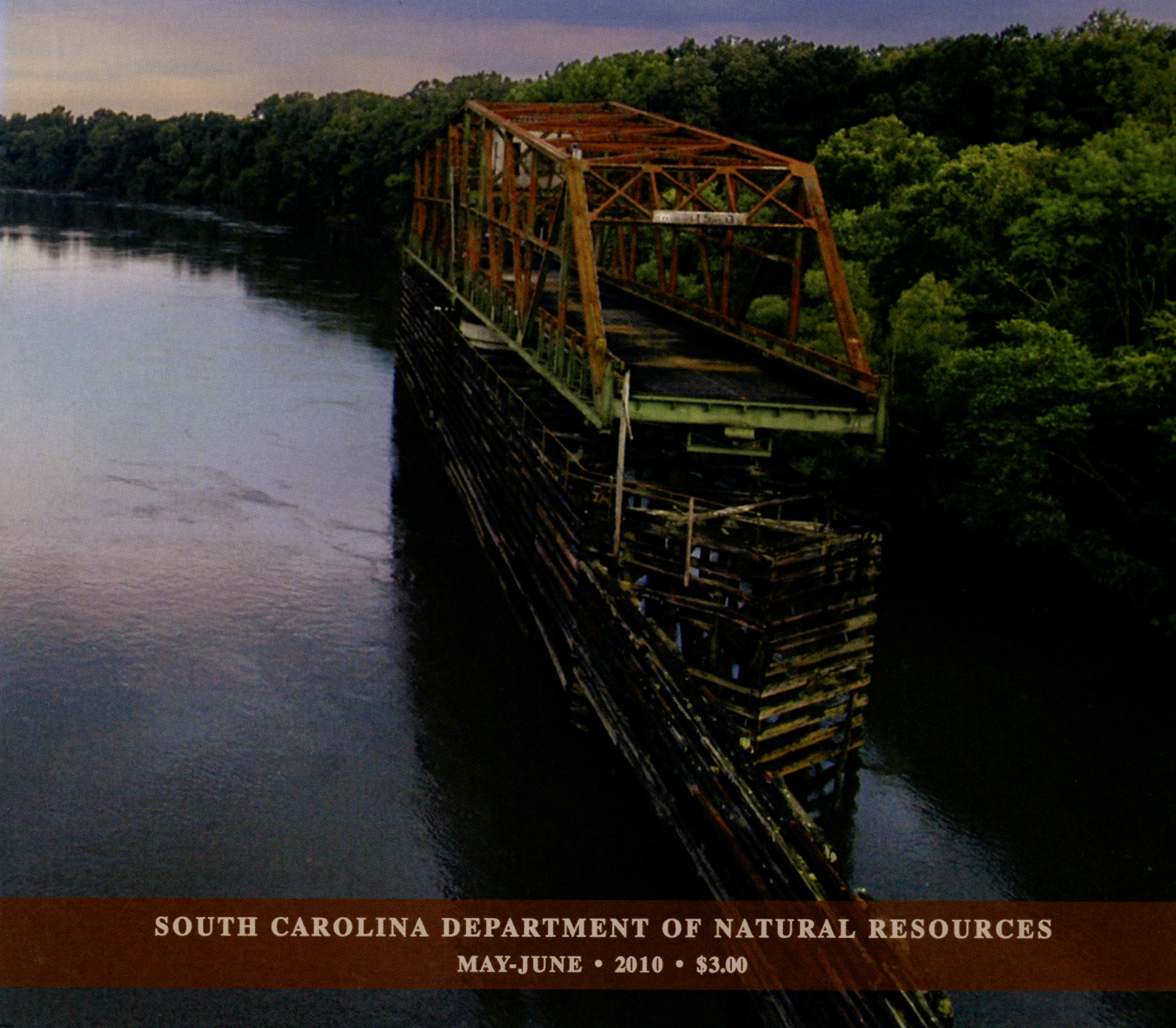


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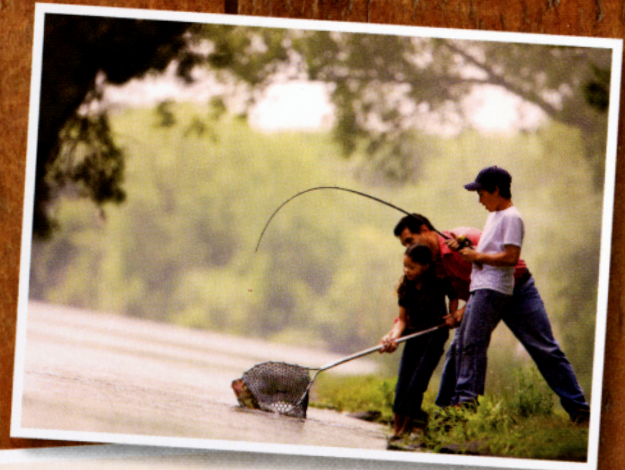
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The abandoned swing bridge located where S.C. Highway 301 crosses from Allendale County into Georgia is one of many scenic spots along the lower Savannah River. (See "Down the River to the Sea," beginning on page 20.)

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*Published by the South Carolina Department of Natural Resources. Magazine/Products Web page: www.scwildlife.com.
DNR Web page: www.dnr.sc.gov.*

South Carolina Wildlife Magazine is 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.



The day I sat down to write this column, an editorial appeared in the *Charleston Post and Courier* newspaper urging readers to support a proposed plan to restore stable funding to the state's Conservation Bank, an action that is sorely needed. A front page story in the same paper announced that a German manufacturer of high-tech wind turbine parts plans to open a new factory in Summerville. As I read both stories, I wondered how many people would see the connection between protection of our natural resources and successful economic development.

Obviously, a wind turbine research facility planned for the area was a major factor in this company's decision to choose South Carolina, but it's also a well-known fact that when we compete with other states for economic development projects, our natural resources make a big difference. Simply put, people want to live in places with clean, abundant natural resources and ready access to quality outdoor recreation. Or, as a 2009 economic impact study from the USC School of Business put it, "Well-managed natural resources provide a magnet for human capital." That same study found that natural resources deliver \$30 billion for the state's economy each year. (Read the full report at www.dnr.sc.gov/green.)

That's why adequate funding to manage our natural resources is also an investment in economic development. But in the last decade, that funding has been decreasing at an alarming rate. Since I became DNR Director in 2003, our budget has been cut, cut and cut again. DNR's allocation of state-appropriated dollars in next year's budget amounts to less than two-tenths of one percent of total state-appropriated funding—by far the lowest percentage of any state agency with comparable responsibilities. When you consider the \$30 billion annual boost that natural resources provide to the state's economy, it's clear that underfunding the management of those assets is a losing deal for South Carolina citizens.

For decades, hunters, anglers and boaters have carried the lion's share of responsibility for funding protection of our natural resources. The DNR owns approximately 277,000 acres of land, managed almost exclusively with funds generated by hunters and anglers through the purchase of hunting and fishing licenses and the payment of excise taxes on arms, ammunition, archery equipment and manufactured fishing tackle. To some degree, our citizens who do not purchase licenses or equipment and yet enjoy the benefits these lands provide are getting a "free ride." I believe strongly that it is time for funds other than just sportsmen-generated dollars to be allocated towards the cost of managing these properties. The DNR has recommended several legislative initiatives that could generate additional revenue to help, yet the General Assembly is hesitant to embrace them. Something must be done to increase funding for the DNR, or access to these lands may be curtailed, and our economic development efforts could suffer the consequences.

I call upon sportsmen and women across the state to make their voices heard in support of additional funding for our natural resources. I also urge anyone who cares about protecting wild places and wild things in our state to do the same, and to purchase a state hunting or fishing license this May—whether or not you intend to hunt or fish this year. Your support of the DNR will help fund habitat protection and management programs and ensure that future generations will enjoy a South Carolina where access to wild places and economic security are two sides of the same coin. 🦋

—John E. Frampton, Director
South Carolina Department of Natural Resources



PHILLIP JONES

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South Carolina Wildlife (ISSN 0038-3198) is published bimonthly by the Outreach and Support Services Division of the South Carolina Department of Natural Resources, 1000 Assembly Street, Rembert C. Dennis Building, Columbia, SC 29201. May-June 2010, Vol. 57, No. 3. Copyright © 2010 by the South Carolina Department of Natural Resources. No part of the contents of this magazine may be reproduced by any means without the consent of South Carolina Wildlife. Manuscripts or photographs may be submitted to The Editor, South Carolina Wildlife, P.O. Box 167, Columbia, SC 29202-0167, accompanied by self-addressed envelopes and return postage. The publisher assumes no responsibility for unsolicited material. Subscription rate is \$12 per year; Canada and foreign rate \$18. Preferred periodicals postage paid at Columbia, SC, and additional mailing offices. Circulation/Special Products: 1-888-644-9453; Editorial: (803) 734-3972; SCDNR Information: (803) 734-3888. POSTMASTER: Send address changes and inquiries to South Carolina Wildlife, Circulation Department, P.O. Box 167, Columbia, SC 29202-0167.

BUDGET PROBLEMS JEOPARDIZE OUR NATURAL LEGACY

Jumping Off Rock in the Jocassee Gorges is an inspiring place. There, the natural resources of South Carolina are on full display—forests, waterfalls and wildlife—at the edge of the Blue Ridge. Yet even as we revere the natural wonders around our state, we stand at a different sort of precipice; one offering an unpleasant view of a future where wildlife, water and other natural resources are lost because we are blinded by budgets and lose the foresight to protect our conservation legacy.

As we stand dangerously close to the edge of steep budget cuts, our vision must reach beyond the next fiscal year. The S.C. Department of Natural Resources teeters on the narrowest ledge, with budget reductions of 41 percent last year and the potential for a devastating \$3.5 million deficit and 60 percent cuts this year. Director John Frampton has told lawmakers that the agency may not be able to meet its legislative mandates. With 198 vacancies, the agency has a significant loss of water monitoring capacity that puts waterways and marine fisheries at risk.

Looking over the edge of this economy into a canyon of cuts would have us believe that there is no bottom to this freefall. A recovery will eventually occur, but dollar deficits shouldn't mean that we simply allow our conservation legacy to fall unfettered until then. We must act now because once precious natural resources disappear, recovery may not be an option.

Wildlife, water, forests—all have incalculable value. A 2009 economic impact study by USC's Moore School of Business found that natural

resources contribute nearly \$30 billion and 230,000 jobs to our economy. Although our natural resources agencies currently receive less than 1 percent of the state budget, they return dividends multiplied thousands of times over. We ignore their importance at the peril of our lives and the wild things they protect.

Our way of life in the Palmetto State has always been defined by our natural relationships. We have wild places and wildlife that need stewardship. In caring for “the least of these,” we care for ourselves. From my childhood in rural Edgefield, I learned many life lessons in nature. I hope that generations to come can experience the nurturing and essential education that the outdoors provides. Whether fishing, hunting or simply watching a summer sunset, nature enriches us all. We cannot afford to let dollars doom our natural future. Let's put our money where our hearts are and pull our natural resources back from the brink. Our very lives depend on it. 🐾

J. Drew Lanham, Ph.D.

Seneca

Professor, Clemson University

Department of Forestry and

Natural Resources

South Carolina Wildlife Federation

Affiliate Representative

South Carolina Wildlife magazine welcomes comments or questions about the articles we run or about other issues pertaining to our state's natural resources. Send letters to David Lucas, SCW magazine, P.O. Box 167, Columbia, S.C. 29202-0167, or via e-mail to lucasd@dnr.sc.gov. Please include your name, address and telephone number. We reserve the right to edit letters for length or clarity.



PHILLIP JONES

IN OUR NEXT ISSUE...

Our state's sporting heritage is a vital part of our natural resources conservation and management efforts. Taxes and license fees paid by South Carolina's hunters and anglers support programs that benefit both game and non-game species, and protect thousands of acres of sensitive habitats.

In the July-August issue, we'll celebrate this special connection between natural resources conservation and our traditional sporting heritage by offering the first ever special Sportsman's Calendar and Almanac issue of *South Carolina Wildlife* magazine. The issue will offer our readers twelve months worth of beautiful sporting images, along with almanac information such as tide tables, sunrise-sunset charts and a listing of the most productive fishing days based on the phases of the moon; as well as information and articles about DNR programs designed to help you and your family get the most out of your experiences in the great South Carolina outdoors. 🐾



CANE POLE DAYS

The humble cane pole may evoke memories of days gone by, but it's still an effective choice for many freshwater fish species and tactics. by Jim Casada
photographs by Phillip Jones

The image is as enduring as it is appealing—something straight from a Norman Rockwell cover on an old *Saturday Evening Post*. A bare-footed, freckle-faced country lad walks down a dusty Dixie lane with a bait bucket in his hand and a cane pole over his shoulder. Headed for a favorite fishing hole, he's as carefree as a milkweed spore riding a summertime thermal current. Those fortunate enough to have enjoyed such experiences have fond memories of simpler times and simpler pleasures.

Or perhaps when you think of cane poles another image comes to mind: a battered old car or pickup truck traveling down a country road with the passenger-side window open and the tips of several cane poles, all of them decorated with colorful

bobbers, sticking out of the window. Inside the vehicle the passengers, perhaps a father and his children or a bunch of friends, smile as they think of good times to come at the old fishing hole. Sadly, I must acknowledge it has been years since sights of this sort have treated my eyes and mind. Still, this is offset by the glad realization that it is still possible to open a window into this world we have largely lost.

"Old-fashioned" or at least out-of-style it may be, but a simple bamboo cane pole rigged for live bait, like worms or crickets, is still one of the simplest and most effective ways available to introduce a youngster to the joys of fishing.

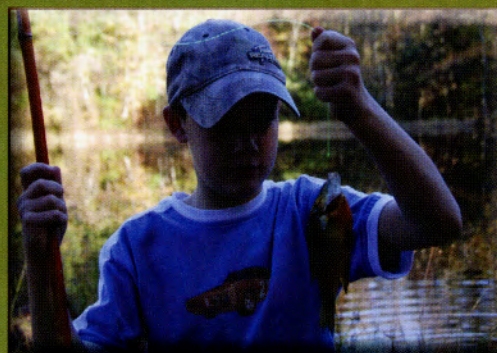


Cane poles are an effective weapon to use for catching pan fish in small ponds, and are a lot less likely to result in hooks snagged in overhanging trees than rods and reels.

You don't need to drink from the fountain of youth to sample and savor cane pole days. Cane poles remain as functional, and as much fun, as they ever were. With that squarely in mind, let's look at some of the ways in which today's fisherman can successfully ply this simple and satisfying angling tool, starting with the way cane poles have been most frequently used over the years—for bank fishing.

A cane pole, whether fished from shore or boat, is deployed using a simple, graceful motion in which the angler lobbs the baited hook (and usually, though not always, the bobber affixed to the line above) to a likely spot in the water. With some practice, this can be accomplished with remarkable precision. The only real limitation is reach—the fisherman can get his bait in the water no farther than a distance just over twice the length of the pole. But offsetting this shortcoming is the fact that a cane pole with a short length of line

hanging from its end is ideal for poking into tight places, such as underneath docks and piers, along shorelines with overhanging brush, or in the midst of log jams or flooded timber.



Cane pole catches make memories that can last a lifetime.

Bedding bream, for example, are notorious for spawning in places where a cast from a rod and reel faces every likelihood of getting hung up. But the length of a cane pole lets the fisherman hold it above the mess and drop his cricket or red worm precisely where it needs to be. When there is a bite, he hoists the fish directly into the air rather than having to weave and work it through limbs, stumps or other impediments.

Cane poles also lend themselves well to being “set;” that is to say, having the butt end jammed into the mud or sand and propped up in a forked stick. This allows the angler to tend or watch over multiple set cane poles, lined up along the bank. Often this can be done while the angler also wields a



Cane pole fishing from the bank is a great way to spend a relaxing afternoon with family or friends. Nothing sparks easy conversations, laughter and fellowship like sitting by the water, waiting for the bounce of a bobber or tug on a line that signals “fish on.”

hand-held pole. It is a fairly simple matter, especially after one has done it a few times, to lay a pole down and rush excitedly to a “set” pole that is getting a bite. If perchance there are simultaneous bites, and this sometimes happens with bedding bream, spawning crappie and summertime catfish, the ensuing chaos is just part of the fun. There will be time enough to deal with tangled lines and crossed poles once some fish have been landed or lost.



A variant on this multiple-pole approach is crappie fishing utilizing what is often described as a spider rig. The name comes from the arrangement of poles extending from all sides of an anchored boat, giving it an appearance similar to a spider's web. The typical approach is to set each pole with the bait (often a

minnow) at a different depth. Then, once the depth at which a school of crappie is holding has been determined, all the poles can be adjusted accordingly.

