned into place, then fused with a special sealant, mixed on site and requiring seven days to dry. Three major windows allow viewing of the tank's hundreds of plants and animals. A wall mural along the staircase leading to the lower level of the Great Tank shimmers with light, while the music of whale sounds follows visitors' footsteps.

Back on the first floor, a changing exhibits gallery features

timely and topical exhibits, allowing the aquarium to be flexible in its involvement and encouraging return visits. Touch models and interactive displays at the Discovery Lab lure whole families into hands-on review of the adventures they've just experienced.

Those who want to carry home a remembrance of the aquarium can stop at the gift shop — 3,000 square feet of unusual items for all ages, from jewelry to sculpture to books to stuffed animals, including replicas of the popular otters. The work of local artists is represented, with South Carolina-produced merchandise in abundance.

And for the many who will want to support the aquarium in its conservation efforts while enjoying unlimited admission to the facility, two categories of annual memberships bring exclusive benefits. Charter memberships range from \$35 to \$75. Supporters who contribute from \$250 to \$10,000 become part of the Aquarium Society and receive special recognition and benefits. For information on either of these options, call the South Carolina Aquarium Membership Department at (843) 577-FISH (3474) or visit the aquarium's Web site: www.scaquarium.org.

South Carolina Aquarium's neighborhood includes the new Charleston Maritime Center and an IMAX Theater, shops and restaurants. The aquarium offers after-hours use as a truly unique meeting and party facility. Catering and music options abound in Charleston, and the view is unequalled. For information, call (843) 720-1990 or visit the Web site. 🐟

Seagulls on Light Tackle



by Jim Mize

Fishermen catch all sorts of things they're not supposed to. In the cartoons, you usually see them catch boots. I've done that. Catfishermen sometimes pull in turtles. I've done that, too. You can even add to my list of catches a bush with a hornets' nest, a pair of pantyhose, and an electric line. As bad as these may sound, the worst of all was the seagull.

Before you hear that story, though, let me explain my disposition toward gulls.

Normally I like birds, but seagulls lack class. A buzzard is probably the only bird besides a seagull that spends so much time picking through garbage. In fact, that may explain why, on lakes near municipalities, the seagulls always show up on Tuesdays and Saturdays.

When they fly, seagulls hover like they're hunting a bathroom. That's why I never stripper fish from a johnboat.

Their constant squawking bothers me, too. Seagulls communicate with one another in a voice that can only be described as Phyllis Diller's laugh played backward. With that tone, they must be complaining about the food, the cold, or their inability to get rid of the aftertaste of dead fish.

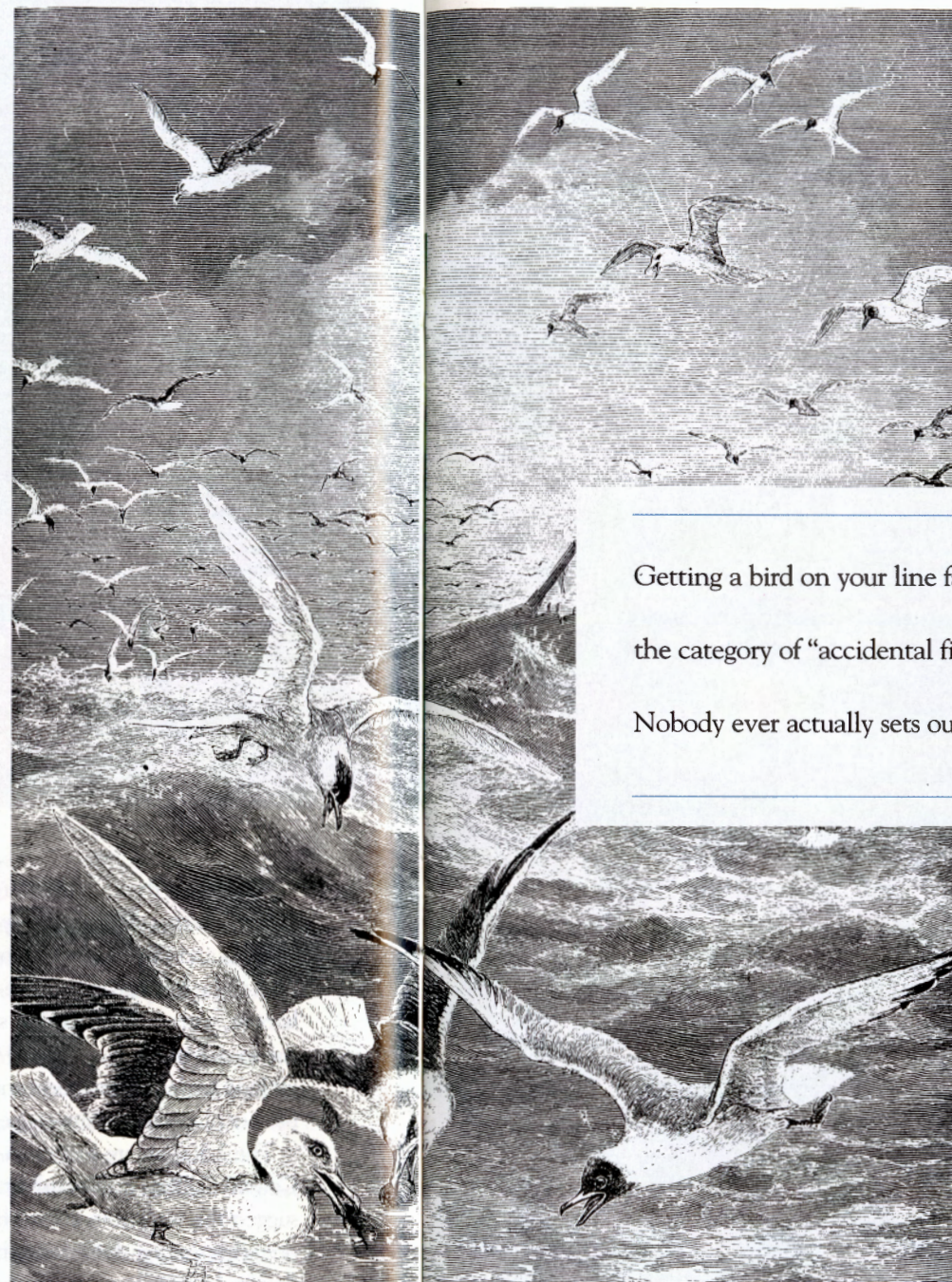
It's no wonder Alfred Hitchcock picked them for the lead role in his movie *The Birds*. Heck, they scared me *before* they attacked.

My son, on the other hand, loves seagulls, if for no reason other than they pester me. When we go to the lake, not only does he chum with crackers, he sets out tourist decoys.

Some fishermen apparently love seagulls, too. They follow them around and converge on them, primarily because someone spread the word that gulls are an indicator of schooling fish. This isn't always true, though, or you'd get more bites at the landfill.

Anyway, nothing else sets boats in motion toward one spot at such high speeds. It's more frantic than a Blue Light Special on Powerbait. The only other time I saw so many people heading to the same place was last Christmas when a front-row parking space opened up at Wal-Mart.

In general, a flock of seagulls over fresh water means either you're onto a school of stripers or someone sank a garbage truck. I've often wondered how



Getting a bird on your line falls under the category of "accidental fishing."

Nobody ever actually sets out to hook one.

seagulls find these schools in the first place. It can't be that they have a good sense of smell — they'd be a lot thinner.

By now I'm sure you're starting to see why catching a seagull would pose such a dilemma for me, especially when you consider I have no idea how to clean one of the things and don't even have a good recipe.

Besides, it's not something I would set out to do. I can't even keep a cracker on a hook. Anyway, enough rambling, here's what happened:

It all started just after sunrise one Saturday morning on Lake Murray. The fog lay on the water like icing on a carrot cake. No wind. No waves. Just the white water created by frenzied, feeding fish.

I pulled up to a point where seagulls swarmed over the surface like fruit flies on a brown banana. They were frantic, diving, dipping, scooping up shreds of fish. They got me overly excited, and I cast so far past the school they'd have to rezone just to get me on the right bus.

Fifty-seven of the fifty-eight seagulls dodged my line. The last one got tangled up and dived like a kamikaze in *Tora! Tora! Tora!* It was the first time I ever had a bird's nest in my line that was inhabited.

At this point, four other boats converged on the school to fish alongside me. Not knowing what else to do, I reeled in the gull and made a big show of measuring it to make them think it might be a keeper.

Not falling for that old trick, a guy in the closest boat yelled over, "Hey, what did he hit?"

Ever my witty self, my first urge was to call back, "Anything from a landfill. Like, maybe, your boat." Actually, since his boat looked faster and he was bigger, wisdom overruled wit and I replied, "You think this is a good one, you should have seen the buzzard that got away."

Then, with an audience thoroughly enjoying itself at my expense, I was faced with taking this rascal off. At the exact same instant, I realized what a strong proponent of catch and release I really was. But getting this joker off was no picnic. The way he pecked, scratched, flogged and squawked, you'd have thought I'd hooked my son.

In a state of panic, I flopped the net over him, taking special care with his gasping mouth and goofy-looking feet. After a brief struggle, I got him loose and threw the net over the bird. Then, I clipped my line and pulled it back through the feathers, sending the bird off in a mood only slightly worse than my son's.

Still, the image of catching that seagull is engraved in my memory like an epitaph; I'll take it to my grave. Funny thing is, I can't remember if we caught any fish. 🐟

Jim Mize is an Upstate outdoor writer who figures seagulls can take a joke. Otherwise, why are they always laughing?



MARTIN MYSTIQUE

*Capistrano may have swallows,
but Lake Murray has purple martins,
in numbers that darken the sky
and amaze onlookers.*

by Kay Gordon

Just before dawn, a lone boater heads toward Lunch Island on Lake Murray. The wake of his boat breaks the dark water in the shimmering starlight. He cuts the motor, drifting toward the northeastern tip of the island. Except for a light breeze and the sound of waves lapping against the shore, the morning is still. About twenty feet offshore, Kemble Oliver shines his spotlight on the island's low-lying shrubs.

Three summers later, Oliver recalls that morning as clearly as yesterday.

"A thousand eyes stared back at me," he says. "The purple martins were lined up shoulder to shoulder to shoulder, in row after row after row."

Oliver turned off the spotlight, dropped anchor off the sandbar at the eastern end of the island, sipped his coffee and waited for dawn.