Spider-rig fishing involves the same restful, relaxing ease as idling on a shady bank waiting for a bobber to bounce, but there are other cane pole techniques that involve plenty of energy expenditure. A cane pole works wonderfully for warm-weather wading in creeks, or even in sizeable rivers such as the Catawba or the Broad, where there are shoal areas with depths of just a foot or two. The fisherman eases along, lobbing his bait or lure into likely spots, then deftly working it along with the current or into inaccessible places that might be all



This fat red worm will be a tasty temptation for a hungry bream.

but unreachable with a spin-casting rig. This can be done with a float or by “tight lining,” where the angler maintains a taut line as the sinker bounces along the bottom of the stream. In slower water, a slight lift and then drop of the pole's tip suffices to change the hook's



Youthful enthusiasm and an afternoon of instruction from an adult mentor can result in a lifetime of fun and fellowship in the great outdoors.

position. This technique works for all sorts of species—trout in mountain streams, channel catfish in shoals in the heat of summer, panfish in deeper pools or slow areas of creeks, or even bass.

Perhaps the most interesting of all cane pole techniques involves the type of fishing known

colloquially as “doodlesocking” or “jiggerpoling.” This approach, which was likely pioneered by Native Americans, involves using a cane of appreciably greater length than normal—as long as twenty feet if the individual handling the pole is strong enough. A short, strong length of monofilament is attached to the



MICHAEL FOSTER

This seasoned cane pole expert understands the three keys to a successful day of bank fishing: finding a comfortable spot, having the necessary gear and baits close at hand, and deploying multiple poles to maximize the chances of coming home with a good mess of freshly-caught fish for dinner!

business end of the pole, and a large surface plug, jig-and-pig rig, plastic worm, or actual piece of a pig in the form of pork rind is used as bait.

The word “finesse” does not figure into the doodlesocker’s vocabulary. The technique involves getting a lure into or near heavy cover—along shorelines, amidst flooded brushpiles, near lily pads or moss beds, amongst log jams, or at the edge of riprap—and then making a ruckus by vigorously thrashing the lure back and forth. One beauty of this method is that you can keep the lure precisely where you want it, imparting back-and-forth action all the while, for an extended period of time. This is impossible with cast-and-retrieve outfits. Strikes from bass, the target quarry with this technique, are often splashy or even of the dramatic commode-flushing variety. Expect misses, but often you can put the lure back in place and the fish will return for another go-round.

Once a fish is hooked, it is not played in the

traditional sense, but rather pulled straight to the boat using a hand-over-hand grip on the pole. Doodlesocking is pretty much a two-man operation, with one individual wielding the cane pole while the other carefully and quietly maneuvers a boat or canoe, always trying to be just the right distance from the spot being worked by the fisher. It can be quite effective for night fishing, especially in times near a full moon when there is enough light to allow anglers to see the spots they want to fish; and because of the necessity of getting pretty close, the technique is more effective when water is murky or has a bit of color than when it is crystal clear.

From fishing on hot, lazy “dog days” while half-doing in the shade to holding court in the middle of a spider rig, from the excitement of jiggerpoling to the delights of wading a creek, the worthy cane pole has much to offer. With a cane pole in hand you can touch base with the past while enjoying a full measure of angling pleasure in the present. 🐟

Jim Casada has been a contributor to SCW for well over two decades and is the author or editor of more than 30 books. Visit him on the Web at www.jimcasadaoutdoors.com.

Wild Edibles

by Rosanne McDowell

*From
dandelion roots
to cattail shoots,
edible wild plants
can be a tasty
addition to
camp meals,
home dinner
pots and even
haute cuisine.*





MICHAEL FOSTER

Rudy Mancke, John Nelson, Jennifer Mancke and Tom Mancke (left to right) discuss the joys of gathering wild edibles with author Rosanne McDowell in Tom Mancke's rustic classroom on the grounds of Hammond School. The natural classroom brings the outdoors in, giving students a close-up look at animal skeletons, snake skins, plant specimens and other interesting objects (including Native American artifacts found on the school's grounds). Tom takes full advantage of the yard surrounding the cabin, which hosts a variety of edible plant species.

When I was a junior gardener, my mother, Mozelle McDowell, periodically offered me a penny for every weed I dug up in our yard. (My enthusiasm for weed harvesting ultimately began to cost her too dearly, so she backed down to a penny for every two weeds.) I felt like quite the entrepreneur when I got my pay, but if I'd known the true worth of the lush crop of dandelions I was tossing away, unexploited, into the wheelbarrow, I might well have rescued them. I learned their true worth recently when I moderated a roundtable of experts brought together by *South Carolina Wildlife* for a discussion about locating, harvesting and safely consuming wild plants. Our panel included Dr. Rudy Mancke, naturalist at the University of South Carolina; Tom and Jennifer Mancke, naturalists at Hammond School and Sandhills School in Columbia, respectively; and Dr. John Nelson, curator of the USC Herbarium.

SCW: *In today's America, with its ubiquitous supermarkets, why should anyone learn to recognize and use edible wild plants?*

Tom Mancke: Part of what makes wild edibles so good to eat is the satisfying personal contact with nature that comes with harvesting, preparing and consuming them. That's a powerful thing.

Jennifer Mancke: It's akin to the pleasure a backyard gardener feels when harvesting and eating his own produce, but getting it from the wild is even better because you don't have to plant or tend it!

Rudy Mancke: It's the pure enjoyment of a taste you can't get anywhere else.

SCW: *What are some of your favorite wild edibles? How do you use them?*

Tom Mancke: Blackberry; serviceberry; and if you can beat the animals to it, pawpaw, which tastes like egg custard . . .

Cattails (Typha latifolia) have a wonderful variety of uses—young flower spikes can be boiled like corn; sweet underground stems can be cooked, eaten raw or ground into flour; and cattail pollen can be used to make food a bright, beautiful yellow.



TED BORG

Young, tender pokeweed (Phytolacca americana) leaves make delicious spring greens. But mature pokeweed (pictured here) can be toxic, and no part of it should be harvested once berries appear on the plant.



MICHELLE CLAY

Root beer-scented sassafras (Sassafras albidum) has a long history and was once used as a cure for the plague and scurvy. Today, it is used for making tea, mead, jelly and candy; the leaves can also be chewed to freshen breath.



MICHAEL FOSTER

Jennifer Mancke: You don't find pawpaw in the supermarket because the fruit is delicate and bruises easily.

Rudy Mancke: Blueberry; muscadine grape; sassafras leaves or twigs for tea; the curly dock outside Tom's cabin door, raw or lightly boiled in spring . . .

John Nelson: Ramps, or wild leeks, and poke . . .

Rudy Mancke: My grandmother always said cook poke in two waters and don't eat it after there's purple on it. Otherwise, you could get sick, because it has hallucinogens in it.

Jennifer Mancke: One early summer, Tom and I caught some cattails at the perfect time for pollination. We shook them over our water bottles and watched the water turn a lovely yellow. Then we just drank up all that protein and vitamin C and A. Cattail pollen tastes like sunshine, and it's [also] a great addition to flour.

John Nelson: Cattails are in most books on edible wild plants because you've got so many options with them. Young cattail shoots can be used like asparagus; the female part of the immature flower spike in spring makes a good corn-on-the-cob-like vegetable—just boil it; the mature spring rhizomes (horizontal underground stems) can be made into flour; and in late summer, rhizome laterals are excellent in salads, steamed or in soup.

Jennifer Mancke: You can make caffeine-free coffee from dandelion roots. Roast 'em in the oven, grind 'em up and use like coffee. Also, the flower heads are good deep fried.

Don't eat African violets, which can cause stomach upset, but wild violets are a real treat. You can wash them and toss them into salad as is, but candied violets are really easy to make, and they're so beautiful. Paint them with a little egg white, let them dry and sprinkle with sugar. Let dry again and store in an airtight jar. They keep a long time that way. You can also flavor your sugar with them. Just put the flowers in sugar for four days. Then take them out, and the sugar will retain the violet flavor. You can eat the leaves, too; they're great raw in salads or lightly steamed.

SCW: What are some of the more easy-to-identify wild edibles?

John Nelson: Fiddlehead ferns, which come up from early March to late spring in South Carolina. When they're still unfurled, they're palatable and tender for raw or cooked dishes.

Foraging 101

"I promised you a foraged salad, so let's go out and get it," says Dr. Gail Wagner, an ethnobotanist at the University of South Carolina in Columbia. Grabbing a bowl, she steps out of the kitchen and into her Chapin backyard, followed by an eager foraging pupil—me. It's an early June afternoon, warm and pleasant. A pair of horses crop grass behind a weathered wooden fence.

"I always eat my way through the woods," says Wagner, "and although many early spring edibles are gone now, I can still find enough tender greens to fill a salad bowl."

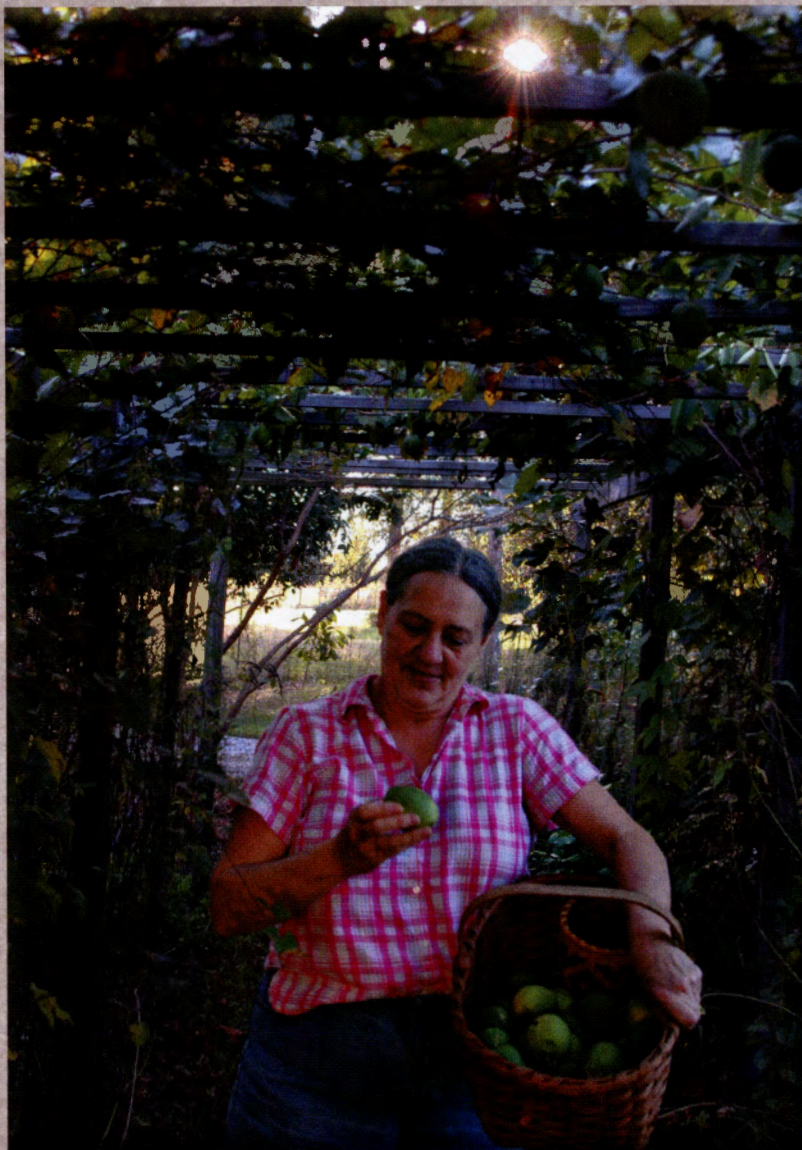
Moving toward the corral, we begin our foraging expedition with a huge weed: lamb's-quarters growing to the size of a living room Christmas tree right next to the barn. Lesson one commences as Wagner teaches me to identify this herb:

"You see the white powder on these growing tips? That's a good indication you've got lamb's-quarters. Some call it goosefoot because of its shape. Pinch off the growing tips, and the plant will produce more for later harvesting. Here, nibble this leaf."

I do, and for a palate unaccustomed to wild edibles, the taste is quite good—similar to spinach. Like spinach, lamb's-quarters contains a high level of vitamin A. We harvest a good bed of the leaves as a base for our salad.

I'm encouraged to find that I like the flavor of my first

wild plant and ask where I might find lamb's-quarters in the city. Wagner obliges with an answer simple enough, even for a beginner: "It grows in yards and around parking meters. Just keep your eye out for it."



MICHAEL FOSTER

Dr. Gail Wagner holds the wild native fruit of maypop, or passion fruit (Passiflora incarnata), which grows in abundance along with wild muscadines (Vitis rotundifolia) on the trellis over her head. Maypop seeds are often found at Native American archaeological sites in the state dating between A.D. 1500-1750. They are believed to have been a favored weed in maize fields—one that was not discarded, but enjoyed as a free fruit. Today a cultivated species is one of the ingredients in Hawaiian Punch.

salad and a smoothie made with frozen peaches. And, thanks to my patient instructor, I'll definitely be able to identify lamb's-quarters next time I see it. 🐸

—Rosanne McDowell

We make the rounds of yard and woods, harvesting as we go, and find ourselves with a bowlful of broad-leaved herbaceous plantain (*Plantago*), wild violet leaves, Johnny-jump-up flowers, wood sorrel, catbrier vine tips and other wild edibles to add to our lamb's-quarters. In an old compost pile, we come across an edging of wild blackberries, and into the salad bowl they go—yum—on top of our greens. Back in the kitchen, Wagner and I crack pecans and black walnuts harvested last fall from yard and forest trees to give our salad a nutty finish. I pause to sample her homemade persimmon leather while she loads me up with frozen peaches and persimmons to take home, all three treats made from uncultivated offerings her property served up the previous year. After bagging my greens, I drive home to my own kitchen, where the highlights of my supper are foraged



Tom Mancke: Catbrier, or *Smilax*, shoots for salad are easy to recognize in spring, and at just about any time of year you can find some part of a cattail that's edible.

Rudy Mancke: Lamb's-quarters is easy to recognize and abundant; everybody uses it for greens. It's in every pasture, around your house, barn, compost pile and the pen where the pig used to be.

SCW: *How much of a plant should you harvest when foraging?*

Rudy Mancke: How much of the plant to leave depends on what you're eating. If it's fruit, the plant doesn't lose too much from what you take; on the other hand, if you're eating roots, leaves or stems, you may be threatening the survival of the plant.

Jennifer Mancke: It's hard to generalize, so check a good field guide. With some plants, like wild violets, you can take all the open flowers you want without hurting the plant because it has another way of producing seed: "cleistogamous flowers," which live closer to the ground, are less conspicuous and never open. This plant also uses rhizomes to reproduce.

SCW: *Are there any good general safety rules you could suggest?*

Rudy Mancke: It's very important to know if a plant has any poisonous look-alikes. Again, check a good field guide.

Recommended Books

The Forager's Harvest
by Samuel Thayer

Stalking the Wild Asparagus
by Euell Gibbons

A Field Guide to Edible Wild Plants
by Lee A. Peterson

Living Off the Land
by Chris McNab
(available from the Wildlife Shop)

Web Sites for Wild Foragers

South Carolina Native Plant Society,
www.scnps.org/plantid.html

USC Herbarium, www.herbarium.org
(for more information, see page 50)

USDA Plant Database,
www.plants.usda.gov





MICHAEL FOSTER

(Opposite page) Herbaceous lamb's quarters (*Chenopodium album*) grows in disturbed ground, here next to a barn. The leaves can be boiled or eaten raw and taste like spinach; the seeds can be ground and added to flour to make dark bread and can also be popped like tiny popcorn kernels. (Above) The flower stalk of curly dock (*Rumex crispus*) can be peeled and used to make a detoxifying tea; the leaves of the plant have a lemony flavor and can be eaten in early spring raw or cooked.

For people with no knowledge and no experienced teacher, it might be best not to forage. They might eat too much of a correctly identified plant or misidentify one and harm themselves.

Jennifer Mancke: Or they might eat a wild edible at the wrong time. Dandelion leaves, for example, are edible raw only before they bloom in the spring. After that, they're too bitter unless you boil them in two waters.

SCW: So hands-on practice and help from an experienced forager are critical to learning accurate identification of wild edibles. Anything else?

John Nelson: If you're picking ripe blackberries on property bordering the road, be sure it's not a place where they've just sprayed 2,4-D [a common herbicide used to control broadleaf weeds].