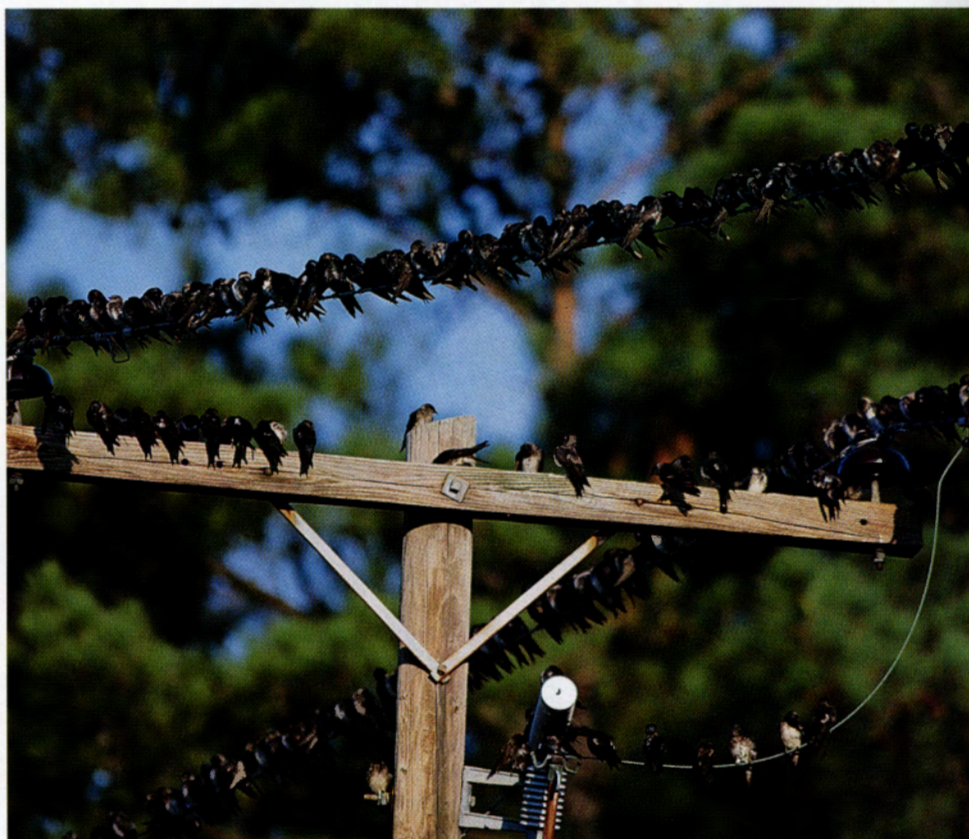
"The first flight of martins departed the island central, heading south, just as the rays of the rising sun touched the island," he says. "Then another flight headed west, and another and another and another, until there came an enormous whirring and the sky turned black with martins . . . and then they were gone."

Oliver is one of hundreds of spectators who return again and again by boat to view the purple martin majesty, at dawn and dusk, and to invite other people to witness the incredible sight of an estimated million birds in a fantastic choreographed flight.

Iridescent insect-eaters, purple martins may congregate in daylight hours with other perching swallows. The birds' incredible numbers show up vividly on the early morning Doppler radar image (right), the thousands leaving the Lake Murray roost visible as a ring in the center. This photo also reveals small roosts at Lake Thurmond and near Greenville; "ground clutter" spreads from Columbia toward the coast. Boaters gather at Lunch Island to witness the martins' return at the end of a day of feeding (previous pages).



JAMES R. HILL III, THE PURPLE MARTIN CONSERVATION ASSOCIATION



It's all over in fifteen or twenty minutes. Everybody sees something different in those moments, says Debbie Blanks, an operations manager for SCE&G, which owns the island. "It's almost like looking at a moving Rorschach ink blot," she says.

Until the 1990s, Lunch Island was just another of the sixty or-so islands on the lake, popular with campers and picnickers. Also known as Bomb Island, it was a target area for pilots dropping practice dummy bombs during World War II.

Since the mid-1990s, the roost, about two thirds of the twelve-acre island on the eastern end, has become nationally acclaimed as a purple martin sanctuary — the first official purple martin sanctuary in North America.

John Cely, wildlife biologist with the state Department of Natural Resources' Wildlife Diversity Section, says the Lake Murray roost is "one of the most spectacular wildlife sites in South Carolina."

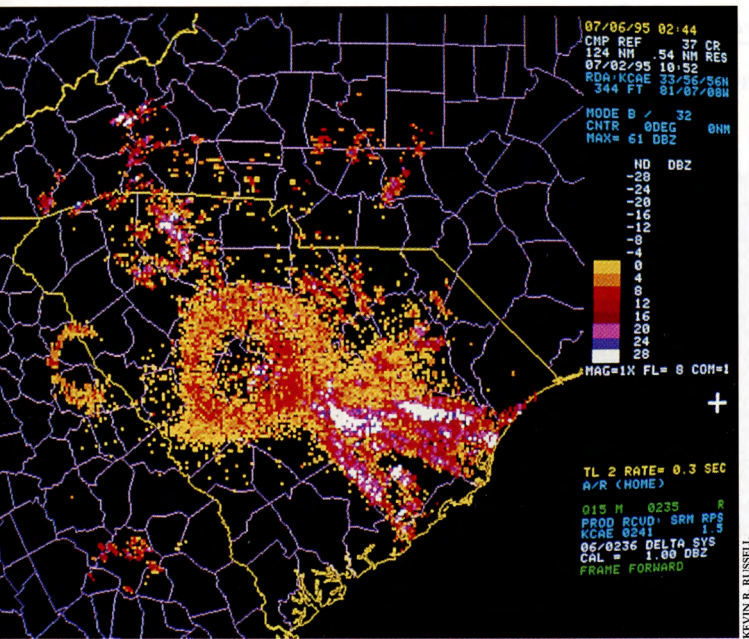
The numbers of birds are astounding. Sid Gauthreaux, a Clemson professor of biological science and ornithologist who

is internationally recognized for using radar to track bird migration, conservatively estimates a million or more purple martins at the Lake Murray roost, which is several miles from the dam. The Purple Martin Conservation Association calls the roost the largest in North America. Dr. Gauthreaux says it is one of the top three.

Gauthreaux conducted Doppler radar studies on the Lake Murray nocturnal roost in 1995 with his former graduate student Kevin Russell to try to determine the birds' flight patterns.

Since the 1970s, SCE&G has conducted prescribed burnings on all the islands to control undergrowth. Speculation is that the burning helps create the vegetation and favorable habitat the martins like: bamboo, switch cane, sumac, poke berries and low shrubs. The martins also favor the island because of the natural water barrier and the lack of predators.

About ten years or more ago, Lexington attorney Bob Wilkins discovered the martins while boating. He didn't know



what they were and asked Palmer “Satch” Krantz, executive director of Riverbanks Zoo, to identify the birds.

Krantz knew they were purple martins. He considers the Lake Murray purple martin roost to be “a wildlife phenomenon equal to some others that are very well known, such as the flamingoes on Lake Nakuru in Kenya. It’s worth going to see. I feel that the purple martin roost is every bit as dramatic as the flamingoes.”

Krantz calls Wilkins the “father of the roost” because of his persistence in helping ensure that it would be protected.

In 1996, the DNR, the Columbia Audubon Society and SCE&G designated the roost as a sanctuary. The eastern end of the island is protected from early June through September, but the roost can be viewed from offshore, says Tommy Boozer, supervisor of lake management programs for SCE&G.

In addition to mesmerizing viewers with their flight displays, the martins, the largest swallow species in America, are beneficial to humans because they eat flying insects. Purple martins prefer to nest near people and are the only songbirds east of the Rocky Mountains that are totally dependent on man for their nesting places. In the west, purple martins still nest in natural cavities and old woodpecker holes in trees. In South Carolina, a few scouts come first each year in the late winter, searching for gourds or martin houses for their nests, followed by others arriving in February or March. Some martins travel as far north as Canada or the Pacific Northwest to breed. After the young are about 28 days old, they leave their nests in the late spring. Martin families congregate in masses during the summer

months at the nocturnal roosts, staging areas for their homeward flight to South America.

Every morning, the birds depart simultaneously in a 360-degree doughnut-like dispersal from the Lake Murray roost. The first birds leave about forty minutes before sunrise, with most leaving about ten minutes before sunup.

After feeding on the wing in a radius as far as fifty miles away from Lunch Island during the day, the martins fly back to their roost at sunset or first dark. Like clockwork, the birds swoop down en masse, filling the sky in one huge, purplish swirling cloud, flying high and low and from all directions, like synchronized spokes of a wheel coming into the center.

The peak time to view the roost at Lake Murray is in a three-week period from mid-July to the second week in August.

“A roost of this magnitude is very important and the biological aspect should be protected,” says Norman Brunswig, sanctuary manager at Beidler Forest and director of the South Carolina State Office of the National Audubon Society. “It is a big deal. There are not too many places you can go and see that many birds. It’s a thrilling spectacle.”

Kay Gordon is for the birds. She retired after nearly twenty years as a reporter for The State-Record Company and now is a free-lance writer living in Sumter County.

Want to know more about purple martins?

Check out these Web sites and addresses:

- ◆ Purple Martin Conservation Association:
www.purplemartin.org or write Edinboro University of Pennsylvania, Edinboro, PA 16444.
- ◆ National Audubon Society:
www.audubon.org or write National Audubon Society, Francis Beidler Forest, 336 Sanctuary Road, Harleyville, SC 29448. Telephone: (843) 462-2150. Hours at Beidler Forest are 9 a.m.-5 p.m., closed Mondays.
- ◆ Columbia Audubon Society:
 (803) 748-9066. A recorded message gives updated information, including meeting times.

Once known only as swimming holes and summer havens, state parks have evolved into full-featured family recreation and education complexes.

by Mike Foley

About 184 years ago, a party of trekkers began what would be a long climb to a beckoning peak in Pickens County. Upon reaching the summit they gazed out at the forests below, and one hiker recorded his experience for others. His account appeared in the *Camden Gazette* in the language typical of the time, which was long before photography made the scenic wonders of North America known to all:

“Very few persons who have once cast a glimpse into the almost boundless abyss, can again exercise sufficient fortitude, to approach the margin of the chasm. Almost every one on looking over, involuntarily falls to the ground senseless, nerveless and helpless; and would inevitably be precipitated, and dashed to atoms, were it not for the measures of caution and security that have always been deemed indispensable to a safe indulgence of the curiosity of the visitor or spectator. Every one on proceeding to the spot, whence it is usual to gaze over the wonderful deep, has in his imagination a limitation graduated by a reference to distances with which his eye has been familiar — but in a moment eternity, as it were, is presented to his astonished senses; and he is instantly overwhelmed. His whole system is no longer subject to his volition or his season, and he falls like a mass of lead, obedient only to the common laws of mere matter. He then revives and in a wild delirium surveys a sense, which, for a while, he is unable to define by description or limitation.”

Despite this astonishing response to the view, or perhaps because of it, others followed these early hikers over the ensuing years, and a hotel was built on the mountain's shoulders to accommodate them. In 1938, local citizens and government officials gathered near the site of the long-vanished hotel and dedicated the mountain and 3,000 surrounding acres as Table Rock State Park.

The appeal of such places is timeless and clear, yet difficult to articulate. Today that same ascending path, worn three feet deep in places by generations of hikers, is undergoing a major renovation. Last year more than 40,000 people set out on the Table Rock trails. One hardy soul, Ron Ford, completed his one-hundredth trip to the summit.

In the years before World War II, thousands of young men of the Civilian Conservation Corps built the rustic and efficient structures at Table Rock and at national and state parks across the country, including sixteen in South Carolina. “I don't know if we could ever duplicate what they accomplished,” says Table Rock State Park Manager Poll Knowland. “The stone and log buildings were basically built by hand from materials taken from the land.” Table Rock's CCC structures are now on the National Register of Historic Places.

Cooling Off, Heating Up



PHILIP JONES



Gear and equipment change, but the “family” aspect of enjoying state parks stays the same. Yesteryear’s picnickers and anglers at Givhans Ferry State Park share a goal with today’s road rangers and tomorrow’s fishermen: to make the most of their time outdoors. Coastal parks, such as Edisto Beach (previous pages) have seen dramatic increases in visitation.

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It is this complementary blend of natural resources and rustic structures that draws visitors back to Table Rock and its sister parks year after year. S.C. State Parks Assistant Director Phil Gaines says that his childhood memories of Table Rock led him to his profession. “From the time I was ten years old, I knew I wanted to be a park ranger. Now I know that what we are really doing is preserving these same experiences for my children and all the children of South Carolina.

“Change is constant,” he says, “and we have to recognize that, but as stewards we must be very careful not to tinker with the natural resources and traditional development that provide the attraction of our parks.”

Views of South Carolina’s parks have changed, based not only on recreational preferences and social taste but also on advances in technology. During the early years, a trip to the nearest state park area was often the best way to stay cool during South Carolina’s hot summers. With the advent of air-conditioned facilities such as theaters and shopping malls, the local swimming hole has disappeared along with the porch swing. Within a single generation, keeping cool and comfortable meant staying inside rather than going outside.

It would also be difficult to overestimate the negative influence of television on outdoor recreation. Falling victim to these trends, the swimming beaches at Cheraw, Sesquicentennial, Lee and Aiken state parks, crowded with swimmers thirty years ago, were virtually abandoned by 1990. In addition, the affordability of automobiles and gasoline and the availability of improved roads allowed leisure activities to be enjoyed at even



greater distances. With rising standards of living and more leisure time came a greater demand for recreational activities. The result was that people no longer satisfied themselves with nearby convenient recreation but planned and sought out more distant destinations.

One revealing statistic: in 1948 Cheraw had five times the visitation and Sesquicentennial near Columbia had fifteen times the visitation of Myrtle Beach State Park. Within ten years, those statistics had permanently reversed with Myrtle Beach leading its closest rival — Hunting Island State Park. Clearly, South Carolinians had discovered their coast and liked what they found. Park Manager Ray Stevens of Hunting Island says that when his park was developed, it was accessible only by passenger ferry. “It was only in the 1950s that a bridge was



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Other changes have been restorative. Very little of South Carolina escaped the ax and plow, and many parks have recovered extensive forest cover in the past seven decades. State Parks Forester Jay Clingman says, "I am constantly amazed at old photos of the parks and how little forest cover was there. Cheraw State Park contained agricultural fields and peach orchards. Table Rock had cotton fields where the lake is now. There were few large trees on any of our parks."

The Civilian Conservation Corps contributed by planting thousands of trees, and elsewhere nature began her process of recovery. "South Carolina has more forests than it did half a century ago," says Clingman, "but they are often commercial forests harvested for wood products. Someone needs to preserve native forests that were once typical in South Carolina. That's a role we take seriously. There are not many places in South Carolina where you can see a forest with trees fifty or a hundred years old. Except on public parks and preserves, it's not economically viable."

Today old-growth longleaf pine at Santee and Cheraw state parks provides necessary habitat for the endangered red-cockaded woodpecker. Mature maritime forests thrive at coastal state parks — Edisto Beach, Hunting Island and Myrtle Beach.

"Even though they are barely a hundred miles apart, they each exhibit subtle differences," says Clingman. "Each has a story to tell, and they remain the only easily accessible examples where the public can experience what our coastal-forest habitats

looked like before development changed the face of the state's oceanfront."

At Myrtle Beach State Park, Park Naturalist Ann Wilson frequently leads walks through the 110-acre maritime forest, now registered as a preserve with the South Carolina Heritage Trust. "This forest," says Wilson, "is representative of what the Grand Strand looked like when George Washington rode down this same beach on his Southern Tour in 1791. It is amazing how quickly it has all disappeared. Tracts such as these are all that are left for the public to see."

Perhaps no other park exhibits the balance of natural history and recreation that Huntington Beach does. Also a registered site with the

S.C. Heritage Trust and recently named one of the best state parks in the Southeast by *Southern Living* magazine readers, the park draws thousands each year for traditional beach recreation. It has also become a four-season destination for travelers intent on studying the natural resources and wildlife habitat of the

finally constructed," he says. "You have to remember that, in those early years, Hunting Island was the only beach accessible by road on South Carolina's southern coast."

While in many cases the vision of a park as a community gathering place began to break down with an ever-more-mobile population, some parks defy the rule. Oconee State Park still serves its local community while drawing visitors from all over the Southeast. Park Manager Andy Davis says some families have visited for generations. "They tell me that it's very much like it was fifty years ago, and that's why they like it," he says.

"Of course, we now have electricity and refrigerators in the log cabins," says Davis. "Kids used to row across the lake and get ice for the boxes. The boats are now just for recreation, but my swimming area still prospers, while others in the state are used very little. No one in the park system remembers exactly when our traditional summer square dances began, but some tell me it was more than fifty years ago. The only difference today is that we have built a larger building to accommodate them as well as other activities."



S.C. STATE PARK SERVICE ARCHIVES

S.C. STATE PARK SERVICE ARCHIVES

coast. Nationally renowned for its bird-watching, Huntington Beach is at the forefront of ecotourism, a term rarely used ten years ago. Park Naturalist Steve Roff points out the varying habitats that attract the 290 species that have been



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recorded here. "We have shorebirds along the beach, and a short distance away we have salt marsh, which supports other species," says Roff. "A few feet across the causeway you step onto an observation deck looking out over a freshwater pond where different birds reside. In addition, the mix changes throughout the season as migrants come and go. People love the alligators and the loggerhead sea turtles, but for birders it doesn't get any better than this."

Huntington Beach may be the best-known of the parks for bird-watching, but other opportunities in other places abound. Each year in October, thousands of migrating birds of prey ride the thermals along the Blue Ridge Escarpment past Caesars Head State Park where park biologists and volunteers identify and count them, feeding the numbers into a nationwide database. At Santee State Park, visitors can take a short hike to a blind where elusive wild turkeys feed on native grasses planted to attract them. "This area is probably the best place in the state to see turkeys not in a cage," says Park Ranger Jeff Cucinella. Birders also make the trip to Santee as well as to Cheraw to see the rare red-cockaded woodpecker.

Trends in public taste have always been difficult to predict. The early physical features of state parks included cabins, picnic and swimming areas, and even mess halls for youth groups. Campgrounds were not a part of early plans. However, camping saw unequalled rapid growth as an economical way to enjoy the outdoors, and today South Carolina's parks offer 2,900 campsites, the vast majority with full water and electrical hookups, in addition to 155 cabins and 40 lodge rooms.

Historic sites were also not considered in formation of the early park system. It was more than twenty years after the park system was created before the first were acquired — Rose Hill Plantation State Historic Site, the antebellum home of Gov. William Gist; the Colonial town of Dorchester (Old Dorchester State Historic Site) with its French and Indian War fort; and the site of the last major Civil War battle in the state, Rivers Bridge State Historic Site. Over the years, others have been added, including an early 18th-century canal (Landsford Canal State Park), a 200-year-old frontier fortified trading post (Oconee Station), and the site where the first permanent European settlement was founded at Charles Towne Landing. Today, eighteen sites within the state parks system are listed on the National Register of Historic Places.

Once swimming areas drew droves of people to cool off in state parks such as Sesquicentennial. With the advent of air conditioning, park visitors' interests shifted to other activities offered by the parks: hiking, nature study, camping, wildlife observation, even history lessons. Oconee State Park offers solitude in a woodland setting.



TED BOING

Not only can parks tell us about the human events and forces that made South Carolina, they can illustrate and bring understanding of the natural world and the biological processes that support all life. "The resources on our parks give us a unique educational opportunity," says State Parks Director Van Stickles, "to bring people in contact with sites which illustrate and reinforce scientific and historical themes."

The State Park Service has increased its emphasis on education and interpretation over the last two decades. In 1984, the first park naturalist was hired at Caesars Head. Presently there are twenty-five rangers whose duties address education and

resource management. Development began to focus on education with the completion of the Jones Gap Environmental Education Center in 1989. "This year we plan to complete renovation of a meeting facility at Lee State Park into a classroom with labs and exhibit spaces," says Stickles. "There are two environmental education centers on the drawing board. We are particularly excited about a center planned for Edisto Beach in partnership with the Department of Natural Resources, which will serve as a gateway to the ACE Basin.

"It's the resources protected within the parks that make all this possible. The more I observe parks and what draws people

to them, the more I realize that it's not the buildings or the development we carry out, but the inherent attractiveness of the land itself. That includes not only those rare habitats and special places but many less-spectacular and typical landscapes found on state parks. We don't undervalue a great day of fishing in a small pond or a night in a campsite on one of the state's reservoirs. We will be ready to serve the people of this state in the 21st century, as long as we stay true to the core value of our parks." 🐾

Mike Foley is chief of resource management and interpretive services with the S.C. Park Service.

With limited staff and resources,
and a mandate to focus on managing populations, not individual animals,
how does the DNR respond to requests from the public to assist distressed wildlife?



Coping With Injured Wildlife

by Pete Laurie

In the Midlands, a doe deer with a fractured front leg stumbles into an elementary schoolyard. As the children run to the windows to watch it hobble around, the principal calls the local office of the S.C. Department of Natural Resources.

Two wildlife biologists arrive on the scene with a tranquilizer gun. The deer, disoriented and in shock, allows a close approach. A single dart strikes the animal's flank, and it quickly collapses. With a hundred pairs of eyes on them, the biologists load the deer into the back of their pickup truck and drive off. The school children celebrate, believing that the biologists have "saved Bambi."

Such scenarios become more common every day in South Carolina, as the public expects the DNR to come on a moment's notice to assist with injured or distressed wildlife. However, with limited staff and resources, the DNR must focus on populations, not individual animals, and cannot respond to every request for assistance with injured wild animals. Moreover, in many cases the animal in question will do better if left alone, and often the public can provide the necessary assistance.