SCW: You've just reminded me that public roadsides are not legal foraging grounds in the Palmetto State, according to the S.C. Department of Transportation, so foragers

should stay off of highway edges. However, Irvin Pitts, resource management chief for the State Park Service, says that under certain circumstances, PRT may grant permission to forage on its properties—for example, a Boy Scout troop may be given permission to work on a badge involving foraging. But all such groups must apply for permission on state park lands. Foraging is not permitted on S.C. Department of Natural Resources properties at all, according to DNR Chief of Wildlife Tim Ivey.

Rudy Mancke: Wherever you forage, remember that just because you see an animal eat a plant, that doesn't mean it's safe for you to eat.

SCW: Thanks to all of you for sharing your expertise with us today. 🍄

Rosanne McDowell is a freelance writer and the resolution writer for the South Carolina Legislative Council in Columbia.

Coastal Explorations



Fun is the name of the game for participants in these wildly popular outdoor classes featuring education, stewardship and adventure.

by Anna Martin

KIM COUNTS



SUSAN ZOLTIEWICZ

DNR wildlife biologist Billy McCord speaks to a group during a "Discovering Hammock Islands" class (left). The group disembarked the education vessel Discovery to walk through the salt marsh and explore an island and its shell-midden habitat. (Above) Dr. Alex Marsh leads a group at St. Helena Sound during a "Marine Invertebrate Identification" class. The group explored mud flats, salt marsh, oysterbeds and sandy beach to find critters, including giant whelks, living there. (Right) Al Segars, Kim Counts and DNR biologist Felicia Sanders set up spotting scopes on Deveaux Bank Seabird Sanctuary to get participants closer to the birds. (Inset) Sanders explains the importance of seabird nesting islands for the survival of these species.

SUSAN ZOLTIEWICZ



First launched in 2007, the S.C. Department of Natural Resources Marine Division's Coastal Exploration Series classes provide a sense of ownership in the natural resources of the ACE Basin for participants through field-based outings and lectures taught by DNR biologists and other experts. Series coordinator Kim Counts originally designed the outreach program as part of her Master of Science degree in Environmental Studies at the College of Charleston, but the enthusiastic reception and positive feedback from that initial season of events and classes provided the impetus to make the series a permanent program under the joint management of the DNR and the ACE Basin National Estuarine Research Reserve.

The Coastal Exploration Series also built upon the success of the Carolina Coastal Discovery Marine Education program, a flagship education program conducted primarily for K-12 educators and students. "The development of the Coastal Exploration Series stemmed from the need for marine education

opportunities that reached a broader public audience in contrast to the Discovery program," says Elizabeth Vernon, a DNR marine education coordinator at the time of the Coastal Exploration Series' inception. Now in its fourth year, the series' schedule of lecture programs and trips takes participants on educational journeys through coastal properties managed by the DNR, such as Donnelley Wildlife Management Area, Lewis Ocean Bay Heritage Preserve, Santee Coastal Reserve WMA, Bear Island WMA and Capers Island Heritage Preserve, just to name a few.

"I think the Coastal Exploration Series has been so successful for the DNR because it has provided a vehicle for us to showcase some of our properties and our expertise in the coastal zone while emphasizing a take-home stewardship message," says Counts.

Consistent messages delivered through the series' programs reinforce the idea of natural resources stewardship and teach people about positive actions they can take to maintain coastal resources for future

generations. Recent programs in the series have focused on themes of sustainability, such as native gardening and rain barrel installation techniques; water quality consumption awareness; and habitat conservation practices, such as the importance of prescribed burning and its relationship to red-cockaded woodpecker habitat. "Groups get to explore some amazing coastal places, and they get to do it with experts," says Counts.

Kim and Dave Gundler, owners of Beaufort Kayak Tours, have participated in a number of the program's offerings, such as a history of the ACE Basin focusing on the area's rich heritage as a center for phosphate mining, a shark identification seminar, a discovering hammock islands tour, and a coastal butterfly and tagging outing. Both are Master Naturalists trained through Clemson University's Public Service program, and both agree their experiences with the program

have enhanced their ability to spread the conservation message to others. "Teaching the teachers allows this information to extend beyond the boundaries [of the lecture hall]," says Kim Gundler. "Learning about monarch butterflies and the extraordinary migration they make to southern climes annually, and that a DNR biologist is tagging and releasing those found along coastal hammock islands in South Carolina . . . now that's a great story that will remain with most people, and it takes on a whole new meaning when they see a monarch in their backyard."

To keep the event opportunities innovative, Counts has partnered with numerous organizations within the coastal community. This step "has allowed us to strengthen a network of groups with similar educational missions," says Counts. "We all work towards getting our communities engaged in the natural world, instilling appreciation for the wilder things and encouraging ownership in conserving resources for the next generation."



Clemson Extension agent Dave Joyner led a group in a step by step process of building a rain garden as part of a demonstration plot at the Fort Johnson complex on James Island.



An event at the Caw Caw Interpretive Center titled "Rice Cultivation and Gullah Heritage in the Lowcountry" featured speakers Thomas Thorton, who spoke on rice field management, and Donald Sweeper, who spoke on the Gullah culture. Here a group spots a baby alligator as they walk through the old rice field impoundments; these impoundments are vital for wildlife habitat in the lowcountry.

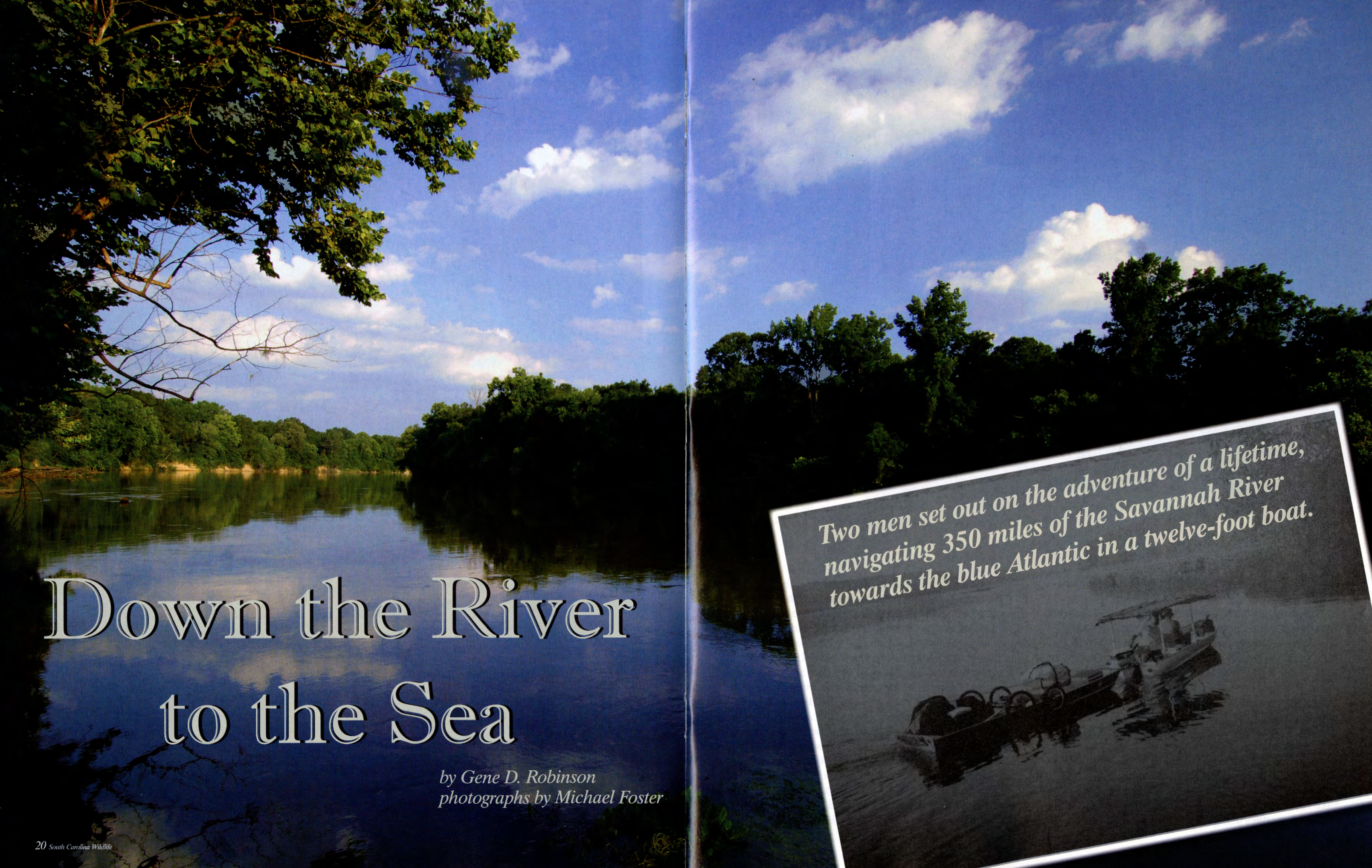
Partner organizations have included the South Carolina Chapter of the Audubon Society, the Nemours Wildlife Foundation, the S.C. Department of Parks, Recreation & Tourism, the Charleston County Parks and Recreation Commission, Clemson's Cooperative Extension program, the Lowcountry Institute and the South Carolina Aquarium. Collaborative programs with the aquarium provided participants with insight into the relationship between the DNR's Marine Turtle Conservation program and in-water turtle research conducted by the aquarium's rehabilitation facility. During the spring 2007 and fall 2008 seasons, events were held that combined a lecture-based program highlighting research conducted by the DNR on South Carolina's sea turtle populations with a tour of the aquarium's sea turtle hospital.

Joe and Marlene Rotter of Charleston first found out about the Coastal Exploration Series through an article in the *Post and Courier* newspaper. The Rotters attended a historical tour of Fort Johnson, an area rich with historical ties to the Civil War, where the DNR's Marine Division and other federal and state agencies are headquartered. The property is perhaps best known

as the place where the first shots of the Civil War were launched, when Confederate soldiers opened fire upon Union troops occupying Fort Sumter in Charleston Harbor in April of 1861. "We found this program to be very interesting, and the speakers and guide extremely knowledgeable," says Joe Rotter. The Rotters went on to participate in other series programs on native plants and using rain gardens and rain barrels in the home landscape. "This motivated us to install a rain barrel to irrigate our yard and to develop and grow a rain garden to slow the water runoff on our property," adds Rotter.

To learn more about the Coastal Exploration Series or to register for upcoming programs, visit www.dnr.sc.gov/marine/NERR/stewards, or contact Kim Counts at Countsk@dnr.sc.gov or (843) 953-9354.

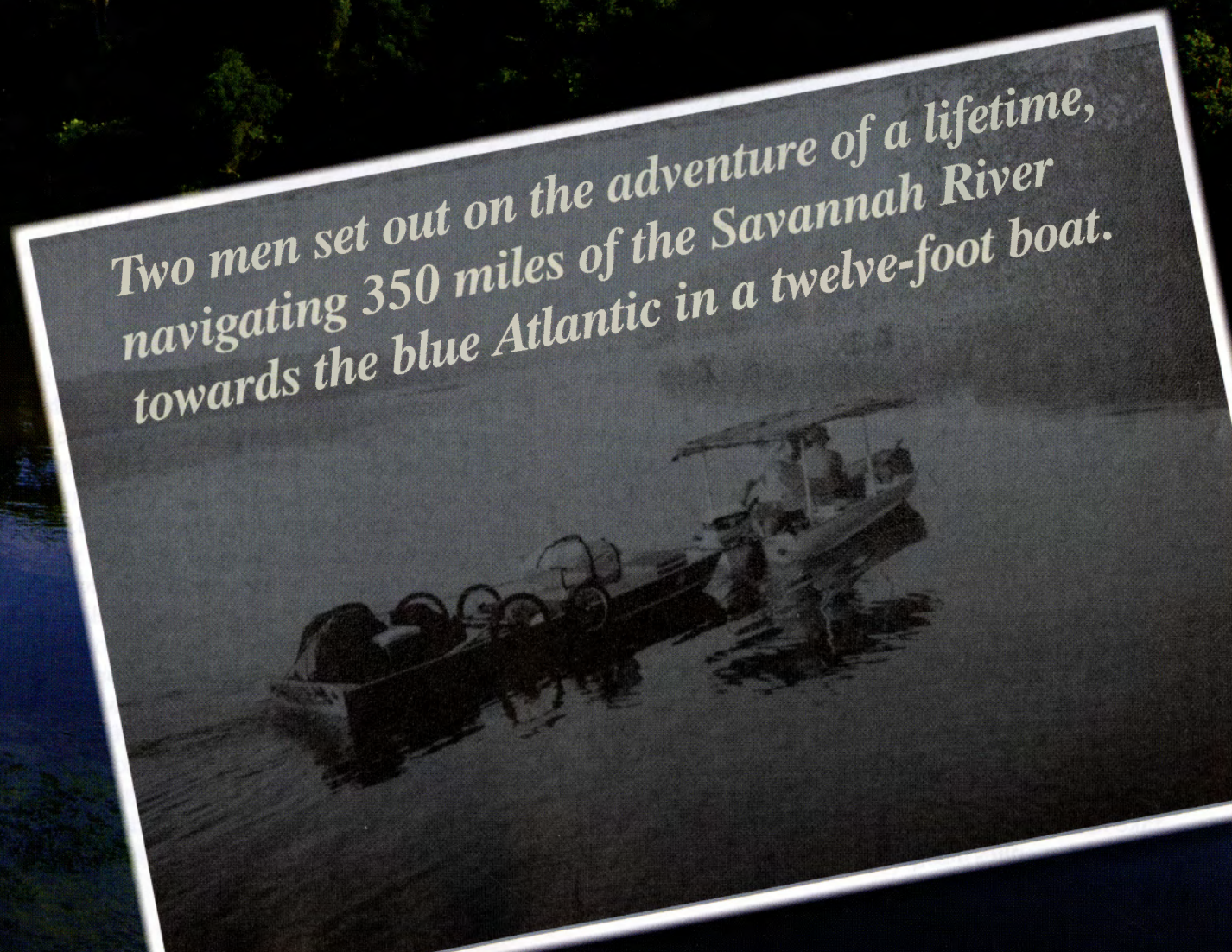
Formerly a media relations coordinator for the DNR Marine Resources Division, Anna Martin now works as a public information and outreach coordinator for the South Atlantic Fishery Management Council.

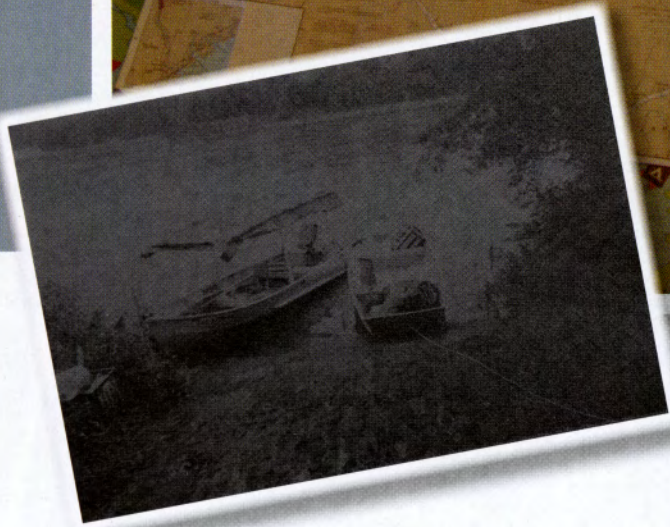


Down the River to the Sea

*by Gene D. Robinson
photographs by Michael Foster*

*Two men set out on the adventure of a lifetime,
navigating 350 miles of the Savannah River
towards the blue Atlantic in a twelve-foot boat.*





(Overleaf) Below the city of Augusta, the slow, winding bends of the Savannah River stretch on for miles, interrupted only by a few highway crossings. (Above) Reinhardt and Butler began their journey armed with little more than maps, basic supplies, two small boats and a surplus of optimism.

Their problems started while their wives were still waving goodbye.

Rock Reinhart and Raymond Butler ran their twelve-foot boat aground only a few feet from the Wilson Creek boat ramp on Lake Richard B. Russell. With their wives' laughter burning in their ears, the two men used an ore to push off and get themselves moving again. It was not exactly the start they had in mind for their grand adventure, but it was a portent of the larger challenges to come.

Butler had wanted to float down the Savannah for nearly half a century, ever since he was a teenager. Reinhart, an adventurer at heart who had once faced down a black bear in the wilds of northern Minnesota by barking like a dog and pawing like a bull, didn't take much convincing. They prepared their tactics and gathered supplies like generals planning a campaign,

but even the best laid plans can go astray.