Nongame biologist John Cely, with the DNR's Wildlife Diversity Section, has handled hundreds of calls from the public concerning distressed wildlife. He sees urban sprawl rapidly increasing the number of encounters between people and wild creatures.

"While we sometimes respond to injured animals close by, mostly we try to educate the public about what they can do themselves, and about the life history of the animal," Cely says. "By educating the caller we accomplish a lot more than just 'rescuing' the animal."

Baby birds out of the nest or birds that fly into windows need protection from dogs and house cats, but in most such situations Cely urges the public to "let nature take its course."

"Adopting" a baby bird, or trying to "save" a small songbird, usually ends badly, and the bird will survive better on its own. Cely (and other DNR staff across the state) can provide a list of volunteer wildlife rehabilitators with the training and proper permits to treat injured birds and small animals. The public can take most injured wildlife to a rehabilitator without DNR assistance. Large hawks and owls, however, require special handling since they possess sharp beaks and powerful talons capable of inflicting serious wounds.

"We usually try to get a local DNR biologist, technician or conservation officer to pick up injured raptors, and we have some excellent rehabilitators for birds of prey," Cely says.

"Part of our education effort involves explaining to the public that we deal with populations, not individual animals. Most people understand that after we talk to them for a few minutes."

As a discouraging example of the futility of "saving" injured

or stressed wildlife, Cely points to an oil spill off the state's northern coast in the winter of 1999. Biologists and the general public captured hundreds of oiled loons and brought them to a specially set-up treatment facility. Despite countless hours of work by many DNR staff and volunteers, and the expenditure of thousands of dollars in federal money, fewer than five loons ultimately survived long enough for release.

Injured deer present an equally difficult challenge for the DNR.

"We now have more than a million deer in South Carolina," says DNR Deer Project Leader Charles Ruth. "As the numbers of people, cars and roads increase, deer/car collisions escalate."

Most deer hit by cars die instantly, but occasionally a slightly injured deer, likely with at least one broken leg, survives such a crash. Usually a DNR law enforcement officer or a local, county or Highway Patrol officer dispatches the animal on the spot.

"Not long ago, we had a deer get into a warehouse in Georgetown," Ruth says. "We used a tranquilizer gun to subdue it, but its injuries required us to dispatch it later."

"Injured deer do not respond well to rehabilitation efforts, and few vets have the knowledge to provide medical attention to these fragile, high-strung animals. Deer under stress almost always attempt to flee, putting rescuers and bystanders in harm's way.

"We place human safety above all other considerations," he says, "and we urge the public never to handle a deer. Deer look small and delicate, but they have deceptive strength, along with sharp hooves and antlers."

The majority of car/deer collisions occur in the fall breeding season as both bucks and does move around looking for mates. Ruth urges special caution on rural roads in the late fall and early winter, but he has seen no scientific evidence that whistling devices mounted on cars have any effect. He also chuckles at the widespread but completely erroneous notion that the DNR, or some other state agency, will pay for deer damage to cars.

"I got a call just the other day from an individual who said, 'I hit a deer more than two weeks ago. When do I get my check?'"

Ruth politely tells such callers to talk to their car insurance agents, noting that even at several thousand per year, deer/car collisions amount to a tiny fraction of automobile insurance claims annually in the state.

In the spring of the year, "abandoned" fawns present another source of public confusion and another headache for DNR staff. Fawns do not travel with their mothers for the first few weeks of their lives, probably to reduce predation. The doe leaves the fawn bedded down in an isolated area, such as a hay field, but returns several times a day to groom and feed it.

Well-meaning citizens often pick up such fawns, take them home, then call the DNR. Unless clear evidence exists that the



WILLIAM G. COBBY

Young animals, like these blue-grey gnatcatchers or the fawn on page 34, may appear abandoned or unattended, but usually the parents lurk nearby; leave such youngsters alone and in place. Stranded marine mammals, including the finback whale shown beached at right, rarely can be saved; proper authorities should be notified. (See below, right.)

doe has suffered a fatal accident, fawns need no assistance and should be left alone.

“A captive deer leads a very limited life, and once fawns reach adulthood they become dangerous, perfectly capable of severely injuring people,” says Ruth. “While deer with their big eyes and graceful movements have a great appeal to most people, the loss of one individual does not impact the overall population.”

Echoing Cely’s comments, Ruth notes that the DNR manages the state’s entire deer herd and has neither the staff nor the resources to deal with individual animals.

“Educating the public about deer and their habits, as well as about our overall approach to managing deer, accomplishes more than trying to respond to every call about an injured deer or an abandoned fawn,” Ruth says.

The DNR’s Law Enforcement Division, because it has officers and regional offices all across the state, receives many requests from the public to cope with injured or otherwise distressed wildlife. However, most such situations have nothing to do with enforcing wildlife laws and regulations, and officers have only limited time for these calls.

“We bend over backwards to help the public whenever we can, but we simply cannot abandon a law enforcement operation to pick up a seagull with a broken wing,” says Horry and Georgetown counties Marine Patrol Sgt. Bill Duncan. “In nine out of ten cases, the caller can take the animal to a vet or a rehabilitator.”

Duncan says the public assumes that all officers possess a full complement of traps, cages and other gear to capture animals, but

most do not. On the positive side, Duncan notes that many local municipalities and counties have begun to play a larger role in dealing with injured wildlife, taking some of the pressure off DNR officers and biologists.

Marine mammals and sea turtles represent a very specialized type of injured or stressed wildlife and require special techniques. Because these animals have suffered substantial population reductions, individuals receive more attention.

Whales and dolphins of a dozen or more species regularly strand on South Carolina beaches, although most arrive already dead from disease or old age. Now and again, though, a live animal beaches. Because of the public interest in marine mammals, the DNR usually gets the call to “save” such creatures.

Unfortunately, only on the rarest of occasions can anyone save stranded sea mammals. Studies from around the world have demonstrated that invariably these animals suffer from internal disease or injury, and they become further stressed and go into shock as the receding tide leaves them on the solid substrate of the beach.

“We do not put stranded animals back into the water, and we do not permit members of the public to do so either,” says nongame biologist Sally Murphy. “These large, powerful animals can inadvertently injure rescuers and will only die a slow death in the ocean, or soon strand again a mile or two up or down the beach.”

Instead, Murphy has organized a team of veterinarians with the training and equipment to euthanize stranded whales and dolphins quickly and painlessly. Nine vets participate in the

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program. Meanwhile, the DNR has developed a detailed protocol and three response teams trained to deal with stranded mammals, and with the public.

“Once we arrive on the scene with the right equipment and the vet in a white coat, we can convince the public that we have the knowledge and the experience to deal with the situation,” Murphy says. “After we explain why we cannot save the animal and that putting it out of its misery represents the best course to take, the public usually supports us.”

The few sea turtles that strand alive annually have deep, life-threatening wounds, or have been sick for so long their flippers have started to rot. Vets euthanize such turtles immediately. Two or three times a year DNR biologists encounter a turtle only

slightly injured and transport it to a rehabilitation facility in North Carolina.

Hatchling loggerhead turtles can suffer from too much public assistance. After about sixty days incubating beneath the warm sands of the beach, the little turtles break out of their leathery eggs and claw their way to the surface. This process takes awhile, timed so that the turtles finally emerge after dark to avoid predatory gulls.

“Everybody wants to help the cute little turtles,” Murphy says. “Well-meaning but misinformed people see the sand over the nest collapsing, dig out the hatchlings and carry them to the surf in broad daylight. Gulls pick them from the water one by one. Unless disoriented by artificial lights, the hatchlings need



While common sense generally dictates leaving seemingly distressed wildlife alone, advice and assistance may be available, depending on the species and where you live. On the coast, concerning all types of wildlife, call (843) 762-5105. In the rest of the state, for situations involving game animals, call (803) 734-3886; regarding nongame species, including birds, call (803) 734-3894.

no help and do much better if left alone.”

With a sigh, Murphy repeats the common refrain, “Educating the public represents our greatest challenge.”

From stranded whales to baby birds to injured deer, the DNR has neither the manpower nor the resources nor the ability to “save” everything. Staff will always try to provide good advice, but in many cases, the public often has to accept an unfortunate situation, provide assistance when possible, and sometimes just let nature run its course.

“Ultimately, protecting and managing habitat provides the best way to ‘save’ wildlife,” Cely says. “I sometimes ask rehabilitators where they plan to release animals once we run out of suitable habitat.” 🐾

Pete Laurie, a staff writer for South Carolina Wildlife for 27 years, now works as a free-lance writer and woodworker at his home on Johns Island.

S U N S E N S E

*Burnished golden-brown,
tanned skin appears healthy and wholesome,
but too much sun exposure
carries serious health consequences.*

by Jim Goller

Warm, sunny days are here again. After winter's layoff, you plan to spend every available moment outdoors or on the water — frolicking, fishing and carefree, right? Whoa! Spending too much time in the sun is not only bad for you, it can even be deadly.

Statistics show that this year more than one million Americans will develop some form of skin cancer, much of it the result of too much sun exposure. But it's still possible to spend happy days in the sun; we just have to be smart about taking the necessary precautions.

Human bodies need some sun for good health, but, unprotected, our skin and eyes can be damaged and our immune systems can be suppressed. And with most average Americans acquiring up to 80 percent of their lifetime sun exposure before the age of eighteen, it's wise to protect not only ourselves but also our children from the sun's harmful rays.

When the sun radiates its warmth, invisible ultraviolet rays reach our skin, causing tanning, burning, and other skin and eye damage. There are three kinds of UV rays: UVA, UVB and UVC, but since UVC rays are blocked by the earth's ozone layer, it's exposure to UVA and UVB that causes skin damage. Melanin, a pigment found in your skin, is your body's first defense against the sun, absorbing dangerous UV rays before they do serious damage. Melanin varies with skin type; the darker your skin color, the more melanin your skin has. As melanin increases with sun exposure, your skin tans to protect itself. But even with a tan, the risk of damage increases with the amount and intensity of exposure. Those who are chronically exposed to the sun, such as boaters, anglers and sunbathers, are at much greater risk, as are those who work outdoors.

When the amount of UV exposure overcomes the skin's melanin protection, sunburn results. Unprotected sun exposure is even more dangerous for people with very fair skin and hair, moles on their skin or a family history of skin cancer, including melanoma. Even if your skin is dark or tans easily, you should protect your skin from overexposure to the sun.