It didn't take the two men long to realize they would have to tow a second boat in order to carry everything they needed. Among their supplies was a tarp rigged on PVC piping for protection against the summer sun and frequent thunderstorms. Truth be told, they were a somewhat comical sight. Their tiny boat with its makeshift plastic rain shelter, pulling a second johnboat piled with sundries and supplies, looked like something out of *The African Queen*.

Undaunted, the men loaded their supplies into waterproof bags a few minutes after dawn one morning in early August. Gasoline and plenty of fresh water: check. Tent, camping gear, propane stove, rope and fishing tackle: check. Spare parts, portage wheels, tools and knives: check. As their wives became tiny specks on the shore, the problems of their launch seemed



A powerboat cuts a lonesome wake against the reflection of the setting sun below the Lake Thurmond Dam. Such scenes were a common sight for the two men during the first half of their journey.

behind them. The motor hummed, the cool morning air caressed their faces, and the smell of the water filled their nostrils. They made good time and by late afternoon had reached the Lake Russell Dam.

There they encountered the journey's first—but definitely not last—unforeseen problem. At a boat ramp near the dam, the men pulled out their portage wheels, planning to pull their boats through the woods to a road that led around the dam to Lake Thurmond. But the weight of their supplies was too much for the as-yet-untested wheels. Luckily, a gentleman in a truck happened along and offered to haul their heaviest gear to the river on the downstream side of the dam, and soon they were back in the water. It wouldn't be the last time that fate and kind strangers intervened on their behalf.

The men decided to stop and camp at Bobby Brown State Park on the Georgia side after a metal handle—

part of the apparatus they had rigged to tow the supply boat—snapped. Showered and rested, they awoke to a glorious sunrise over Lake Thurmond. Realizing that they didn't have what they needed to repair the broken handle, they walked to the park maintenance shed and told the workers there about their problem and their goal of reaching the Atlantic. With the help of the maintenance staff, the broken piece was repaired and they were again underway. The motor purred and the miles drifted by, but they soon noticed the repair to the johnboat's tow handle was again weakening. Finally, they gave up on the handle and bar arrangement entirely and began towing the boat using a rope.

Their third day on the water started with another portage—this time around the Lake Thurmond Dam—and ended in a way the two men could never have imagined. A sheriff's deputy helped them move their



(Clockwise from upper right) Boaters, skiers, highway overpasses and houses along the riverbank signal the hustle and bustle of the approaching city of Augusta. Well below the city, a lone fishing shack stands sentinel over a beautiful stretch of water. The riverbanks along the lower portion of the Savannah teem with wildlife, like this alligator hiding in partial shade on a muddy bank. Lights on the Strom Thurmond Dam cast a glow on the darkening waters of Lake Thurmond, just below the S.C. Highway 221 crossing in Edgefield County.



heavy gear to the boat launch area below the dam. After that, they made good progress and reached the Stevens Creek Dam, just north of Augusta, by the afternoon. This time, it was the supervisor of the power plant who helped them with their portage. After traversing the Augusta city canal, Reinhardt and Butler were able to make it back into the river by portaging a two-hundred-yard strip of land at the city waterworks property.

With darkness getting close and no place to camp, the men were in some desperation. Crossing to the far side of the river, they hailed a man on a jet ski. Yet again, through the kindness of a stranger, their pilgrimage to the sea was put back on track. Donnie was the man's name, and he led them a short distance to his son's house on a bluff above the river. With its

commanding water view, elaborate landscaping, boat dock and manicured lawns, the house was more like a mansion. "Camp anywhere you want on the lawn," said Donnie. "There's plenty of fresh water and electric lights in the gazebo. I own slip sixteen at the Augusta Marina, but it's empty right now. You should put in there tomorrow and see a little bit of the city."

The men pitched their tent in soft grass and slept. The next day, rested again, they accepted the offer to tie up at the city marina, where their tiny craft was surrounded by gleaming white yachts. After a meal and some shopping, they were back on the river. Thirteen miles later, they reached the New Savannah Bluff Lock and Dam, their last major barrier. After crossing around this final obstacle without difficulty, they camped near the entrance to Savannah Bluff Park and decided to rest there before tackling the last half of the journey.

Before the next day—their sixth on the Savannah—



*A large colony of pickereelweed (*Pontederia cordata*) along the shallows near a bend in the river provides a food source for ducks, geese and muskrats, as well as cover for many fish species.*

ended, they'd reached Eagle Point, where they set up camp near a boat ramp. A few small fish were all they could catch for supper, until a boat loaded with fishermen pulled up to the ramp. After hearing about Reinhardt and Butler's adventure, the men gave them several more fish—enough for a feast that night.

The next day, the men began to notice more wildlife along the river, even spotting their first alligator. At one point, a huge fish broke water right in front of them, and soon after they glided past a bald eagle—close enough to see its cotton white head and yellow eyes. After putting in for lunch at a large grassy area, the men were joined by some most unexpected guests—a road crew of prisoners overseen by shotgun-toting guards. Like everyone else they had met, the

prisoners were curious about their trip. With lunch finished, the two men felt the prisoners' eyes follow them as they returned to their boats and started down the river, perhaps longing to join them in the freedom of their adventure.

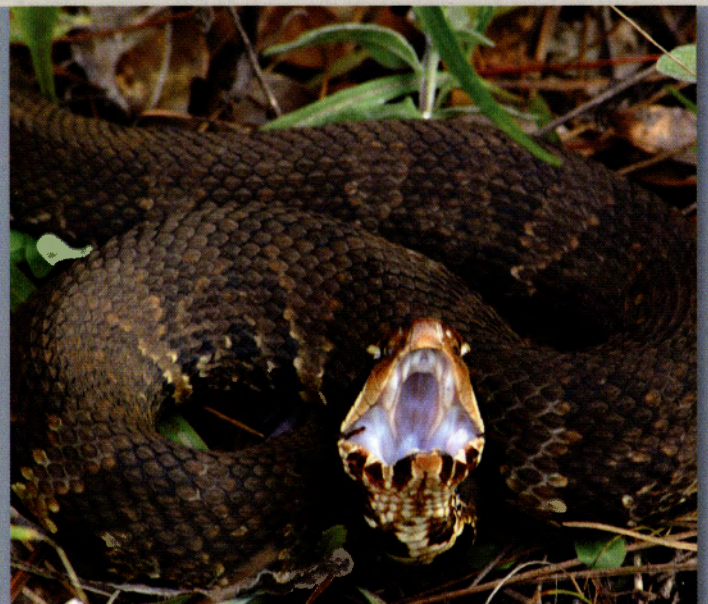
On their eighth day, they made thirty more miles, passing Poke Patch Bar to spend the night at another boat ramp near Cohen's Bluff. The humidity was thick and the gnats flew in swarms, but the fishing was good enough for another fish fry.

The ninth day turned out to be the best travel day of the entire trip. By the time they pitched their tent that evening near Frying Pan Point, they were sixty miles closer to the ocean. One more good travel day would take them past Savannah to their goal.

Day ten dawned cool and misty after a thunderstorm the night before. Both boats had to be bailed out, but the travel was pleasant once they were on the river.



*(Clockwise from upper left) The red-spotted purple butterfly is a common sight along the Savannah's banks. This species' similarity to the toxic pipevine swallowtail helps protect it from predators. A bricked-in artesian well bubbles out of the ground at the Little Hell boat landing near the town of Millet in Allendale County. A venomous water moccasin on the banks of the Savannah shows why this species is often called "cottonmouth." A yellowbelly turtle, or slider (*Trachemys scripta*), basks in the sun on a half-submerged log at the foot of a large cypress tree, a ubiquitous sight along the river.*





Reinhardt and Butler in 2009, downstream from the location where some timely assistance from a friendly deputy sheriff helped them get themselves, their boats and their gear around the massive Strom Thurmond Dam. Helping hands from numerous friendly strangers along their journey allowed the two men to reach their goal.

The current was gentle, and fingers of sunlight poked through the mist, revealing the great variety of wildlife along the shore and in the water. After a couple of hours, the river widened and signs of the approaching city began to appear. A marine inspection station on the outer fringe of Savannah made an ideal place for lunch. Later in the afternoon, they began seeing huge freighters. Soon their tiny flotilla was bobbing and weaving among the giant ships to keep from being swamped by their huge wakes. Before long, people waved at them from Savannah's scenic river walk area, and they passed by the famous "Waving Girl" statue.

Only the marshy area south of the city stood between them and the sea. If all went as planned, the men would catch sight of the sparkling waters of the Atlantic well before sunset. Fate, however, decreed otherwise. If a twisty marsh could stop Bogart and Hepburn's African Queen almost in sight of Lake

Victoria, it could certainly stop Reinhardt and Butler. And coupled with the weather, it almost did.

The navigation charts the two men carried proved useless in threading their way through the marsh. They got lost, backtracked and got lost again. With the evening shadows lengthening, the heavens opened and a deluge fell—a far heavier rain than any they'd experienced previously. The water pooled on their blue tarp until it collapsed on top of them. They were drenched, almost out of gas, lost, and unable to see any sign of open water or even a place to camp. At the moment when all seemed lost, fate—again in the guise of a helpful stranger—stepped in. The captain of a passing yacht saw their plight, stopped, and offered to tow Reinhardt and Butler to a campground near Isle of Hope Marina on the Intracoastal Waterway. With good weather the next day, the two men would reach their goal—the Atlantic Ocean. 🐾

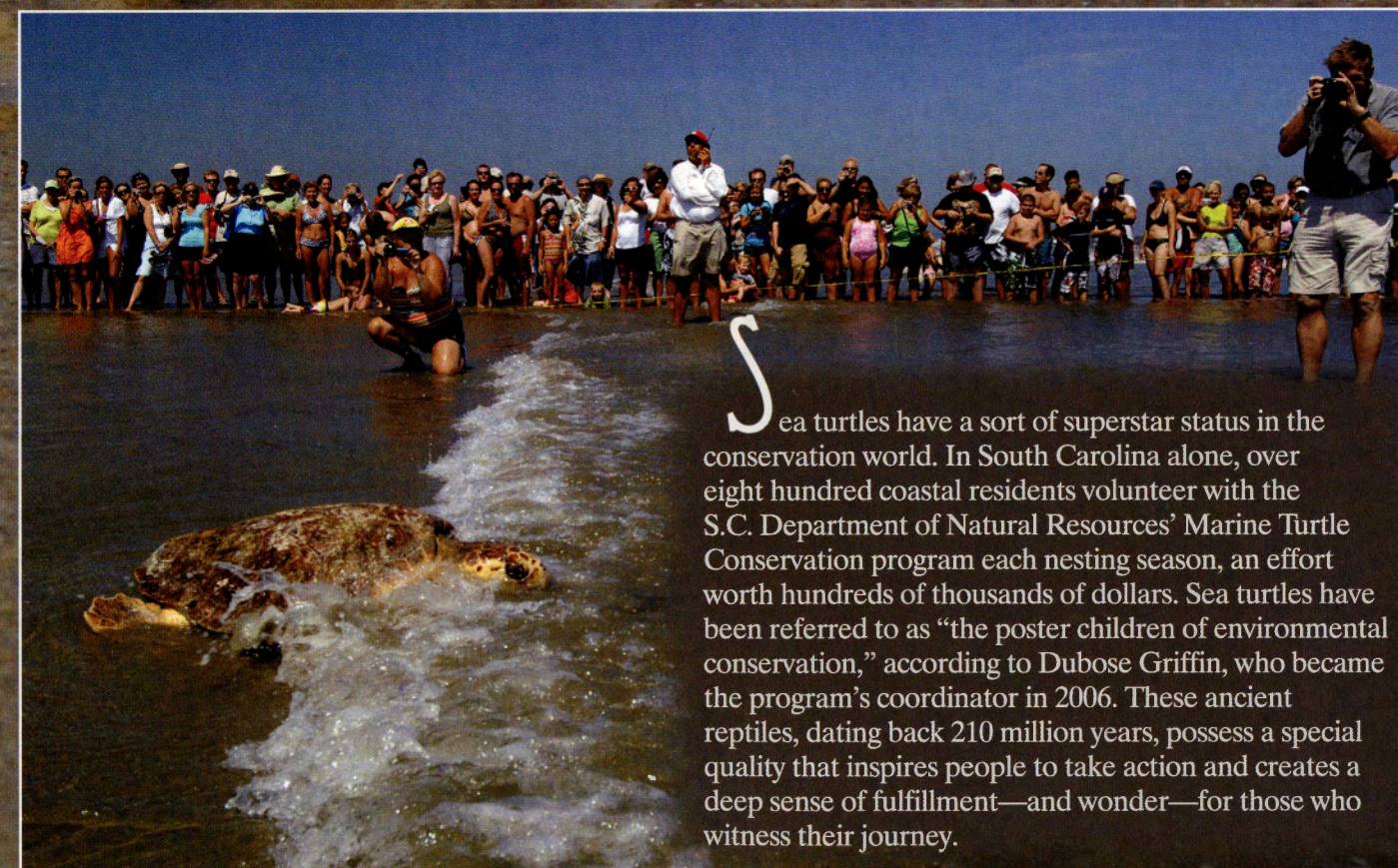
Gene Robinson is a retired professor of geology living in Lake Secession.

VULNERABLE

With a small staff and a wealth of dedicated volunteers, the DNR's Marine Turtle Conservation program is working to protect these ancient creatures. by Carrie Young
photographs by Michael Foster



GIANTS



Sea turtles have a sort of superstar status in the conservation world. In South Carolina alone, over eight hundred coastal residents volunteer with the S.C. Department of Natural Resources' Marine Turtle Conservation program each nesting season, an effort worth hundreds of thousands of dollars. Sea turtles have been referred to as "the poster children of environmental conservation," according to Dubose Griffin, who became the program's coordinator in 2006. These ancient reptiles, dating back 210 million years, possess a special quality that inspires people to take action and creates a deep sense of fulfillment—and wonder—for those who witness their journey.



(Page 28) A loggerhead hatchling struggles to reach the ocean on a South Island beach. (Page 29) The S.C. Aquarium released three rehabilitated sea turtles in July of 2009, including a loggerhead named "Kiawah." The event attracted a huge crowd of enthusiasts, volunteers and local media, a testament to the sea turtles' star power. (Left) After completing the nesting process, a female loggerhead slowly makes her way back to the ocean. (Inset) Seen from behind, the same female covers the nest near the sand dunes where she has laid around 120 leathery, ping-pong ball-sized eggs.



Nesting

From May through August each year, female sea turtles that have traveled hundreds or possibly thousands of miles from their feeding grounds to the nearly 185 miles of South Carolina coastline swim slowly back and forth, just beyond the breakers, in search of a safe place to come ashore and lay their eggs. Octavia Sola, an intern who spent the 2009 nesting season on South Island, part of the DNR's Tom Yawkey Wildlife Center Heritage Preserve, is familiar with the turtles' terrestrial journey. South Island, an undeveloped coastal wilderness preserve, offers a quiet, dark place for turtles to nest. Octavia said her favorite part of working on South Island "was getting to work with the people from the DNR's sea turtle program and being a part of the crucial conservation work they do." Engaging with others who have turned their passion for threatened and endangered sea turtles into a career inspires her to do the same.

At night during the 2009 nesting season, Sola loaded up her equipment—predator screens, stakes, record sheets and mosquito spray—and drove an old state-

issued truck down the island's overgrown paths to the beach to patrol for turtle tracks. While many nest protection projects patrol at first light, night patrols are a necessity on South Island because of heavy mortality to nests by predators, primarily coyotes. At the first site of tracks, Sola would cut the lights and engine; if the located female turtle was still in the process of laying her eggs, she would wait quietly until the task was completed and the turtle returned to sea. "It is difficult to put into words the emotions I felt when I saw a nesting female turtle emerge to lay eggs," she said, "To see this ancient creature come ashore was awe inspiring."

On the night I joined Sola for her rounds at South Island, we watched a large female loggerhead crawl slowly up the beach, each scrape of her flippers leaving a trail of sparkling green light in the sand (the result of bioluminescent algae). The turtle slowly made its way towards the dunes and began to dig a cylindrical, inverted light bulb-shaped hole about twenty inches deep. We were able to get close enough to see the

leathery white eggs, each about the size of a ping-pong ball, falling from her one by one.

Each loggerhead nest contains an average of 120 eggs, and a single female repeats this nesting ritual about every thirteen days, or an average of about four times in a single season. With an output of over five hundred eggs a season, loggerheads will only return to nest again every two to three years. Once the turtle we encountered at South Island was back at sea, we returned to the freshly created nest and began to stake down the screen that would protect the eggs from coyotes and other predators, including raccoons, foxes and ghost crabs. In the best-case scenario, about sixty days later (between July and October) the eggs would hatch and about 120 tiny hatchling turtles would boil up to the surface to make their way to the ocean.