Avoid peak times, when the sun is highest overhead and therefore the strongest (normally from 10:00 a.m. until 3:00 p.m. in the Northern Hemisphere). If in the sun during these hours,

apply protective sunscreen. Water reflects around 80 percent of the sun's rays, so take extra precautions on or near lakes, rivers or oceans. Other light-colored surfaces, such as the interior of a boat or even concrete, reflect most of the sun's rays, so if you're at home installing that new depth finder or simply cleaning your boat, remember to protect yourself from these rays. Cloudy, cool or overcast days can give a false sense of security, but UV rays travel through the clouds and reflect off sand, water and other surfaces, causing damage. Some prescription medications increase your skin's sensitivity to the sun; check the labels and contraindications packed with the medicine or ask your doctor if sun-sensitivity will be a problem.

Use the right sunscreen. The mark of a good one is the degree of protection from UV rays it provides, so concentrate on the Sun Protection Factor, or SPF, number marked on the container. This number indicates how long you can stay in the sun without burning. For example, if you normally begin to burn after thirty minutes in the sun, a properly applied sunscreen with SPF 15 affords fifteen times the protection, or 7.5 hours. The American Academy of Dermatology strongly recommends a sunscreen with an SPF of 15 or greater year-round for all skin types. SPFs do not actually increase proportionately with SPF number. With higher SPFs, such as 30+, 97 percent of the sun's burning rays are absorbed or blocked, while SPF 15 indicates 93 percent absorption. SPF 2 only blocks 50 percent of the harmful rays.

Sunscreens are available in many forms, including ointments, creams, oils, gels, lotions and waxy sticks, and even with built-in insect repellent. Apply liberally, and don't rub into the skin. Sunscreen works by forming a barrier between the skin and the sun; applying too thin or rubbing it in defeats the purpose.

Traditional formulas consist of chemical screens, and naturally some of the chemicals get on or into the skin. A new generation of very effective products called physical screens is now available. These physical screens, marketed under various labels such as Westwood Squibb's Pre-Sun 28, contain titanium dioxide and remain on the surface of the skin. They're similar to the familiar zinc oxide ointments we used to see as white creams on lifeguards' noses, but they disappear on the skin and afford better protection. The term "sun block," applied to chemical and physical preparations, is a misnomer, as they screen rather than truly block the sun's rays.

Don't forget the lips, nose, neck, tops of the ears and tops of the feet. These areas are more susceptible, often overlooked and need special attention. A variety of lip balms with high SPFs are available.

Columbia dermatologist Jim C. Chow, M.D., president-elect of the South Carolina chapter of the American Academy of



Dermatology, says that sunscreens should be liberally applied and reapplied often. "People often have a false sense of security when using high-SPF sunscreens and should take into account the factors of their surroundings," he says. "Swimming, water-skiing and other water-related activities, wind, perspiration from heat or exertion and other factors lower the SPF of even water-resistant sunscreens. Reapply often for your own protection, and reapply to protect children. At particular risk are individuals with fair complexions, such as those with red hair and green eyes." The American Academy of Dermatology has a Web site full of good sun tips, the latest cancer statistics and more, at www.aad.org/btsntf/index.html.

Choose clothing that provides comfort and UV protection. Dr. Chow says, "The best protection from the sun is to cover up with tightly woven black cotton, which has an SPF rating of fifty or higher. But to be both safe and comfortable, a good alternative is tightly woven cotton khaki, especially if lined. Every year I



On fresh water or salt water, anglers and boaters must be especially mindful of the sun's reflection. Sunglasses, gloves, long-billed caps and skin-shading clothing protect wearers, with some fabrics developed specifically to block UVA and UVB rays. Baffling displays of sunny products abound in retail stores — read labels to be sure the concoctions and apparel suit your lifestyle.

TED BORG

treat patients who get sunburned while wearing thin, inexpensive T-shirts. They come in with artwork patterns and logos still visible within the burned areas." Choose quality, tightly woven T-shirts that provide SPF 50 when dry. Tees expose the neck and arms, so apply sunscreen liberally to these areas. If your T-shirt is wet, it provides only SPF 4, so stay dry!

Many SPF-rated garment choices exist today, says the American Sun Protection Association, a not-for-profit trade organization of manufacturers, importers, distributors and retailers of sun-protection products. "Australia, recognizing the long hours many of its residents work and play in the sun, now advises them to wear SPF-rated clothing out-of-doors," says Chow.

To qualify as an SPF-rated product in the United States, fabrics must achieve minimum UV blocking after the tested equivalent

of two years of laundering plus two hundred hours of accelerated ultraviolet exposure and must maintain minimum blocking after 50 percent of the original material is worn away. The fabrics must also pass bio-compatibility tests to assure no irritation occurs to sensitive skin types. NASA has used these fabrics to develop experimental suits to protect extremely sun-sensitive children, allowing them to lead more normal outdoor lives.

Anglers, typically exposed to both direct and reflected rays, have many clothing choices of style, fit and material that afford full range of movement and are constructed of cool fabrics. Many shirts have special ventilating panels to keep the wearer comfortable. Long sleeves are important, and hats are a must. Wide-brimmed or long-billed caps with panels that turn down to

protect the face, ears and neck make good choices, but any hat is better than no hat at all.

The backs of your hands are particularly vulnerable to the sun, and anglers' gloves are available with open fingers and constructed of a fabric that dries rapidly. To protect your neck, try a head covering that is worn under hats or caps. Protect your feet by wearing socks and shoes.

If you're having trouble identifying what items in your current wardrobe are safe, a good rule of thumb is to place your hand



inside the garment: If you can't see your hand, you should be protected. Above all, stay clothed. On hot days it's hard to resist the temptation of going sans shirt or wearing that stylish new bikini all day long to work on your tan. Don't do it . . . there's no such thing as a healthy tan.

UV light from the sun damages the eyes as well as the skin. Prolonged exposure can lead to cataracts and macular degeneration. Wearing sunglasses is the best way to protect your eyes, but all sunglasses are definitely not equal. Purchase sunglasses marked with manufacturers' labels stating they provide 99 percent to 100 percent UV protection. Polarized lenses, which reduce or eliminate surface reflections, are available with UV protection, an important factor for boaters and anglers. Lens colors are available to enhance low-light or low-contrast lighting situations while providing excellent UV blockage.

Today's fashionable European eyeglasses with small lenses allow extraneous light to enter the eye around the lenses, so clip-on sunglasses for these do not protect as well as larger aviator or wrap-around styles. For rigorous sports like skiing and riding personal watercraft, goggles with UV protection are advised. Your optician can prepare your regular-prescription lenses and sunglasses with a UV coating, and even contact lens wearers can specify built-in UV protection.

Boaters and anglers can add shade to their boats simply and economically, using bimini-type tops, T-tops, hard tops and even simple umbrellas. Most new boats come equipped with some sort of canvas or vinyl convertible top, but many owners are now choosing T-tops. These offer reasonable shade while allowing anglers to fight the fish all around the boat without having to negotiate the support tubing and tie-down straps of a bimini-type top. Many have built-in electronics boxes to keep radios, depth sounders and other electronics overhead and out of the way. Recently, small canvas tops for PWCs have become available, designed to easily collapse and store for running.

A simple, economical fix for small boats is a large "stadium-type" umbrella placed in a rod holder and fitted with a length of PVC pipe as a handle extension. Some avid enthusiasts even sneak the patio umbrella off to the water for even greater protection. Just be sure to collapse it before you travel at high speeds or it could become a fish attractor on the bottom. While the shade provides welcome relief from the sun's blistering rays, you still need to apply sunscreen.

The weather pages of most daily newspapers and many network television weather reports feature some variation of the UV index. This index, based on a scale of 0 to 10+, tells how high the UV exposure will be on a given day and helps you plan what precautions you need to take to protect yourself from these harmful rays. Another source for the UV index and related links is on the Internet at www.cpc.ncep.noaa.gov/products/stratosphere/uw_index/.

The dangers of sun exposure are real, and taking precautions isn't just for warm-weather exposure. Still, there's no reason you have to give up outdoor pursuits. Whether you are an angler, hunter, birder, hiker or participant in another outdoor sport, you can still have fun in the sun if you take a few simple steps to reduce your exposure to the sun's ultraviolet radiation. And don't forget to visit your physician or dermatologist regularly.

Jim Goller, longtime circulation and marketing director for South Carolina Wildlife magazine and an avid angler, serves on the tournament committee of the S.C. Governor's Cup Billfishing Series and edits its newsletter, Tag and Release.

Photo assistance provided by SunGrubbies.com, designer of The Chic Sheik, a shade for ears and neck, with shirts and pants from Triple J Sportswear and Sportif USA. (Visit www.sungrubbies.com for more information.)

For related information, visit these Web sites:

- ◆ Solarweave/Solarknit Fabrics
www.solarweave.com/
- ◆ American Sun Protection Assn.
www.aspa.amc.org/
- ◆ American Academy of Dermatology
www.aad.org/btsntf/index.html
- ◆ NOAA UV Index
www.cpc.ncep.noaa.gov/products/stratosphere/uw_index/



Wood Stork



At first glance, you might suspect the wood stork has more in common with vultures than it does with other wading birds. After all, it shares two of vultures' most recognizable features — graceful, effortless soaring, and, in adults, a naked neck and a head that, to be blunt, can only be described as ugly.

The truth is, you'd be right.

"Actually," says Tom Murphy, a biologist with the Wildlife Diversity Section of the S.C. Department of Natural Resources, "genetically, they are more closely related to the vultures than to the herons. You just have to think about the marabou stork in Africa, which is a scavenger [a heck of a scavenger, actually, standing fully five feet tall and bullying the

vultures with whom it often shares meals of carrion]. The lines get pretty blurred there."

Most warm mornings wood storks, which stand three to four feet tall and have wingspans of five-and-a-half feet, can be seen riding thermals toward lofty positions above South Carolina's marshes.

"They can gain a lot of altitude without much flapping," says Murphy of their effortless grace. "Then, they'll peel off and glide down to foraging areas, which can be as much as forty miles from the colony, although averaging more like ten miles."

They are in search, during the nesting season, of enough fish to feed demanding and rapidly growing young. They return

Wood stork,

Mycteria americana

Description: 3 to 4 feet in length; 5-1/2-foot wingspan; white, with black along the bottom of the wing, and black tail. Naked head and neck on adults. Rough, heavy beak.

Range and Habitat: Southern U.S. to Argentina. In U.S., breeds from Florida into South Carolina.

Nesting and Young: Frail platform of sticks, in colonies, with up to 20 nests per tree — normally cypress trees standing in water. Lays 3, sometimes 4, dull-white eggs. Both sexes share incubation for about 30 days.

Viewing Tips: Look for large birds with black and white wings soaring in early morning sun. Can be spotted in shallow, freshwater feeding areas. Prime viewing areas in the ACE Basin.

after long feeding forays to rather flimsy nests atop cypress trees, primarily in the ACE Basin. The young birds are fed a regurgitant, demanding it with a begging peep. Except for the occasional warning hiss, adults have no vocalization, although they use bill-clapping on occasion, particularly in mating activity.