"The job I did this year at the Tom Yawkey Wildlife Center played an important part in making sure that large, healthy nesting females return to South Carolina beaches for many years to come," said Sola.

Sea Turtle Diary

Editor's Note: Sea Turtle Network volunteer Sue Haberemeier was kind enough to share with SCW magazine journal entries detailing her experiences during the 2008 and 2009 nesting seasons. What follows are direct excerpts from those journals.

2008 Season: The Story of Our Nest: "Just Add Music" June 9, 2008: Garden City

One of the local Garden City volunteers was making her sunrise dog walk, looking for turtle tracks as she did every morning. She spotted tracks on a very low part of a dune. The mother turtle laid her eggs in an unsafe part of the beach, so she called Jeff McClary of SCUTE, and he made arrangements to relocate the nest to our dune which was higher and safer. Our grandchildren watched as they dug a new nest. They covered the nest and marked it, and we began our job of monitoring it for the next two months or until hatching.

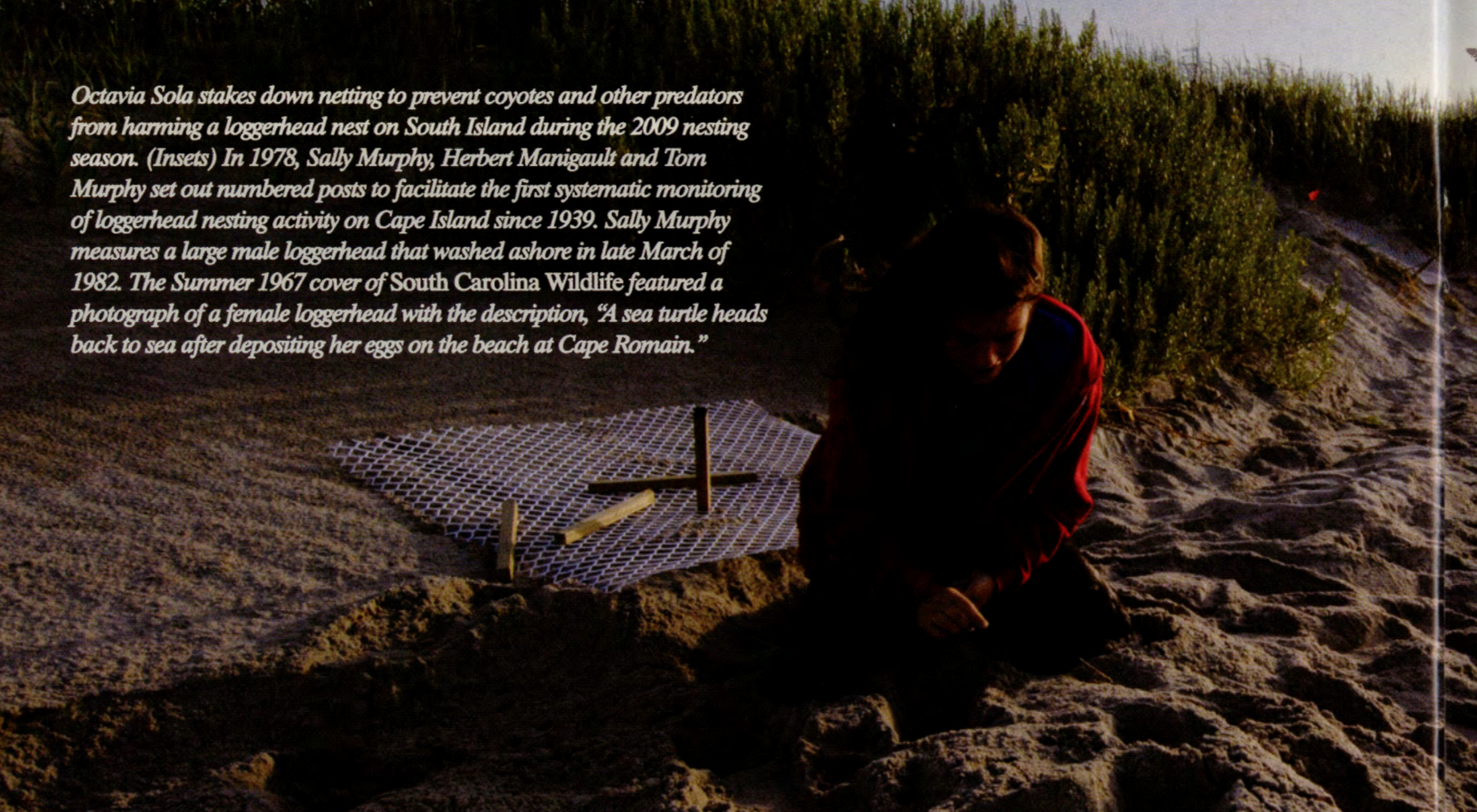
August 4, 2008: Garden City

Our daughter Laura was checking the nest and found a change in the surface. It looked like two small bubbles had come up. . . . It was the first day of the normal range of hatching. Little turtles began to peep out at 7:28 p.m. At about 7:45 p.m. the first one poked out its head and flippers, then it emerged from the nest, paused, looked left and right as though checking for traffic and then started down the sandy slope toward the ocean. It walked as far as the gray PVC pipe that held the orange diamond sign of the DNR turtle nesting site, and looked up at the top of it, and then walked around it and continued toward the sea.

A few seconds later about six turtles tumbled out. Then, as if a New Orleans jazz band broke into a loud version of "When the Saints Go Marching In," the full boil of thirty something turtles erupted from the nest. A mad scamper toward the ocean had the crowd of turtle watchers spellbound. The turtles were all safe in the ocean by about 8:20 p.m.

Once in the water, the first couple of waves washed the tiny turtles in and out again, but then they caught their proper aim into the current. We watched as they came up for air a couple of times showing their little black heads for a moment, and then they were gone—into the ocean at last.

Octavia Sola stakes down netting to prevent coyotes and other predators from harming a loggerhead nest on South Island during the 2009 nesting season. (Insets) In 1978, Sally Murphy, Herbert Manigault and Tom Murphy set out numbered posts to facilitate the first systematic monitoring of loggerhead nesting activity on Cape Island since 1939. Sally Murphy measures a large male loggerhead that washed ashore in late March of 1982. The Summer 1967 cover of South Carolina Wildlife featured a photograph of a female loggerhead with the description, "A sea turtle heads back to sea after depositing her eggs on the beach at Cape Romain."



Journeys

Sally Murphy, a retired DNR biologist who coordinated the Marine Turtle Conservation program for over thirty years, explains that scientists do not know for certain how the turtles choose their nesting sites, but it appears that they make their decisions based in part on topography and the amount of light and movement on a beach. Loggerhead sea turtles (*Caretta caretta*), which make up 99 percent of the nesting population in South Carolina, weigh 250 pounds on average; and while they may glide gracefully through ocean waters, their movements on land are extremely laborious.

Murphy described her emotions when witnessing hatchling turtles during their first day of life as "relief and gratitude for them making it this far, and a motherly apprehension for what they face in that huge, dangerous ocean for the next thirty years." Murphy said she will always remember the look of amazement and joy on her then three-year-old grandson's face when he first saw hatchlings going to the water.

After spending just over thirty years reaching maturity in the ocean, loggerheads are ready to begin mating, and many return to the region where they were hatched to begin the cycle anew. Loggerheads can be found in warm, tropical and temperate waters around the world, but the southeastern United States is one of their primary nesting areas. The DNR reported over three thousand

loggerhead nests on the South Carolina coast during the 2009 nesting season; other species that make occasional appearances are the green sea turtle (*Chelonia mydas*), Kemp's ridley (*Lepidochelys kempii*) and leatherback (*Dermochelys coriacea*).

The loggerhead, green sea turtle and olive ridley (*Lepidochelys olivacea*) were listed as threatened species under the U.S. Endangered Species Act in 1978; the Kemp's ridley, leatherback and hawksbill (*Eretmochelys imbricata*) were already on the list. Federal grants available under the act allowed South Carolina to start a program to protect loggerhead nests and identify sources of mortality causing their decline. South Carolina was among the first group of states to sign cooperative agreements with the U.S. Fish and Wildlife Service and the first state to sign a similar agreement with the National Marine Fisheries Service.

But long before sea turtles were listed under the Endangered Species Act, William "Bill" Baldwin, a biologist with the USFWS, and his assistant John Lofton were on the beaches of Cape Island, working to understand and record turtle nesting. The two men wrote the first scientific work on sea turtles in North America in 1940, titled "The Loggerheads of Cape Romain." In 1977, Murphy began her work with sea turtles on the South Carolina coast at Yawkey and Cape Islands. She

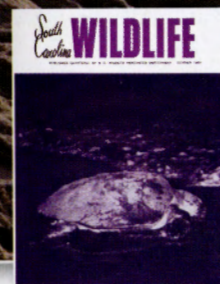


PHOTO COURTESY SALLY MURPHY



PHOTO COURTESY SALLY MURPHY

spent her first three years recording nesting data using many of Baldwin's techniques, and what she discovered was that only 7 percent of the nests were surviving. Murphy began flying aerial surveys of the coast once a month to document "strandings" (turtles washed ashore) in areas that could not be monitored on foot. She also began to test management options such as predator screens, raccoon trapping and nest relocation, which increased nest productivity to over 80 percent. As volunteer nest protection projects were initiated along the coast, staff and volunteers implemented these techniques, which are still used today.

In 1979, the USFWS and the National Marine Fisheries Service appointed Murphy and turtle expert Peter C. H. Prichard co-leaders of the first national turtle recovery team. The team's first goal was to create a regional stranding network to collect standardized data on sea turtle mortality. Two other pioneers of sea turtle conservation contributed to the efforts on the South Carolina coast in the late 70s—Tom Murphy, the DNR's first non-game biologist, and technician John Coker. The two men carried out innovative sonic and radio telemetry research, and discovered that female turtles travel up and down the coast near the shore during the nesting season, increasing their chances for conflict with commercial shrimp boats.

September 12, 2008: Myrtle Beach State Park: Rare Leatherback

I was invited to attend the inventory of the rare leatherback sea turtle that hatched at Myrtle Beach State Park. The mother nested at Garden City Beach just a few houses down from us, in the middle of the day around July 4th! Since it was a holiday, the beach was full of people. Later I heard that she laid about forty eggs and about nineteen spacers. The naturalist estimated that she weighed about 1,100 pounds. The officials moved the nest immediately to the state park to be monitored. Her tracks were very wide and the nest was much deeper than the loggerhead nests.

During the inventory we were very lucky to see one hatchling make its way to the sea. As we expected, the hatchling was much bigger than the loggerhead hatchlings. When the naturalist held it up for us to get a close look, it more than covered her palm as she held it diagonally and appeared to be about four inches long and about two and a half inches wide, with a flipper spread of about seven inches. This was a very exciting day.


2009 Season

July 20, 2009: Turtle Release, Kiawah Island

My husband and I picked up our granddaughter so we could take her to the turtle release on Sunday, July 26, at Beachwalker Park on Kiawah Island. It was a long drive, but it was worth it. It was thrilling to see the two Kemp's ridleys and one loggerhead go back to the sea after their long hospital stay in Charleston.



A member of the aquarium's Sea Turtle Rescue team holds one of the two Kemp's ridleys released during the July 26th event.



“Murphy described her emotions when witnessing hatchling turtles during their first day of life as ‘relief and gratitude for them making it this far, and a motherly apprehension for what they face in that huge, dangerous ocean for the next thirty years.’”

Going Forward

The DNR's Marine Turtle Conservation program consists of four major components: basic research to determine what actions are required to protect turtles; management to implement these actions; long-term monitoring to determine the effects of this management on the population; and public education and outreach.

The program is managed by a surprisingly small number of full-time staff members: biologist and program coordinator DuBose Griffin, biologist Charlotte Hope and seasonal biologist Kelly Sloan. Their responsibilities include issuing permits; working with various government agencies and private groups; monitoring nesting and stranding trends; and training volunteer network participants to locate and relocate nests (when necessary), protect the nests with predator-proof screens, monitor nests during incubation and inventory the nests after the hatchlings emerge. Each spring Griffin, Hope and Sloan provide support to project leaders who oversee the activities of the hundreds of coastal volunteers who are the foot soldiers of the twenty-one nest protection projects overseen by the DNR. The number of volunteers has grown from around fifty in the early 1980s to over eight hundred in 2009.



Tracks of a female loggerhead mark the path between dunes and sea—the upturned sand along the outer edge of the track was made by the scrapings of the turtle's flippers, while the wavy mark down the center of the track was made from its tail. After protecting the turtle's nest with a predator screen, Sola loads up her equipment.

September 1, 2009: Litchfield Beach

Hans and I went to the inventory of a sea turtle nest at Litchfield Beach. The sunset was around 7:43 p.m. Walking up to the nest, we noticed two black spots at the nest bowl. About thirty minutes later two heads were visible. Later four heads, then later six heads and a flipper could be seen. By now it was really dark and around 8:20 p.m. The first little hatchling slowly came out of the nest, climbing up the forty-five-degree slope in very dry sand. It would climb a little and rest a little, standing on the back of the one below it, pushing to get out of the nest. As each hatchling got out, the next one began the same struggle to break free of the sandy nest. A small boil of six or seven followed. Then steadily they came out in ones and twos until twenty five were on their way to the ocean. Happy Birthday to my grandson and to the little hatchlings!

September 4, 2009: Litchfield Beach

By the time we got there, the nest managers had expanded the ropes around the nest so that the entire crowd would be able to see what was going on and other ropes were in place for a possible "run" to the sea. It was a large group. Nine hatchlings were released to the thrill of the crowd. Nine or ten died or did not develop. One hatchling kept going for the sunset, but then the volunteers blocked the sun and the turtle went to the sea.

October 9, 2009: Myrtle Beach State Park

A seventy-day nest; only four eggs died, all in the shell. As with all inventories I have attended, there is an ongoing mini-lecture about a sea turtle's life, as well as what is going on during the digging process. I always learn something new from each nest manager's message which is usually thirty minutes of good information.

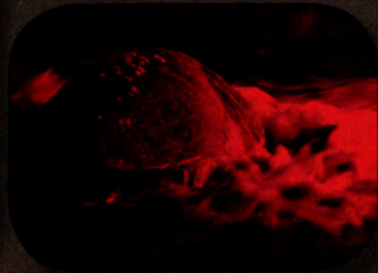
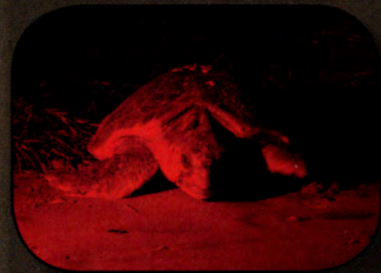
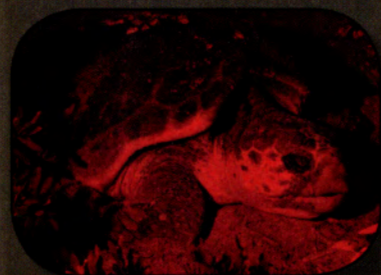
As the turtle season ends, I am looking forward to a busy season in the spring of 2010. Each time I attend a turtle event, I learn more and realize I have only begun to scratch the surface of what is to be learned about these fascinating creatures.

Special thanks to SCUTE volunteer network member Sue Habermeyer for sharing her exciting sea turtle experiences with us through her volunteer diary.

Lights Out!

Each nesting season about thirty nests on beaches in South Carolina are affected by light pollution which results in disoriented hatchlings. These hatchlings crawl away from the ocean towards the brightest light. During this disorientation event, hatchlings are more susceptible to nocturnal predators and desiccation. While crawling the wrong way on the beach, hatchlings exhaust valuable, limited energy needed to swim offshore. To combat this problem, the SCUTE volunteer organization (South Carolina United Turtle Enthusiasts) began the "Lights Out for Loggerheads" initiative with the support of the DNR and Santee Cooper Electric Cooperative to help educate coastal residents and visitors about this danger and encourage them to turn off beachfront lights during the nesting season.

Here, the nesting process of a female loggerhead was captured—from start to finish—by DNR photographer Phillip Jones using camera equipment designed for low-light conditions.