As for the stork's looks, this is, like most other soarers, a highly attractive bird in flight. With its two-toned wings, white at the leading edge and black along the trailing edge, its rising numbers provide a striking addition to the skies along the state's marshes.

No one is more qualified to speak about those rising numbers than Murphy. In fact, we know pretty precisely when the wood stork first became a nesting species in South Carolina because Murphy was there.

In the 1930s, there were about 60,000 wood storks (including 20,000 breeding pairs) in the birds' Southeastern range, all nesting in southern Florida and taking advantage of the rich waters of the Everglades. They would move up the coast each year after nesting in the spring, settling into Georgia and South Carolina to feed.

As often happens, Murphy's nesting discovery was serendipitous. He was in a small plane during the spring of 1981, flying over the coast, doing counts of heron rookeries. At one point he noted wood stork nests, the first ever unambiguously recorded in the state. There were, in all, eleven. There would be about twenty in each of the next three years, and then, in 1985, their numbers increased dramatically and continued to do so in the years following.

The reason was alteration of water-flow patterns in southern Florida — projects that changed the wetlands the birds preferred, draining and channeling what had once been regulated only by nature. Some of the birds began moving northward, nesting in central Florida, then in northern Florida and Georgia. Those that had moved north after nesting each year were moving

earlier, particularly as feeding conditions deteriorated.

"They were getting to South Carolina earlier and earlier," says Murphy, "and eventually they were early enough to be here in the breeding season."

Nesting normally gets under way here in April (although this year they were on nests by mid-March) and is usually finished by the second week in July. The birds nest in colonies, and there are frequently ten to fifteen nests per tree. The number of nesting pairs increased through 1998, when it peaked with 1,093. Last year, wind, hail and bad weather in general caused a great deal of nest abandonment, and just 520 pairs were counted. This year, says Murphy, "we expect it to be back up over a thousand."

Once nesting is completed, the birds will disperse and feed along a number of wetlands, although there are still many communal roosts. Birds are more likely

at that time to feed near those roosts and will sometimes fly short distances to feeding spots at night.

Wood storks are tactile feeders, probing underwater with their large, curved bills, which snap shut at the touch of a fish in what is one of the fastest movements of its kind in nature. The amount of rainfall is crucial to such feeding, as the birds classically feed on fish concentrated in smaller pools during dry periods. Generally, they regularly use the inter-tidal waterways, feeding about two hours either side of low tide.

The comeback here has not cured the species' overall population woes, and there are still only 7,000 pairs in the Southeast. Habitat alteration will continue to be a threat. But, in South Carolina at least, wildlife watchers are more likely than ever to be able to spot this welcome addition to our marshes and skyways. 🐾

— Rob Simbeck

Rob Simbeck is a free-lance writer who lives in Nashville, Tennessee.



July-August 2000, Vol. 47, No. 4

In the uppermost reaches of South Carolina, the clear waters of Lake Jocassee splash against the base of the Blue Ridge Escarpment, a "Blue Wall" of hills that represent the sharp transition between our Carolina mountains and piedmont. Here forested slopes drop in elevation by 2,000 vertical feet in a matter of one to two miles. A series of steep-sided gorges carrying surging mountain rivers and streams down to the piedmont has cut the generally uniform sloping face of the escarpment. These gorges together are known as the Jocassee Gorges.

The Jocassee Gorges tract, protected in a cooperative effort between the S.C. Department of Natural Resources, Duke Energy and the Richard King Mellon Foundation, with assistance from The Conservation Fund, contains about 43,500 acres. The most important consideration in managing the Jocassee Gorges is maintaining the natural character of the area. The secondary objective is to provide public recreation compatible with the area's natural character.

This driving tour is a mixture of everything that's good about the Jocassee Gorges and surrounding area — breathtaking views, magnificent waterfalls, lush hardwood forests, incredible botanical diversity and an opportunity to see some of the wild denizens of this mountainous region. If you have a full day to spend, you can make every stop, but individual sections of the tour make perfect shorter expeditions.

1 Begin the driving tour at the intersection of highways SC 11 and US 178. Traveling from this intersection, take 178 north toward Rocky Bottom, passing through impressive hardwood forests. Though some folks might think of these large hardwood trees as "old growth," in reality, this forest is mostly 30- to 40-year-old trees, demonstrating the adaptability and resilience of nature. Most of the Jocassee Gorges tract, and much of the surrounding area, has been logged since the early 1900s for lumber and paper products.



Flame azalea.

At 1.9 miles from the intersection of SC 11 and US 178, notice on the right Camp Adger Road, an improved dirt road that is open year-round to foot traffic. This road passes through the interior of the Jocassee Gorges tract about 7 miles to the location of an old Civilian Conservation Corps (CCC) camp. Continuing on US 178, after 5.5 miles pass McCall Royal Ambassador Camp on the left.

At 7 miles, reach the community of Rocky Bottom. You will take the second right, F. Van Clayton Road, toward a parking lot at the base of Sassafras Mountain, the highest point in South Carolina at 3,554 feet. Pass the Rocky Bottom Camp of the Blind and follow this road 4.7 miles to the parking lot at the base of Sassafras. Along the way the road twice crosses the Foothills Trail, the 80-mile footpath that winds its way between Oconee and Table Rock state parks. The Foothills Trail weaves its way through the middle of Jocassee Gorges, and from the parking lot at the base of Sassafras Mountain, it's 8.8 miles on foot to Table Rock State Park via the Foothills Trail.

Parking here and hiking the trail in either direction provides the hiker access to some of the highest peaks and ridges in South Carolina. Elevations here range between 3,000 and 3,500 feet, and hikers can get views of the mountain landscape from the trail or from adjacent rock outcrops. Botanical features of this area include beautiful flame azaleas, dense growths of pink lady slipper orchids, American chestnut sprouts up to 20 feet high, *Rhododendron maximum* and *Rhododendron minus*, mountain laurel and other mountain species.

2 Return to your car and head down the mountain, going back the way you came, and turn right on US 178 at Rocky Bottom. In just under a mile, cross the bridge over Eastatoe Creek, then turn left onto the upper dirt road, not the lower paved one. A vehicle with high clearance is recommended for this sometimes-bumpy road. Drive .2 mile to the Foothills Trail parking area on the left. From here you can hike on the Foothills Trail or take a spur trail to Eastatoe Creek Heritage Preserve, site of many rare plants. This preserve is part of the DNR's Heritage Trust program, which protects significant examples of natural and cultural sites in the state. Please note: all wildlife, including snakes, are protected on heritage preserves.



Motorists sampling this Upstate Field Trip can follow winding roads and access trailheads that lead to awe-inspiring Lake Jocassee overlooks and showy cascades like Laurel Fork Falls.

To hike on the Foothills Trail, leave the parking area on foot and turn left on the access road. From here it is a 7.5-mile walk west to Laurel Fork Falls on the Foothills Trail, and 4.8 miles east to Sassafras Mountain. The trail heading west goes 100 feet from the parking lot, then ascends steeply up a set of steps embedded into the hillside on the right side of the road, just before an iron pipe gate. White blazes mark the Foothills Trail.

To reach Eastatoe Creek Heritage Preserve, walk past the steps ascending to the Foothills Trail and go farther down the road a couple of hundred yards to the trailhead on the left, marked by three yellow blazes. An iron pipe gate 100 feet ahead is open during hunting season. From the trailhead it is a 2.3-mile hike to the bottom of Eastatoe Gorge, where humid conditions and narrow rock walls enable three species of rare ferns to thrive. One of these is found nowhere else in North America. Primitive camp sites are at the base of the gorge. Because of the sharp descent going in, the return trip is much more difficult.



TED BONG

Outdoor adventurers stand a chance of seeing rare plants like Oconee bells or wildlife as common as a white-tailed deer. Jocassee Gorges habitats range from a cold-water lake to thick hardwood forest.

3 Returning to US 178, you can head north and in 2.5 miles reach the North Carolina line. Though the Jocassee Gorges tract extends into North Carolina with many additional sites to see, this Field Trip will head south, backtracking to the starting point at the intersection of 178 and SC 11. From here, SC 11 goes north toward Table Rock, Caesars Head and Jones Gap state parks, or south, the direction we will take, toward numerous other attractions.

Heading south on SC 11, it is about 9 miles to Keowee-Toxaway State Park. Although sometimes overshadowed by Table Rock State Park, Keowee-Toxaway should be included on any visit to mountain parks. The museum and interpretive trail tell the story of the Cherokee from their arrival in the Blue Ridge to the present, while challenging trails and abundant wildlife make the trip worth the time of any hiker or naturalist.

A quarter-mile interpretive trail that begins at the park museum tells the story of the Cherokee Nation in four separate exhibits. For more serious hiking, cross SC 11 to the north section of the park and take Raven Rock Hiking Trail or the Natural Bridge Trail. The 4.2-mile round trip to Raven Rock is rated moderate to strenuous, while the Natural Bridge is more moderate and can be walked in about an hour. Along the way, you'll pass creeks and waterfalls and may see raptors like bald eagles, ospreys and, in summer, broad-winged and sharp-shinned hawks.

Native plant enthusiasts will want to watch for the Allegheny spurge, a plant of regional concern, and wildflowers such as Catesby's trillium and rosebud orchid. For those interested in staying overnight, a small number of campsites and one cabin are available.

4 Travel 4.5 miles south on SC 11 to reach the next stop — Devils Fork State Park on Lake Jocassee. Devils Fork, one of the newer state parks, attracts a mix of anglers and wildflower lovers. Lake Jocassee is known for its record-breaking trout. It's also known as one of the few public properties where

you can readily see Oconee bells. When these plants, listed as a species of national concern, bloom in mid-March, folks from all over arrive to see and photograph the delicate beauties. The mile-long Oconee Bell Nature Trail is a good place to look for other wildflowers, too, such as rosebay rhododendron, mountain laurel, crane fly orchid, whorled loosestrife, dwarf crested iris and flame azalea. The trail begins behind the parking area at the park store/ranger station and winds its way through woods filled with songbirds.

Back on SC 11, head south again, go 1.6 miles to the intersection with SC 130. Turn right on 130, and in about five miles watch for the Tater Hill Demonstration Project, established in 1995 to show the compatibility of wildlife and forest management. It's a good spot to see white-tailed deer, wild turkeys and perhaps even black bears. The project area is open to the public for self-guided tours, and educational signs are posted along the access road.

5 From Tater Hill, the Bad Creek Pumped Storage Station is only 5 miles ahead on the right, only a bit more than a quarter-mile from the North Carolina state line. Turn in, pull up close to the gate, and it will automatically open (daylight hours only). As you enter, look to the right to see Bad Creek Reservoir. After 2.5 miles on this road, turn left into the Whitewater River/Foothills Trail parking lot. Leave your car here and take a .6-mile walk through beautiful woods to join the Foothills Trail or one of two spur trails. A one-mile spur leads to Coon Branch Natural Area, and a 1.7-mile trail leads to a platform overlooking Lower Whitewater Falls.

The Whitewater River and its tributary, Coon Branch, shelter rare species and unusual biological communities. As you hike toward the river, look for interesting plants like running cedar and wildflowers ranging from wild ginger to native deciduous azaleas. Migratory songbirds that you might encounter here include the scarlet tanager, wood thrush, red-eyed vireo and ovenbird. The cool, moist woods surrounding Coon Branch are a special haven for salamanders and other amphibians. It's also a good place to spot bobcats. This unique area features stands of old-growth timber and showy springtime wildflower displays.

Drive down the Bad Creek road for another mile and a half to the visitors overlook (open only during daylight hours). This is a great vantage point for Lake Jocassee and the Jocassee



MICHAEL FOSTER

Gorges property. You can see Lower Whitewater Falls to the north, Rocky Knobs and the Thompson River Gorge to the northeast, and the Jocassee Dam to the southeast. You might also see eagles, ospreys and other birds of prey soaring over Lake Jocassee or nearby forests.

6 Travel back up Bad Creek Road to SC 130 through the gated entrance and turn left. Backtrack .7 of a mile, then veer right onto SC 413 toward Cashiers. You'll go about 2 miles up this road to find another outstanding overlook of Lake Jocassee, this one from a little higher vantage point. Here you can see the rolling hills of the Piedmont melding into the mountainous ridges of Jocassee Gorges. From this overlook it's easy to make a side trip to Walhalla State Fish Hatchery, where all of the brown and rainbow trout stocked into South Carolina waters are spawned. From the overlook, continue west a short distance to SC 107, where you turn left and in 2.4 miles reach the entrance to the fish hatchery.

To return to the starting point of the driving tour at SC 11 and US 178, from the hatchery, head back up 107 to SC 413. Continue down 413 and turn right, back onto SC 130. In about 4.6 miles pass Tater Hill, then in about another 5 miles reach SC 11. Turn left, or north. About fifteen miles will take you back to the starting point. On this brief tour, Field Trippers have only scratched the surface of the Jocassee area's beauty and natural diversity. Though the trip can be covered in a day, why not stretch it out to a lifetime? 🐾

— Greg Lucas

Adapted from Jocassee Gorges: A Partnership in Conservation, a brochure produced by the South Carolina Department of Natural Resources with funding from Clemson University Cooperative Extension Service and Clemson University Biodiversity Initiative. The complete brochure is available by contacting the DNR at (803) 734-3888.



JIM COLLIER



PHILLIP JONES

ROUNDTABLE



Reel Art Program Coordinator BeBe Harrison recognized the 1999-2000 winning artist, Jennifer Hilton, of Manning, at the Palmetto Sportsmen's Classic luncheon last March.

REEL ART — NO FISHY PROPOSITION

Some artists paint landscapes and some still lifes, but Reel Art competitors have their own special niche: aquatic animals and their habitats.

Familiarity with fish and fish habitat places young artists entering the state DNR's new Reel Art contest in an enviable position. It can help them depict their subject more accurately, a very important consideration of the contest's judges.

The Reel Art contest is open to South Carolina students in kindergarten through grade 12, in public, private or home schools, and entries are accepted through March 1, 2001, by the DNR. Students will learn what types of fish live in South Carolina waters and what types of aquatic habitats exist as they do research for their artwork.

Entries must be of a horizontal format, and any medium other than computers or other mechanical devices may be used to create the artwork.

First, second and third places and honorable mentions will be awarded for each age category: K-3, 4-6, 7-9, 10-12. An overall winner will also be named for the state. All winners will receive prizes and will have their work displayed at the Palmetto Sportsmen's Classic and on the DNR's Web site.

Subjects for elementary and middle school students may include any fish inhabiting South Carolina waters in its habitat. High school themes will change each year, with this year's topic being "anadromous or catadromous fish in their spawning habitat." A list of fish that live in South Carolina will be available to teachers, as well as a *Sportfish Identification Pocket Guide*. Aquatic activities from Aquatic Project WILD, SC MAPS and Project WET will also be available upon request, so teachers may use them as follow-up activities in their classrooms.

"The Reel Art contest will be an opportunity for students to learn about aquatic species and their habitats while they create them artistically and is

a way to promote aquatic conservation through artistic ability and creativity," says BeBe Harrison, coordinator of Reel Art and the related program, Reel Kids. The contest, a joint effort among the DNR's Wildlife and Freshwater Fisheries, Conservation Education and Communications, and Marine Resources divisions, will also teach students about South Carolina's diverse aquatic habitats such as oceans, estuaries, Carolina bays, mountain streams, blackwater rivers and reservoirs, she says.

Entries must be postmarked by March 1 and mailed to S.C. Department of Natural Resources, Reel Art, Attn., BeBe Harrison, P.O. Box 167, Columbia, SC 29202. To receive more information and a brochure and/or application, contact Harrison in the DNR's Columbia office at (803) 737-8483 or visit the Reel Art Web site: www.dnr.state.sc.us/cecl/educate/reelart.html.

Entering the Reel Art contest is one of many goals of the SC Reel Kids program (but you don't have to be in Reel Kids to enter). Reel Kids teaches youth about the aquatic world and rewards their efforts with prizes! For more information about the program, call the DNR at (803) 737-8483.

**OPERATION
GAME THIEF**
1-800-922-5431
STOP GAME AND FISH VIOLATORS



DNR officers and others will provide hands-on outdoor activities for children and adults at the National Hunting and Fishing Day event, to be held September 23 at Cohen Campbell Fish Hatchery in West Columbia.

NATIONAL HUNTING AND FISHING DAY EVENT PLANNED NEAR COLUMBIA

Want to learn more about outdoor skills and activities including archery, canoeing, wildlife-cooking, duck-calling, hiking, bird-watching and wildlife photography without having to invest a penny? You can try these and other activities free of charge on National Hunting and Fishing Day, Sept. 23.

Sponsored by the state DNR and S.C. Wildlife Federation, this major event will take place from eight a.m. to five p.m. at the DNR's Cohen Campbell Fish Hatchery, located at 1528 Fish Hatchery Road in West Columbia. Similar events are planned in other states on the same day.

"National Hunting and Fishing Day has traditionally come and gone in South Carolina with little or no fanfare," says Angela Viney,

event co-chair and executive director of the S.C. Wildlife Federation. "That's about to change." The event will offer hands-on outdoor learning opportunities for every age group, outdoor-oriented people and urbanites alike, Viney says.

"From the novice to the experienced angler or outdoor enthusiast, we'll offer activities that the whole family will enjoy," says Breck Carmichael, DNR assistant to the deputy director for the Wildlife and Freshwater Fisheries Division and also co-chair of South Carolina's National Hunting and Fishing Day celebration.

Along with the many other attractions, the event will feature wildlife art and taxidermy, hunter education and outdoor skills enhancement for camping. Other planned activities and demonstrations include target- and skeet-shooting, a BB-gun range for the kids, introductory fishing seminars, fly-fishing, cast-

netting, a kids' casting contest, kayaking, demonstrations of muzzleloaders and black-powder firearms, fly-tying, fish-handling, -cleaning and cooking, a marine touch tank and fish-hatchery tours, as well as Boykin spaniel and other retriever demonstrations.

In 1972, the U.S. Congress and President Richard Nixon established National Hunting and Fishing Day to recognize generations of hunters and anglers for the time and money they donate to wildlife conservation programs. To date, more than \$4 billion has been generated through the federal Wildlife Restoration Program. Since 1972, many millions of Americans have been introduced to wildlife-related activities through National Hunting and Fishing Day special events that highlight the vital role of hunting and fishing in conservation.

For more information on National Hunting and Fishing Day contact DNR at (803) 734-4133 or the S.C. Wildlife Federation at (803) 256-0670. Details are also available on the Web at www.dnr.state.sc.us or www.scwf.org.

Look for South Carolina Wildlife magazine's outstanding photography in exhibits and promotional materials for the world-class South Carolina Aquarium, now open in Charleston. The magazine has worked with aquarium staff to help depict the beauty and diversity of the state from the mountains to the sea, with breathtaking results! (See article, page 12.)

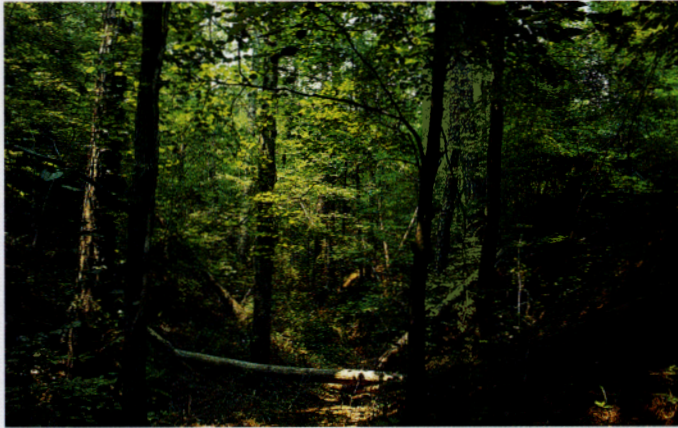
EMERGENCY PLANS CAN SAVE ANIMALS

Animals, wild and domestic, increase our quality of life in many ways and a new section of the state's Emergency Operations Plan makes sure they are protected in case of a natural disaster.

Clemson University Livestock-Poultry Health (CULPH) has led a group of support agencies to formulate a plan as the basis for local, state and federal animal emergency response for our state. As a support agency, the state DNR is involved with animal emergency plans that involve wildlife or fish issues.

The plan emphasizes individual planning and preparedness. Animal owners should have an emergency kit, including IDs, photos, medical records, first aid, food and water, and prearranged plans with friends or family for temporary housing for you and your animals. Having these ready may save time and lives.

Each county is participating by developing county animal emergency response committees and plans. Check with your local veterinarian, humane society, animal control, or Clemson Agriculture Extension Agent to see what your county has in place. Helpful information is available on the Web at www.clemson.edu/ep. For further information or brochures on animal emergency preparedness, check with local agencies or call Dr. Venaye P. Reece at CULPH: (803) 788-2260, Ext. 231.



TED BORG

Forest Legacy Program administrators will help landowners, state and local governments, and private land trusts identify and protect threatened forestlands.

FORESTED LANDS A LEGACY FOR OUR FUTURE

In the face of rapid development across the state, a cooperative program between state and federal agencies will protect forested lands threatened by conversion to non-forest uses.

The Forest Legacy program, administered by the USDA Forest Service, receives 75 percent of its total funding from the federal government. The remaining funds must come from non-federal sources, including private and in-kind donations.

Forested lands can be protected by means such as fee purchase and conservation easements. Any acquired properties will be managed by the state DNR and Forestry Commission. Lands under consideration for protection will be evaluated based on criteria prepared by program administrators from the DNR, Forestry Commission and Forest Stewardship Coordinating Committee.