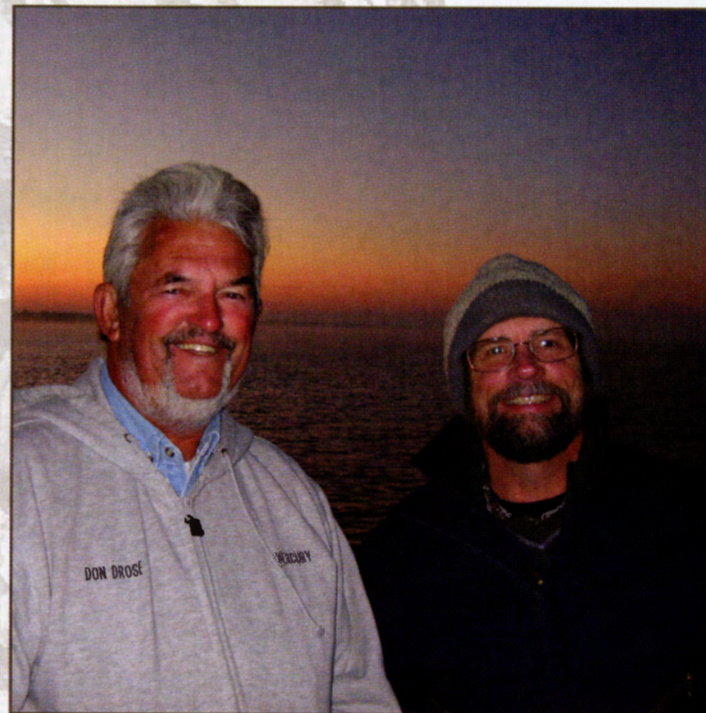
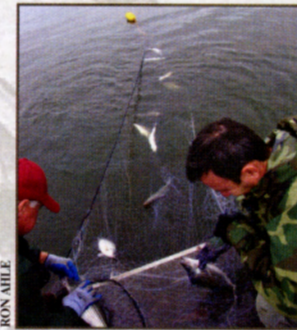


"There would be no Marine Turtle Conservation program without you," Griffin told a room full of volunteers at an appreciation dinner hosted by the DNR, "and that's a fact."

Despite the good work done by the program's professional staff and volunteers, from 1977 to 2009 nesting numbers in South Carolina declined 1.9 percent each year. A bright spot in this long-term trend was a strong 2008 nesting season—the seventh highest season on record since 1980. Nesting numbers in 2009 included an estimated 3,233 loggerhead nests, as well as three confirmed leatherback nests and one green nest. The "Loggerhead Biological Review Team," a national group of marine turtle experts under the auspices of the NMFS, concludes in their latest report that the Northwest Atlantic Ocean Distinct Population Segment (which includes loggerheads nesting in SC, NC, GA and FL) is currently at risk of extinction. In the DNR's 2009 "State of South Carolina's Coastal Resources: Loggerhead Sea Turtle Update" scientists emphasize that the maintenance of protection for sea turtles, both on land and at sea, is critical for their survival.

South Carolina Wildlife Managing Editor Carrie Young is a former researcher for National Geographic magazine.

Summer Break for Santee Stripers



Input from stakeholders like fishing guide Don Drose and USC biology professor Jerry Hilbish (center) resulted in good decisions for managing the popular Santee striped bass fishery. (Lower left) Hilbish displays a keeper-sized striper landed during a wintertime fishing trip. (Upper left) Gill net sampling in state lakes helps DNR scientists monitor striper populations. (Above) DNR fisheries technicians collect striped bass eggs on the Congaree River.

The stakeholder group process designed to address declining catches of Santee-Cooper striped bass is proving to be a valuable management tool for the DNR—a firsthand report.

by Jim Bulak

Fast, unpredictable and known for putting up a spirited fight, few fish are more exciting to hook than South Carolina's state game fish, the striped bass. But since 2005, S.C. Department of Natural Resources fisheries biologists have been concerned about low population levels of "stripers" in the Santee-Cooper lakes. In May of 2008, new regulations designed to protect and enhance the Santee striper fishery went into effect. These new regulations were developed by a public stakeholder group through a process of constructive debate, open communication and consensus building that should serve as a model for future conservation efforts.

The Santee-Cooper striped bass stakeholders group was formed by the DNR in 2007. Every legislator whose district touches the Santee-Cooper system—from Moncks Corner to Columbia and Camden—was invited to participate or send a representative. Outside experts and interested citizens were also invited. The final group of approximately forty stakeholders represented diverse

interests within the region and included fishing guides, landing operators, tourism officials, college professors, fishing club members and citizens.

During initial meetings, stakeholders were provided with information about the Santee-Cooper striper population. Data from net sampling conducted since 1983 confirmed that striper numbers were at a historically low level, despite natural reproduction occurring in the Congaree and Wateree rivers and an aggressive DNR stocking program that puts at least a million one-inch striper fingerlings into lakes Marion and Moultrie each year. Research has taught us that the success of both natural reproduction and stocking varies greatly from year to year.

Stakeholders also learned that female striped bass do not reach full sexual maturity until they are five years old,

or about twenty-six inches in length. Annual monitoring data shows that approximately 65 percent of the total striper population was lost to either natural-or fishing-related mortality. Regulations in place prior to June of 2008 allowed anglers to take five stripers of up to twenty-one inches in length each day. A twenty-one-inch striped bass is only three years old. These factors resulted in the loss of an estimated 80 percent of female stripers before they reached reproductive size. The stakeholders group debated several options for addressing this situation, including leaving the regulations as they stood, reducing the daily bag limit or protecting fish within specific sizes. A presentation by citizen stakeholders Gerald Hayes and Jerry Hilbish outlining the clear benefits of protecting pre-reproductive age females was a decisive moment for many participants. After much discussion, stakeholders voted to recommend a twenty-six-inch limit and a reduced daily bag limit of three fish per day to protect pre-spawning-age females.

Also at issue was the high rate of catch-and-release mortality during summer months. In South Carolina, striped bass are often stressed and lose weight and condition during the summer because of the lack of cool water. Recent DNR studies on Lake Murray found that 80 percent of striped bass caught on live bait and released during the summer died within several days, while none died after release during the cool winter months.

Many of the Santee-Cooper stakeholders were concerned that catch-and-release fishing during the summer months—in particular, night fishing under lights, a very popular method on the lakes—was resulting in the loss of substantial numbers of striped bass before they could reach reproductive size. Not everyone agreed, but after considering several alternatives, the stakeholder group voted to also recommend a no-harvest regulation from June 1 through September 30. This recommendation was based on the expectation that anglers would largely stop fishing for striped bass during the summer months if harvest was not allowed. Anglers would still be able to harvest stripers during the cooler months of fall, winter and spring.

Once the stakeholders reached a consensus recommendation, the proposed regulations required approval by the South Carolina General Assembly. Because the stakeholder process included representatives from each legislative district in the region, lawmakers were well-informed of the importance of the proposed changes. After several hearings attended by stakeholders, a bill was passed and signed into law by the governor

on May 21, 2008. The new regulations reduce the daily creel limit from five to three, increase the minimum size limit from twenty-one to twenty-six inches, and make harvest and possession of stripers illegal from June 1 to September 30. The new regulations cover the waters of the Lower Santee River system, including all waters and tributaries seaward of the Lake Murray Dam, the Columbia Canal Diversion Dam, and the Lake Wateree Dam to the freshwater/saltwater dividing line on the North Santee River and the South Santee River; as well as all waters and tributaries of the Cooper River, including the Tailrace Canal, from its point of origin seaward to the freshwater/saltwater dividing line.

However, the work of the stakeholders group is far from over. The new regulations also required the DNR to report to the legislature within eighteen months on progress to date and future recommendations. Fortunately, survey information indicates that striped bass reproduction and stocking were very successful in 2008. These abundant new fish will be protected by the new regulations and should attain full sexual maturity in 2013. In the meantime, the stakeholders group will continue working with and giving their ideas to DNR fisheries staff.

One concern raised recently by stakeholders is the considerable amount of catch-and-release fishing that occurred on the Santee-Cooper lakes during the summer of 2009. The new regulations do not prohibit catch and release, only harvesting. Stakeholders have recommended additional regulation changes that would prohibit striped bass fishing entirely during the summer months. This recommendation is currently under consideration by the General Assembly. They are also promoting a more aggressive public outreach aimed at informing citizens of the high rate of mortality that can occur with catch-and-release fishing, particularly when water temperatures rise into the 70s and 80s.

Isn't this the way the system should work—concerned citizens working together with agency experts and lawmakers to make sure that responsible action is taken when needed? In this case, the recovery efforts are off to a good start and appropriate regulations are in place. But each year will bring new questions and new information. Hopefully, this ongoing process can be used to enact laws and practices that will protect and conserve the Santee-Cooper striped bass population and provide anglers with quality fishing opportunities for many years to come.

Jim Bulak is a fisheries biologist and research coordinator for the DNR's Wildlife and Freshwater Fisheries Division.

CUT AND RIG YOUR OWN CANE POLE



The tools of the trade for cutting and finishing a natural cane pole are simple: a fine-bladed saw, sharp knife, garden shears, sandpaper and varnish. You will also need fishing line; duct tape; and a hook, bobber and lead weight for each pole.

Going Green

The essence of simplicity, a cane pole makes a first-rate and surprisingly versatile fishing tool. It's also a great do-it-yourself project thanks to a number of considerations—including readily available raw material, ease of preparation, an opportunity to save money and the quiet satisfaction of knowing you are catching fish with a sporting tool you made. What makes such an effort even more appealing is that it is a project that a youngster can undertake with minimal adult supervision and assistance. Here's a "recipe" for making your own fishing pole (or maybe a whole bunch of them).

Raw Materials

Bamboo, in various forms, grows widely across the South Carolina landscape. From switch canes of the sort found in dense thickets along creek and river bottoms, to the giant bamboo used in ornamental landscaping, to patches planted for who knows what reason decades ago, the knowing eye can readily spot a fishing pole in the making. Give some thought to length though, because what suits an adult might be unwieldy for a youngster, and a pole intended for use on bream or crappie will be quite different from one used while doodlesocking for bass. Whatever the intended purpose, you should have no trouble finding and cutting canes of a suitable length.

Cutting, Straightening and Curing the Cane

Once a few canes have been selected, cut them close to the ground using a fine-toothed saw. Be sure to cut squarely through a joint with the saw's blade working

parallel to the ground. Avoid using a hatchet or an ax because doing so, even if you subsequently employ a saw, risks a crack or split that can weaken a cane and shorten its useful life.

Once you have your cane on the ground and sawed cleanly at what will become the butt of your pole, remove the slender side shoots that hold the cane's foliage and trim it at the top. Either pruning shears or a sharp pocket knife will work for trimming, but make every effort to cut the foliage away cleanly and closely. When cutting the tip, keep in mind that you want plenty of give, but not so much that the cane becomes floppy as a buggy whip. However, it is best to err on the small side, because you can always cut a bit more after curing the pole.

The curing process is quite easy. Just tie a weight of several pounds to the tip of the cane. Half a cinder block or a couple of bricks work quite nicely, and they offer convenient holes through which you can run a strong, slender piece of cord, but a heavy rock will work in a pinch. Tying the cord to the pole is not a problem, since slight swelling at the joints keeps it from slipping. With your weight in place, suspend the pole from a barn rafter, tree limb, or whatever is available to keep it hanging in the air with the weight off the ground. Give it a few weeks to dry and straighten out, and the cane will be ready for the final steps.

Finishing Touches

First, use coarse sandpaper to smooth the places where foliage was trimmed away from joints. Next, apply a couple of coats of clear, protective varnish. While polyurethane-based products provide greater waterproofing, they are also prone to crack when the pole gets pressure (hopefully from a good fish). Oil-based varnishes are a better choice. Once the varnish is dry, it is time to tie on monofilament; attach hook, sinker and bobber; and go fishing. Choose monofilament of a suitable strength (4-, 6-, or 8-pound test for panfish; stronger for other species) and measure off a length a few feet longer than the pole. Tie it to the pole twice; once three or four joints below the tip, then run the line to the tip and tie it again. The remaining line should be a bit longer than the pole. Pinch on a split shot or two, affix a bobber and tie on a hook. All that is lacking at this juncture is some bait and a fish-filled lake or pond. 🐟

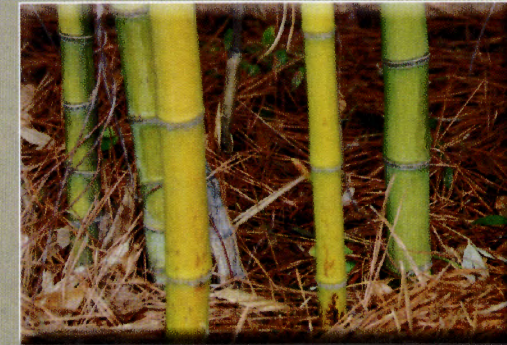
—Jim Casada

Hands-on Outdoors

Raw materials:



Stands of canes can often be spotted near swampy areas, with individual canes growing together thickly.



Once you've located a stand of cane (and gotten permission from the landowner to cut some poles) find a cane with the right base diameter—around three-quarters to one inch thick.



Cut near the bottom with a fine-bladed saw. Tip: Avoid chopping with a hatchet, as this may cause cracks or splits.

Curing & Straightening:



Cut the branches from the cane using garden shears and trim it to the desired length.

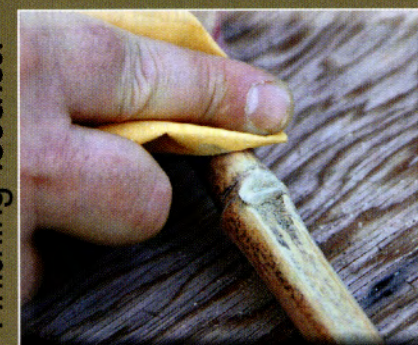


Trim the area around each joint with a sharp knife. Tip: This is much easier to do when the cane is green.

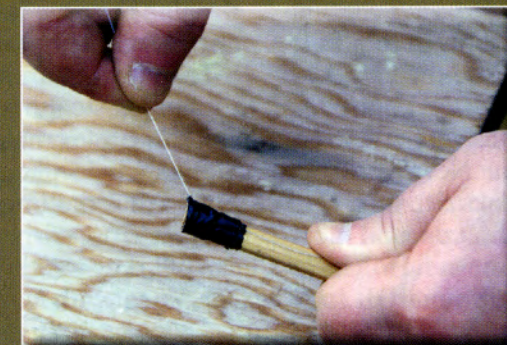


Hang the pole with a weight tied to the end to help it dry straight. Tip: Alternatively, try sliding the cane inside a slightly larger length of PVC pipe; leave the pipe in a sunny spot and it will dry straight and quickly.

Finishing Touches:



Before applying varnish, use sandpaper to smooth all joints and remove any mildew spots leftover from the drying process.



Tie on a length of monofilament line using several half hitches beginning several joints from the pole's end. Tip: Use electrical or duct tape to secure the final knot.



Rig the pole's lines with a bobber, a small hook and some lead weight and you'll have a fine home-built panfish rig at a fraction of the cost of its modern, high-tech counterpart.

Bobcat



PHILLIP JONES

We need look no further than fairy tales to grasp the enmity Europeans had for predators. Wolves took the brunt of it, since lions, which once roamed widely across southern Europe, had for the most part disappeared by the 1st century A.D. Bears were extinct in England and in retreat elsewhere in Europe by A.D. 1000. Classic fairy tales, such as *The Three Little Pigs* and *Little Red Riding Hood*, with their roots in the oral traditions of early European societies, and the Greek fable *The Little Boy Who Cried Wolf*, all attest to the wolf's sway on the early human imagination.

When European settlers arrived in the New World, the vast North American continent was as rich with predators as it was with other flora and fauna, and settlers began hunting, trapping, poisoning and otherwise attempting to eradicate these animals. It took centuries, but the Eastern mountain lion was driven to probable extinction, and the few red wolves remaining in South Carolina are confined to an enclosure at the U.S. Fish and Wildlife Service Sewee Environmental Education Center in Awendaw.

Two of the smaller predators native to South Carolina, the gray fox (the red fox was introduced here) and the

bobcat, have used their inborn stealth and wariness to survive into the 21st century; especially for the bobcat, it has not been easy.

"Like most predators that competed with man for food, bobcats were killed with near impunity due to their potential as predators of game and livestock," says Jay Butfiloski, supervisor for the S.C. Department of Natural Resources' Furbearer project, "probably up through the time that the state really began to transition away from being primarily an agrarian society."

The bobcat is indeed a marvelous predator, combining stealth with power and quick acceleration. Bobcats prefer rabbits and other small mammals, but they can and will eat anything, from insects to deer. They will sometimes take fawns in the summer, stalking from cover or lying in wait to pounce. A bobcat can kill prey ten times its size, and it will cover what it can't eat with leaves. It is also legendarily elusive. Even now, with its population "quite secure," according to Butfiloski, sighting one is an extraordinarily rare occurrence.