Twenty-two states currently participate in the Forest Legacy program, including South

Carolina. In South Carolina, as program administrators are working to prioritize available tracts, they have divided the state into five Forest Legacy Areas: Foothills, Western Piedmont, Central Piedmont, Northern Coastal and Southern Coastal. In each of these areas, lands for acquisition will be evaluated and prioritized based on a number of factors, including forest product production potential, public recreation potential, riparian and hydrologic values, fish and wildlife habitat values, threatened and endangered species, cultural and historic resources, level of conversion threat, acquirability and manageability. Points assigned to these criteria will help coordinators to rank tracts. "Two of the primary goals of this program are to promote continuation of timber production and increase opportunities for public recreation." For more information on the Forest Legacy Program, contact the DNR at (803) 734-9810. 🐾

SPECIAL HUNTS FOR YOUTH, MOBILITY-IMPAIRED OFFERED IN UPSTATE

Today's young hunters and mobility-impaired sportsmen may soon take advantage of a unique opportunity to experience some outstanding white-tailed deer hunting.

For the fourth consecutive year, special hunts sponsored by Bowater Inc., International Paper Company, the state DNR and others make parcels of prime Upstate lands available for special hunts. The sponsors have provided the land, personnel and financial support to ensure that these hunts provide a quality outdoor experience for both the young hunters and the generally older, more-experienced sportsmen who are mobility impaired.

Youth 12 to 15 years old who have an interest in hunting but limited opportunities to hunt may participate in this outstanding opportunity. Mobility-impaired hunters who are permanently confined to a wheelchair or permanently require some type of assistance in walking are also welcomed. The hunts are provided at no cost to hunters.

Both groups of participants will hunt with the assistance of experienced volunteers.

The past year's mobility-impaired deer hunts allowed 34 hunters to enjoy this traditional outdoor pastime. Hunters took seven deer. Bobby Harrell, president of the S.C. Disabled Sportsmen Association, said, "These hunts provide us a great opportunity to hunt some very exclusive places and also

demonstrate to individuals who have recently become disabled that even some of the most serious disabilities do not have to stop us from enjoying outdoor activities such as deer hunting."

Twenty-six young hunters took advantage of the special hunts last year, taking five deer. Many had never hunted before. "We would like to see the youth hunts stimulate the kids' interest by showing them that a safe, quality hunt can be fun as well as a truly memorable recreational experience," says Mike Williams, the DNR's hunter and boater education coordinator.

Each of the special hunts includes a good meal, with great barbecue and a special time of fellowship with other hunters and friends.

Dates for the upcoming special Upstate hunts are not finalized, but those interested may obtain an application by contacting the DNR's Union office at 124 Wildlife Drive, Union, SC 29379 or calling (864) 427-4771. Those interested in youth hunting and fishing opportunities statewide should contact the DNR's Take One Make One program at P.O. Box 167, Columbia, SC 29202 or phone (803) 734-3942. 🐾

Applications for two youth "Take One Make One" dove hunts, to be held in the Upstate on September 2, are due by August 17. For more information, or to request an application, call the DNR's Clemson Office at (864) 654-1671.

S.C. MARINE RESOURCES ACT MODERNIZES COASTAL FISHERIES LAW

Confusing and complex coastal fisheries laws that have often created problems for recreational and commercial fishermen will be clearer and simpler from now on.

The Marine Resources Act of 2000, a comprehensive modernization of coastal fisheries laws that will be better understood by the public, went into effect July 1.

The bill is the most comprehensive piece of legislation ever passed for the Marine Resources Division of the state DNR.

“Coastal fisheries laws evolved over decades resulting in controls that were often disorganized or ambiguous,” said Dale Theiling, of the Marine Resources Division. “Basically, the bill consolidates and modernizes South Carolina’s coastal fisheries laws.”

Employees with the DNR have prepared educational materials that will make it easy for the public to understand the changes.

“During the preparation of the bill, the DNR benefitted from the ideas and comments gained at fifteen public forums and innumerable discussions with citizens,” Theiling said.

The public can find the new bill and other natural resources laws on the Internet at www.scstatehouse.net/code/titl50.htm or can call the DNR switchboard at (843) 762-5000 with specific questions. Details of the laws are available on informational brochures at the DNR offices in Charleston, Georgetown and Port Royal. 🐾

AT YOUR SERVICE: PHILLIP JONES



MARGIE BRIDGES

Phillip Jones has a unique way of making people see things his way.

The beauty of it is, people don’t mind at all — his viewpoint, as a photographer for *South Carolina Wildlife* magazine, often focuses on the amazing and magnificent wildlife of the state.

Through the lens of a camera, Jones shows views most people would never see otherwise, like the dangerous beauty of Raven Cliff Falls in a snowstorm. Thirty-plus years of experience traveling the state (and the world, as a staff photographer for the S.C. Army National Guard) with camera in hand have given him not only an eye for capturing the wonders of nature on film, but also a uniquely humorous outlook.

In fact, it’s impossible to be around Jones without getting a helping of his zany philosophy of life, always served up with a smile. With plenty of time alone on the road or in the

woods to think things over, he’s had time to boil it all down to a simple motto, which he uses to remind himself that “stress will kill you,” and willingly shares with others. Of life, Jones says “just start out slow and ease off . . .”

To those who know him well, like SCW’s Editor in Chief John Davis, that motto is one of his best jokes. “He does just the opposite!” laughs Davis. “In everything he does, he goes all out, even down to the way he chooses a carrot from a bowl.”

Even though his personal motto is more of a goal, Jones’ good fortune in his career has not been lost on him. Telling about the way he happened onto the career he still loves every day, he grins the whole time, splicing stories of his travels and fortunes, good and bad, together with truisms about life. And why not grin?

Along the way he’s had, by his own admission, some good advice, some good luck and some good opportunities. The result? A career he wouldn’t quit if he won the lottery tomorrow.

Though by necessity or by choice he spends much time working alone, he really enjoys people, especially sharing his knowledge and experiences as a photographer. While on leave from his job at *South Carolina Wildlife*, he gives lectures and teaches workshops on wildlife photography, often aided by his dummy, Snapshot, whom he calls the oldest living wildlife photographer in the world. “He’s someone I can identify with on stage,” says Jones. A practiced ventriloquist, Jones performs and teaches photography workshops on cruise ships, billing himself as a “phototrilquist.”

Though very different in nature, the two pastimes Jones enjoys, photography and ventriloquism, balance each other nicely. Jones uses his time alone while waiting for the sun to rise or his wild subject to appear to rehearse his act and dream up new material for it. This he keeps whispered into a small recorder for later use. The performances, well, that’s Jones’ time to impart the wisdom he’s gained during the course of his career, mostly by poking fun at himself. On stage, he and Snapshot use slides and other visuals, as well as anecdotes, to ensure that his audiences, at least for the moment, see things his way! 🐾

— Caroline Foster

ROUNDTABLE

URBAN ECOLOGIST: *Hurricanes and Wildlife*

This time of year, coastal residents listen a little more closely to the weather forecast, double-check their emergency lists and make sure their cars are well-tuned. The peak hurricane season is upon us. Although it has been more than a decade since Hurricane Hugo hit South Carolina, the devastation of that monster storm remains fresh in our memories.

The human aspects of hurricane damage, at least the physical part, have been well documented. Hugo, for example, was a \$7 billion storm and the worst natural disaster ever to hit a national forest. Not so well-known is the impact hurricanes have on wildlife.

Birds, because of their mobility, stand at least some chance of getting out of harm's way. Many seabirds are carried great distances inland by gale-force winds. Ironically, these hurricane waifs are a boon to bird-watchers who get to see off-shore pelagic species like tropicbirds, petrels, shearwaters and others at inland locations. I remember the morning after Hugo seeing many of the lakes and ponds in the Columbia area covered with terns and other shorebirds that had been blown inland more than 100 miles. We assume these beach birds find their way back to the coast, but many probably perish from stress and the difficulty of finding food in unfamiliar surroundings.

The smaller, "dicky" birds, while more fragile than their larger relatives, may fare better than expected. Most appear able to find pockets of shelter



PHILLIP JONES

How do wildlife cope when wind gusts exceed 100 miles per hour and storm surges of 10 feet or more flood the land?

on the ground and under debris that allow them to ride out the storm. But the aftermath may be worse than the storm itself. The foliage of so many hardwood trees was stripped clean after Hugo that birds dependent on the leaves and branches for cover and food support (insects) could have starved or been picked off by predators. Some ornithologists have speculated that hurricanes were partly to blame for the demise of the all-but-extinct Bachman's warbler.

Hérons, egrets, and marsh birds may suffer from hurricanes worse than most other birds. Biologists documented numerous dead rails, gallinules and wading birds after Florida and Gulf Coast hurricanes. After severe storms, the habitats these birds depend on are often decimated and sometimes take years to recover.

Deer, foxes, raccoons, bobcats, rabbits and other mammals, as well as reptiles and amphibians, are probably even more affected than birds by hurricanes. Habitat alteration after the storm probably has the biggest impact on these animals. The loss of older cavity and nut-bearing trees has considerable impact on squirrel populations, for example.

One thing Hugo taught us about impacts to wildlife is that the real, long-term loss comes in the form of habitat damage, not direct mortality. This storm struck some of the most valuable wildlife properties on the East Coast, including the Francis Marion National Forest, Cape Romain National Wildlife Refuge, Santee Coastal Reserve, and the Tom Yawkey Wildlife Center. About 63 percent of the endangered red-cockaded woodpeckers on the Francis

Marion were killed by the storm, but even more devastating was that nearly 90 percent of the woodpeckers' mature pine cavity trees were destroyed. Despite heroic restoration efforts by the U.S. Forest Service, it will be at least 50 years before this forest looks the way it did before 1989.

Hugo also destroyed about 25 percent of all the state's loggerhead sea turtle nests, but more importantly, about 38 percent of the turtle's nesting dune system was flattened. Forty-four percent of all bald eagle nests or nest trees in the state were blown down; fortunately the storm struck before the eagles started nesting.

Even the more subtle aspects of habitat damage can have overlooked effects. Much of the Spanish moss that festoons coastal woodlands is blown away in severe hurricanes, affecting birds that use it for nesting or foraging like the swallow-tailed kite, Northern parula and yellow-throated warbler.

Hurricanes are natural events that have influenced wildlife for eons. In pre-settlement times hurricanes may actually have benefitted those wildlife species that need the scrubby habitats created by the storms. Now, with so much coastal habitat lost to development, and more and more wildlife existing on increasingly isolated forest fragments and refuges, the effects of future hurricanes on wildlife populations and the habitat that supports them may be magnified beyond those of past natural events. 🐾

—John Cely

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