It is estimated that there are between 1.4 and 2.6 million bobcats in the continental United States. Regulated hunting is thought to account for about half of their deaths annually (automobiles are a

big factor as well), and the decline in popularity of this type of hunting has no doubt helped their numbers. In South Carolina, bobcats can be hunted from Thanksgiving Day to May 1 with no bag limit, and trapped from January 1 to March 1.

Bobcats are supremely adaptable, with twelve subspecies living everywhere from Florida swamps to Southwestern deserts, and from southern Canada to northern Mexico. In South Carolina, says Butfiloski, our subspecies, *Lynx rufus floridanus*, "appears to be most abundant in the lower coastal plain, although they certainly occur statewide."

One of four lynx species (the Canada, Eurasian and Iberian lynx are the others), the bobcat is about twice the size of an average domestic cat, from thirty to forty inches in length, with a bobbed, black-tipped tail that gives it its common name. It stands, on average, between sixteen and twenty-two inches at the shoulder, with males weighing eighteen to thirty pounds and females weighing between fifteen and twenty-two pounds. Bobcats have gray to brown-colored coats (reddish in summer), with lighter underbellies. Black spots, with dark bars on the forelegs, are typical. Bobcats also have yellow eyes and black-tufted ears (the tufts are a key indicator that what you are looking at is actually a bobcat and not a large feral house cat), sensitive whiskers and fur tufts under their ears that make their faces look wider than they are.

Bobcats are active mostly at dusk and dawn, patrolling a territory that can vary widely in size depending on their sex (males and females may share overlapping territories), the terrain and food availability. Territories are marked by scrapings and scent markings. Each bobcat will have a main den and several other secondary shelters in thickets, brush piles or hollow logs. During fall and winter they, like their prey, become more active during the day. Active creatures, they have voracious appetites, a good sense of smell, and great hearing and vision; the number of rats, mice and rabbits eaten by a single female bobcat and three kittens per year can number in the thousands.

Bobcat *Lynx rufus*

Description: Gray to brown, with facial and ear tufts, bars on the forelegs and spots otherwise. Length is 30 to 40 inches; stands 16 to 22 inches at shoulder; weighs 15 to 30 pounds.

Range and Habitat: Adaptable. Primarily deciduous or coniferous woods, but can be found from swamps to scrubland and in suburban areas.

Reproduction: Breeds in winter, with 2 to 4 young born in spring. 60-day gestation. Young stay with mother until the following winter.

Viewing Tips: Secluded wooded areas at dusk or daylight. Bobcats are more active in the daytime in winter. This is a highly elusive creature. Learning to look for tracks, scat or markings is helpful.

Bobcats breed in February and March. A male and female will travel and hunt together for a few days, engaging in chasing and bumping behavior sometimes accompanied by great throaty growls; the bobcat's vocalization can have an other-worldly tenor. Both males and females may mate several times with different partners.

After two months of gestation, the female will select a secluded spot and give birth to two to four young weighing around three-quarters of a pound each. Their eyes open by day ten, they begin exploring at a month and are weaned at two months. Their mother will bring them birds and small mammals and begin teaching them to kill. They start traveling at three to five

months and will be hunting on their own by the fall. By the time the female mates again the following winter, the previous year's young will be on their own.

The young bobcats are vulnerable to virtually any carnivore, including birds of prey and even adult male bobcats. The process of going out on their own, perfecting hunting techniques and establishing individual territories is fraught with peril, and juveniles have high mortality rates. They are susceptible to ticks and fleas, as well as internal parasites, some of which they pick up from rabbits and squirrels.

The state gets few nuisance calls about bobcats, says Butfiloski, who adds, "Most are from property owners who see one and just feel threatened in general."

In truth, humans don't have much at all to fear from bobcats. Irrational fear has doomed some other predators, but the bobcat's wariness of humans has worked to its advantage. Their ghostly presence in the South Carolina countryside may go unnoticed by most of us, but the bobcat remains one of our most precious wildlife treasures. 🐾

—Rob Simbeck

Rob Simbeck is an award-winning freelance writer living in Nashville, Tennessee.

Congaree Creek Heritage Preserve

A slice of local history and an interesting hike await visitors to this DNR Heritage Preserve.



Congaree Creek Heritage Preserve offers an abundance of wildlife; quiet, sunlight-dappled forest paths; and nearly 12,000 years of history and pre-history in a pristine setting just a stone's throw from downtown Columbia.

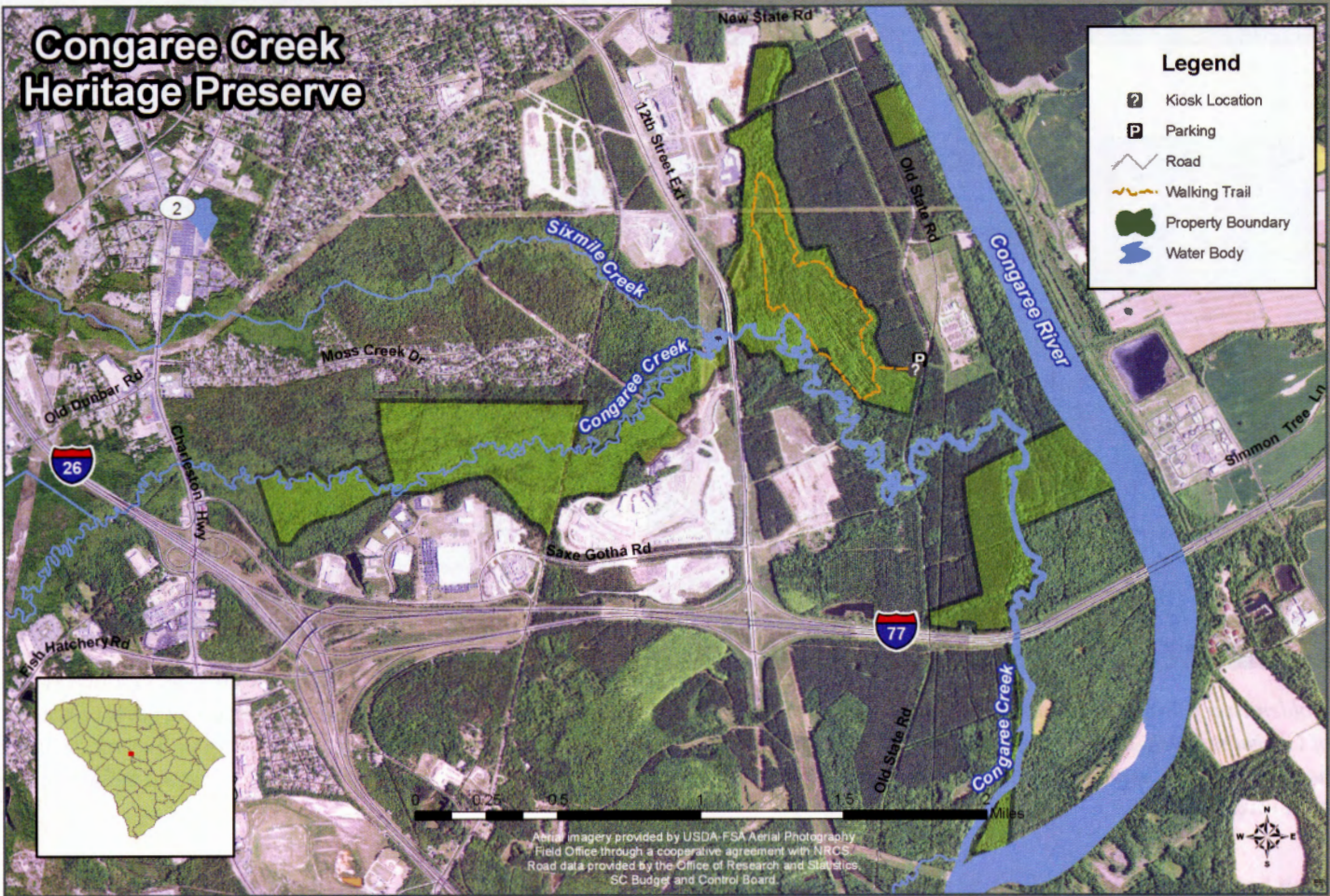
In satellite photos, it looks as if some giant animal has left deep, long claw marks in the earth near the banks of the Congaree River south of Cayce, just a few miles from the South Carolina State House grounds in downtown Columbia.

At ground level, the picture is different. Long, narrow trenches are filled with swampy water. Some are tinted rich tannin-brown with last year's fallen leaves; others are bright green with surface algae. Still others play host to water lilies and the occasional minnow.

It's the consistent shape of the trenches that gives

them away as man-made. Many have squared corners and are lined up neatly next to each other in the forest. This part of the S.C. Department of Natural Resources' Congaree Creek Heritage Preserve was once a clay quarry for the Guignard Brickworks, which operated in the late 19th and early 20th centuries. Men dug these trenches to gather clay for bricks. Kilns for the brickworks still exist; they stand several miles away on the Lexington County side of the Congaree River, where Knox Abbott Drive turns into Blossom Street, and the downtown Columbia skyline is clearly visible

Congaree Creek Heritage Preserve



across the water. Look around at all the historic brick homes and buildings in the capital city, and you'll realize it's no stretch to say that the Congaree Creek property helped build Columbia—one brick at a time.

The 627-acre preserve seemed a welcoming hideaway—so close to downtown, yet so little-known. I'd heard that snakes, turtles, bobcats, deer, hogs, hawks, waterfowl, birds and even alligators make the preserve their home, so I drove the short distance to try my luck at spotting some of Congaree Creek's wildlife.

A large, well-maintained gravel parking lot off Old State Road marks the beginning of the Guignard Brickworks Trail, a two-and-a-half-mile loop that has been designated a "Millenium Trail"—part of a national initiative honoring the importance of trails to the history of the U.S.

Posted signs near the trailhead warn of alligators. Even though the preserve is almost two hundred miles from the coast by way of the Santee and Congaree rivers, it's the right kind of wetlands habitat for the American alligator, and a small population of gators calls Congaree Creek home.

Here and there on the meandering trails running between the quarry trenches are signs of the preserve's former use. An enormous rusted axle with a wheel on

Driving Directions

From Interstate 77, take the Saxe Gotha exit and turn right onto 12th Street Extension. Turn right on Godley Street, then right on Old State Road and take the fork to the right. The parking lot, kiosk and trailhead for the Guignard Brickworks Trail will be on your right, just past the Cayce water treatment plant.

Please Note:

- Bring your own drinking water.
- No trash receptacles – please take your trash out with you.
- No plant, animal, artifact or any other natural or cultural material may be taken or disturbed.
- The Guignard Trail is not wheelchair accessible.
- Insect repellent is recommended.
- Visitors are reminded it is unlawful to feed or harass alligators.



Golden club (*Orontium aquaticum*) floats peacefully on the surface of Congaree Creek, along with the reflection of 70-year-old hardwoods. This aquatic plant has the nickname “never wet” because of its waxy leaves.

each end lies next to the trail. At the end of a short spur trail is a length of railroad track, twisted and nailed to a tree. There was once a train track running between this quarry and the brickworks upriver.

At one point the silence of the trail is broken by a loud crash, and I look to my right to glimpse the white rump of a deer bounding off through the trees. A dove rises from the trail ahead of me, wings beating. After about a mile of weaving between trenches, the trail bursts forth into full sun. Here are tall grasses, taller than me, with grasshoppers flitting around my head. I look around, the power lines overhead a vivid reminder of how close I am to the city. In the distance, I hear earth-moving equipment and the low roar of Interstate 77. But the grasshoppers soon take up a scraping drone note, drowning out the sounds of nearby civilization. The trail twists southward again, and now I’m walking barely above water level on a narrow track between two long, pond-like trenches. Water lilies clog the one to the left; fallen branches and brackish water clog the one to the right.

I stop and wait, scanning the trail ahead and the



PHILLIP JONES

Visitors to Congaree Creek Heritage Preserve might consider themselves lucky (or not) to see one of the preserve’s alligators (there are two in this photo); the preserve is also home to a wide variety of snakes, turtles, bobcats, deer, hogs, hawks, waterfowl and other birds.

placid ponds for some sign of an alligator. Suddenly in the left-hand pond there’s a ripple, and then a small protuberance above the water. I hold my breath. It’s moving parallel to the trail. I realize it’s the head of a turtle, a small slider of some sort, like the hundreds that dot rocks in the Congaree River just east of here on sunny days. As I walk, I’m also scanning the ground for pot sherds and arrowheads—any sign of the many unmarked archaeological sites in the preserve. DNR archaeologists have found projectile points, pottery sherds and tools here, suggesting the area might have been the home and meeting place of native Americans as far back as 12,000 years ago. A part of the Old Cherokee Trail, which led from the Appalachian Mountains to the coast, also runs through the property, adding to its rich history. More recently, in early 1865, General Sherman is believed to have camped in this area before moving north to cross the river

into Columbia. Nearby earthworks where Congaree Creek crosses Old State Road mark the location where Confederate troops made a desperate, last-ditch attempt to halt Sherman’s inexorable march on the city.



PHILLIP JONES

The preserve comes alive in the spring as wildflowers like the beautiful—but poisonous—rattlesnake plantain (*Sesbania punicea*) add splashes of color to the preserve’s landscape.



DAVID LUCAS

A bench overlooks one of the many water-filled trenches where clay was extracted for the production of bricks beginning in the late 19th century. The clay pits now form long, narrow ponds, home to a number of wildlife species.

Congaree Creek is the tributary that gives the preserve its name. Sunlight, filtered through the high canopy, highlights the shallow, clear stream. Here along the creek, surely, is the place for an alligator. I stamp my feet as I approach the water, hoping to spot one of the fearsome creatures, but am loath to actually stumble over one basking on the bank of the stream. But today, nothing slips into the water.

The creek is the heart of the preserve. It flows in from the west, then turns south, eventually merging into the Congaree River just a few miles downstream. Its banks are densely lined with hardwoods. There is a canoe trail along the creek—technically at least. With many overhanging trees and overgrown spots, it can be a difficult paddle, says Brian Long, the DNR’s property manager for the preserve. The canoe trail is just to the west of the Guignard Brickworks Trail, running along Congaree Creek between 12th Street and US Highway 321, also known as the Charleston Highway.

Besides alligators and other wildlife, the preserve plays host to the Atlantic white cedar, a rare evergreen found in wet, low-lying areas. There is no cedar along



DAVID LUCAS

The Guignard Brickworks Trail, running here between two clay-mine trenches, was designated a “Millennium Trail” in 2000 because of its cultural and historical significance.

the Guignard Brickworks Trail, however. “It’s hard to get to unless you’re in a canoe,” says Long. Today, at least, I stick to the trail. After running along the creek for a short way, it loops back toward its starting point. The journey takes me about an hour-and-a-half to walk.

The ground is higher here, and the quarry trenches drier—the end of the line for my hopes of seeing an alligator. Was it just bad luck (or good, depending on your point of view)? It seems I’m not the only one to miss out on alligators here lately. Long says they’re around, but construction may have temporarily driven them into hiding. SCANA recently built its new corporate headquarters near the property line of the preserve, and a nearby water treatment plant is expanding. “I’ve seen many alligators in the past,” Long says, “but this year I didn’t see as many.”

Maybe that’s just as well for the day hikers seeking a bit of tranquility from Columbia’s hustle and bustle.

—Eva Moore

Columbia-based writer Eva Moore is a connoisseur of southern food and beautiful places.



DAVID LUCAS

A rusted axle lying beside the trail serves as a reminder of the railway that once ran between the preserve and the brickworks upriver.

30TH ANNIVERSARY MIGRATORY WATERFOWL STAMP: "WOOD DUCKS AT ACE BASIN"

South Carolina celebrates the 30th anniversary of the successful state Migratory Waterfowl Stamp program this year with "Wood Ducks at ACE Basin" by internationally-renowned artist Jim Killen. In 2007, Killen was commissioned by the S.C. Natural Resources Board to create artwork for four stamps, culminating in the 2010-2011 stamp. (Killen was also recently commissioned to create artwork for the 2011-2012 and 2012-2013 stamps.) Prior to 2007, an annual contest was held to choose artwork for the stamp.

The anniversary stamp features a bright-eyed Boykin spaniel looking skyward as two richly-colored wood ducks fly over the wetlands of the ACE Basin. The stamp is characteristically rich with color and motion, capturing the essence of waterfowl in flight against the backdrop of one of South Carolina's most beautiful landscapes.

Killen's three previously commissioned stamps featured redhead ducks at Winyah Bay (2007-2008), blue-winged teals at Santee Coastal Reserve (2008-2009) and ring-necked ducks at Broad River (2009-2010). All four of Killen's commissioned stamps have included retrievers, inspired by his own faithful hunting companions. "I have hunted with some great dogs and painted them as well," said Killen, "I know the dedication that exists between an owner and their dog."

Killen is an avid sportsman and passionate conservationist, whose artwork has won numerous national



Revenue from the sale of state Migratory Waterfowl Stamps and prints supports habitat protection and other DNR programs.

and international awards, including Ducks Unlimited's "International Artist of the Year," which he won three times, and the Southeastern Wildlife Exposition's "Artist of the Year," which he won in 1987. Killen's artwork has generated millions of dollars for conservation organizations.

Duck Stamps, first created by the U.S. Fish and Wildlife Service in 1934 as federal licenses required for hunting waterfowl, are now considered one of the most successful conservation programs ever initiated. To date, the sale of federal Duck Stamps has raised over \$750 million. Ninety-eight cents of every dollar made from the sale of federal Duck Stamps supports the National Wildlife Refuge System, which includes South Carolina's ACE Basin, as well as other wildlife refuges in the state that provide critical habitat for waterfowl and other migratory and endangered bird species. Because of the success of the federal program, many

states began their own duck stamp licensing programs; South Carolina's program began in 1981.

Each year, around 25,000 South Carolina stamps are sold to hunters who are required to have a hunting license and migratory waterfowl permit when hunting migratory waterfowl in the state. An additional 5,000 stamps are sold to collectors. Posters and promotional prints add to the revenue of the stamps. As specified by state law, half of the proceeds from stamp and print sales are used by the DNR for specified in-state projects. The remainder of the proceeds support government-sanctioned projects in Canada that provide waterfowl for the Atlantic Flyway.

To purchase prints of DNR Migratory Waterfowl Stamps, visit www.arcadiapubs.com.

The 2009-2010 Junior Duck Stamp contest winner was Weston DeWolff from North Charleston's School of the Arts.

—Carrie Young

DNR WORKS TO PRESERVE HISTORIC BELFAST PLANTATION

The DNR is working to complete the purchase of historic Belfast Plantation—one of the largest blocks of forestland in the Piedmont. The 4,664-acre property offers a wealth of hunting, fishing and other outdoor recreational opportunities for South Carolinians.

The DNR, the National Wild Turkey Federation, the South Carolina Conservation Bank and The Conservation Fund are all working together to raise awareness and funds to complete the purchase of this treasure, located in Laurens and Newberry counties along SC Highway 56. "It's all about partnerships," said DNR Assistant Director Emily Cope who has played a large role in coordinating the project. Initial funding for the property was provided by the Conservation Bank, the U.S. Forest Service's Forest Legacy program and the U.S. Fish and Wildlife Service. These grants were matched by Heritage Trust funds and a donation from the NWTF.

The property includes the Belfast Plantation House, one of the oldest structures in Laurens County. The house, built in 1786, has a downstairs closet that once served as a local post office. The property is home to a variety of habitat types, including hardwood drains and upland loblolly pine forests.

The DNR plans to use Belfast for natural resource education opportunities and as a key area for promoting outdoor activities for youth, including special youth hunts. The property provides excellent deer, turkey and small game hunting



A late-winter snowfall covers the grounds of the historic Belfast Plantation House. The Belfast property will be a focal point for DNR youth education programs, shooting sports and family-oriented outdoor recreation. (Below) A hermit thrush, a migratory winter visitor to Belfast, rests on a snowy branch.

opportunities, and also provides over twenty miles of protection to the Little River and Mudlick Creek, tributaries of the Saluda River.

Adult and youth archery ranges, as well as rifle and pistol ranges will be constructed on the property to increase opportunities for participation in shooting sports. This family-friendly property will also include great opportunities for wildlife photography, bicycling, bird watching, nature walks and picnicking. The recreational and hunting areas at Belfast are easily accessible to the mobility impaired. When asked why she works so hard to help preserve properties like Belfast, Cope said, "I do it for our children; I want to get youth excited about being outdoors and excited about hunting and fishing in order to continue these traditions." The property is part of the DNR's Wildlife Management Area (WMA)

program and is open to the public except during scheduled drawn hunts. Fishing is by special event permit only.

Visit the DNR's Web site at www.dnr.sc.gov (follow the link to "Managed Lands") for more information about Belfast and other DNR-managed properties. To become a partner of Belfast Plantation, please contact Emily Cope at copee@dnr.sc.gov.

—Carrie Young



PHOTOS BY STEWART GRINTON

PAULA FELDMAN



2010 GBBC RESULTS ARE IN

Results from the 13th annual Great Backyard Bird Count are in. This annual four-day event engages tens of thousands of bird watchers nationwide as they record bird species in backyards, parks and wildlife refuges.

In South Carolina during this year's event, 163,323 birds (201 species) were recorded, including 2,066 sightings of Carolina wrens and 64 sightings of the rare and endangered piping plover (shown above).

For a listing of birds sighted this year, visit www.birdsource.org/gbbc. To learn more about South Carolina's role in the count, see "Birds of a Feather" in the January-February 2010 issue of *SCW*, or on the web at www.scwildlife.com.

PROPOSED STATUS CHANGE FOR LOGGERHEAD SEA TURTLES

On March 10, 2010, NOAA's Fisheries Service and the U.S. Fish and Wildlife Service jointly determined that the loggerhead sea turtle is comprised globally of nine population segments that qualify as "species" for listing as threatened or endangered under the Endangered

Species Act.

It was recommended that seven of the nine species be classified as endangered, including those in the Northwest Atlantic, which includes the waters off the coast of South Carolina.

The services are soliciting public comment on the proposal. For more information, visit www.nmfs.noaa.gov (search "loggerheads") or www.fws.gov/northflorida/ (click on "Sea Turtles" in the left-hand column).

To learn more about the DNR's sea turtle conservation efforts, read "Vulnerable Giants," beginning on page 28.

DNR WINS AWARD FOR HISTORIC HOUSE RESTORATION

The recent restoration of the historic Marshlands House at the DNR's Marine Resources Center has won an annual Caropolis Award from the Preservation Society of Charleston.

The society presented the award at its 90th annual meeting in January for restoration of the plantation house built in 1810 on the Cooper River and moved in 1961 to the DNR's Fort Johnson facility on James Island.

GET OUT AND PLAY WITH NBTA

With warm weather right around the corner, it's time to get outside and play! Members of the South Carolina Nature-Based Tourism Association offer a variety of fun, low-cost outdoor activities that emphasize conservation of the state's natural and cultural resources.

For more information, visit www.scnatureadventures.com.

MICHAEL MCSHANE WINS AWARD

The Pee Dee Land Trust recently presented S.C. Natural Resources Board Chairman Michael G. McShane with the William H. Chandler Stewardship Award, the organization's highest honor.

McShane was chosen to receive the award for his dedication to preserving ecologically and historically important lands in the Pee Dee Region during his tenure on the board.

NRS ESSAY WINNERS ONLINE

The top outdoor essays by student participants in the Natural Resource School education project have been posted on the DNR Web site.

This innovative program, sponsored by the DNR and the state Department of Education, is being piloted at Palmetto Middle School in Anderson County, Rice Creek Elementary in Richland County and North Central Middle School in Kershaw County.

To read winning essays or learn more about the project, visit www.dnr.sc.gov/nrschool/.

USC HERBARIUM OFFERS FREE PLANT I.D.

The USC Herbarium can help identify local plant species, including houseplants, weeds, garden plants, trees, shrubs and aquatic plants.

To have a plant identified, simply put a fresh or dried specimen in a baggie and put it in the mail to: Plantman, USC Herbarium, Department of Biological Sciences, USC, Columbia, SC 29208. Photos can also be sent to the Herbarium at plantman@herbarium.org.

MAY-JULY EVENTS

MAY.

Coastal Exploration Series.

Coastal South Carolina. Dates and contact: **May 4**—ACE Basin, Discovering the ACE. **May 11**—Donnelly WMA, Wetlands Night Sounds. **May 13**—Lewis Ocean Bay Heritage Preserve, Exploring Lewis Ocean Bay. **May 20**—Hobcaw Barony, Hobcaw in Bloom. Contact Kim Counts, DNR coordinator, at the Marine Resources Center, at (843) 953-9354, or via e-mail at CountsK@dnr.sc.gov. Online registration available at www.dnr.sc.gov/marine/NERR/seminarseries.html.

MAY-JULY.

Annual Governor's Cup Billfishing Tournament Series. Coastal South Carolina. Dates, locations and contacts: **May 11-15**—Bohicket Marina Invitational Billfish Tournament, Bryan Richardson, (843) 768-1280; **May 26-29**—43rd Annual Georgetown Blue Marlin Tournament, John Horton, (843) 546-1776; **June 23-26**—Carolina Billfish Classic, Deidre Menefee, (843) 345-0369; **July 7-10**—HMY/Viking Megadock Billfishing Tournament, McKenzie Estes, (843) 278-4920; **July 28-31**—Edisto Marina Billfish Tournament, Becca Smith, (843) 463-2082. Contact Amy Dukes, Governor's Cup Program Coordinator, (843) 953-9365, DukesA@dnr.sc.gov; www.govcup.dnr.sc.gov.

MAY-OCTOBER.

Coastal Birding. Murrells Inlet. Every Wednesday. Contact Huntington Beach State Park,

16148 Ocean Highway, Murrells Inlet, SC 29576, (843) 237-4440.

MAY 8.

International Migratory Bird Day. Cleveland. Contact Caesars Head State Park, 8155 Geer Highway, Cleveland, SC 29635, (864) 836-6115.

MAY 15.

Children's Day. Beech Island. Contact Redcliffe Plantation State Historic Site, 181 Redcliffe Road, Beech Island, SC 29842, (803) 827-1473. **Heirloom Gardening.** Union. Contact Rose Hill Plantation State Historic Site, 2677 Sardis Road, Union, SC 29379, (864) 427-5966.

JUNE 12.

Jr. Farmer Day. Blacksburg. Contact Kings Mountain State Park, 1277 Park Road, Blacksburg, SC 29702, (803) 222-3209.

JUNE 12-13.

Free Fishing Days. Statewide. Contact Lorianne Riffin, (803) 737-8483, or e-mail her at aquaticed@dnr.sc.gov.

Weekend on the Edisto River. Canadys. Contact Colleton State Park, 147 Wayside Lane, Canadys, SC 29433, (843) 538-8206.

JUNE 28-JULY 2; JULY 12-16. Junior Ranger Ecology Camp.

Congaree National Park, Hopkins. Contact David Shelley, Congaree National Park, 100 National Park Road, Hopkins, SC 29061, (803) 776-4396, ext. 3966, or visit the Web site at www.nps.gov/cong.

JAF PARSONS



WILDLIFE SCULPTURE EXHIBITION COMING TO SPARTANBURG

JULY 10-SEPTEMBER 5.

Don't miss the chance to see the work of Kent Ullberg, one of the world's most renowned wildlife sculptors. Ullberg's nationally-touring exhibit will be coming to the Spartanburg County Museum of Art July 10-September 5, 2010.

The exhibit will include forty-eight bronze and stainless steel wildlife sculptures, plus enlarged photographs of some of Ullberg's outdoor installations. This retrospective was first featured in Omaha, Nebraska, after Ullberg completed an epic installation titled "Spirit of Nebraska's Wilderness."

Ullberg's work has won him numerous awards, including election as a full academician by the National Academy of Design—the first artist to gain this honor since John James Audubon. Ullberg is a major supporter of many wildlife conservation efforts. In 1996, he received the Rungius Medal, the highest honor bestowed by the National Museum of Wildlife Art. The medal is awarded to artists, authors and conservationists who have made significant contributions to the interpretation and conservation of wildlife and its habitat.

For more information, contact the museum's associate director, Scott Cunningham, at (864) 582-7616, or visit www.spartanburgartmuseum.org.

Common Sense Ecology

CATASTROPHE AND PERCEPTION

I recently had a chance to chat with State Climatologist Hope Mizzell. We talked about climate trends and time frames, and, in particular, what we had experienced in our lives regarding changing weather patterns. I was making the case—or trying to—that some of the possible declines we’ve noticed in small reptiles and amphibians may be due to a gradual “drying-out” in the Southeast, especially across the coastal plain where I grew up.

I recalled my days of snake hunting as a teenager in the 1960s, when we often found ourselves wading knee-deep in longleaf pine savannas, and every pond and bay seemed to be filled to overflowing each year. Floodplains seldom dried out completely. But beginning in the late 1970s, we began to experience intermittent years of drought—with relatively severe extended droughts occurring during both of the past two decades. Contrasting the conditions during my youth with the drier years that followed, I wondered aloud whether these “new conditions” might be affecting the distribution and abundance of aquatic and semi-aquatic amphibians and reptiles. At about that point Hope said to me, “Steve, you do realize that the 60s were one of the wettest decades on record, don’t you?”

Well there you go. I hadn’t known that, and I came to the sudden and disconcerting realization that what I had always thought of as “normal” was actually shaped by abnormal events in the larger scheme of things. As scientists—and ecologists in particular—we are taught that things such as rainfall and animal populations typically fluctuate around an operating “norm” or mean. We talk about rainfall cycles, drought cycles, predator-prey



PHILLIP JONES

Stands of old-growth bald cypress trees are typically the result of past droughts.

abundance cycles and all manner of other cycles as if they were regular, predictable occurrences, when, for the most part, they are actually quite unpredictable. Both cycles and their operating means are mathematical constructs. They are useful, but we have to be careful not to allow our perception of them at a single point in time to become our reality.

As I began thinking about how growing up in one of the wettest decades on record shaped my view of the natural world, I was reminded of a branch of ecology that examines the effect of disturbances on ecosystems. Disturbances often come in the form of natural disasters or catastrophes—earthquakes, hurricanes, wildfires and droughts, for example. If you think about these types of events as “cycles fluctuating around an operating mean” you begin to understand that often they are really just big dips or peaks in a cycle. And as catastrophic as these events may sometimes be from a human standpoint, they can also be beneficial—possibly essential—from an ecological one. Drought, for example, which at first glance wouldn’t seem to be much good for anything, turns out to be really, really good for bald cypress trees.

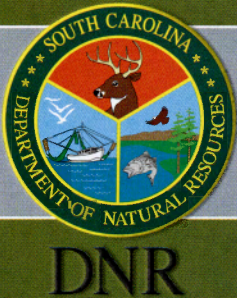
Every old-growth bald cypress

stand—and there are very few remaining—is the result of a catastrophic or near catastrophic drought. Bald cypress seeds will not germinate underwater, and the seedlings require two to three years of growth before they can withstand inundation. After most of our original bald cypress stands were logged out in the late 1800s and early 1900s, they did not regenerate. Water tupelo and black gum, both of which will germinate underwater, grew back instead.

As professionals charged with managing South Carolina’s natural resources, we have to be careful that our short-term perceptions don’t become our reality. Accounting for the role of abnormal events in shaping ecosystems may be just as important as understanding the generalized cycles and operating norms. Our management decisions definitely benefit from a perspective that takes both “normal” and “abnormal” events into account, along with an understanding that tomorrow’s perceptions of both may be quite different from today’s. 🐾

—Stephen H. Bennett

Stephen H. Bennett is a biologist with the DNR’s Wildlife and Freshwater Fisheries Division.



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A portrait of a middle-aged man with short, graying hair and a goatee. He is wearing a black button-down shirt with a small, light-colored logo on the left chest. The background is a dense green hedge.

A group of people in kayaks on a river. The kayakers are wearing colorful gear, and the water is a vibrant blue. The scene is set against a backdrop of lush green trees and a clear sky.



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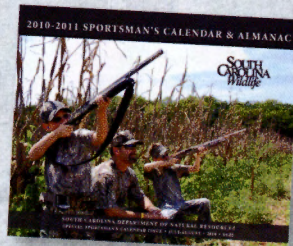


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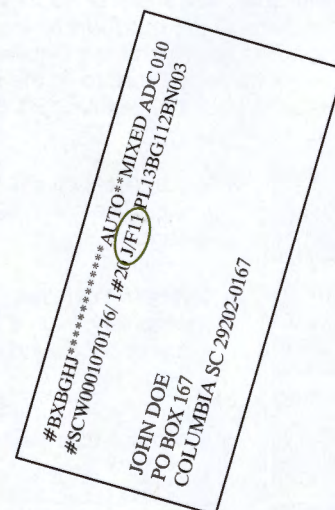
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