



Jocassee Journal

Information and News about the Jocassee Gorges



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Looking for a peregrine falcon nest high above Lake Jocassee are (from left) Tom Swaynham, DNR Upstate regional wildlife biologist, and Laurel Barnhill, DNR bird conservation coordinator. (DNR photo by Greg Lucas)

Peregrines find home in Jocassee Gorges

Speedy birds nest high above Lake Jocassee

In what was only the second documented nesting site in South Carolina in decades, peregrine falcons nested in the Jocassee Gorges in northern Pickens County.

"This is a perfect example of why conserving places like Jocassee Gorges is so important," said Laurel Barnhill, bird conservation coordinator with the S.C. Department of Natural Resources (DNR). "Without the efforts of all the conservation partners who helped protect Jocassee Gorges, these peregrine falcons would not be here."

Since nesting peregrine falcons are extremely sensitive to disturbance, a 5-mile section of Horsepasture Road from Cane Creek Road remained closed when the interior Jocassee Gorges roads were open from March 20 through May 10. That meant that the hallmark view of



Peregrine falcon

the Jocassee Gorges, Jumping Off Rock, was not accessible until the peregrines fledged their young in June.

"It's unfortunate that folks were not able to access Jumping Off Rock in April and May," said Mark Hall, DNR wildlife biologist, forester and Jocassee Gorges land manager. "But conservation-minded people were understanding of this, as this was a historic

moment for wildlife protection in South Carolina.

"We also opened up six new vistas on the Horsepasture Road before you get to Jumping Off Rock, all of them spectacular views, so this helped compensate for the loss of not being able to get to Jumping Off Rock this spring." (See story on Page 5.)

Continued on page 2

Outward Bound uses Jocassee Gorges in month-long course

Foothills Trail to serve as backdrop for wilderness experience

By A.J. Frithiof

"The journey of a thousand miles began with one step." The first step for several Outward Bound courses will begin on the Foothills Trail this summer. Lowcountry Outward Bound will kick off its second summer of miles-long journeys on the Foothills Trail as part of its 28-day Intercept courses.

Outward Bound is a worldwide wilderness organization that serves youth and adults through a wide variety of outdoor adventure experiences from dogsledding to rock climbing to sailing and beyond. Courses aim to push students past their limits to gain new skills and venture out into the unknown to build confidence and overcome adversities that may arise.

Locally, courses run through the Lowcountry base are focused on backpacking and canoeing and during these courses, students learn technical skills specific to these elements in addition to essential life skills such as leadership and communication. The Lowcountry



Outward Bound participants pause for a breather at the Horsepasture River crossing while backpacking on the Foothills Trail.

Outward Bound base in Awendaw just north of Charleston aims to serve at-risk and adjudicated youth populations through a variety of programs: Intercept, Redirections, and Community-Based Families in Need of Services.

If you are interested in participating in an Outward Bound course, please visit our Web site for more information, admissions, and scholarships: www.outwardbound.org.

(A.J. Frithiof is course director at Outward Bound Discovery-Lowcountry. She can be reached at cldlowcountry@outwardbound.org.)

Peregrine nesting a conservation milestone

Continued from page 1

Hall first noticed the peregrine falcons in early March. He monitored them constantly during the next two weeks and also observed courtship behavior. A visit by ornithologist Barnhill to Jocassee Gorges on March 13 confirmed that the peregrines were exhibiting typical nesting behavior.

"The area where the peregrines are nesting was closed for the benefit of the birds," Barnhill said. "This is a situation similar to three barrier islands in Charleston County that are closed to boat landings and the public from March to October to protect nesting seabirds. Without these kinds of protections, these birds would not be nesting successfully."

A pair of peregrine falcons has nested on the backside of Table Rock Mountain in northern Pickens County since 1990.

Peregrine falcons are among the world's fastest birds, clocked in dives at speeds in excess of 200 miles

per hour. Populations dropped to precipitously low levels because of pesticide contamination (from pesticides now banned throughout much of the western hemisphere). Concern about their long-term survival led the U.S. Fish and Wildlife Service to list the species as endangered in 1971. Due to population recovery, it was removed from the list in 1999.

Peregrines typically lay a clutch of three to four eggs, and incubate them for 29-32 days. It takes 35 to 42 days for the young birds to fledge (leave the nest). Peregrines raise one brood a year, and they feed almost exclusively on birds.

Signs about the peregrine nesting were posted at the closed section of Horsepasture Road. All access to the peregrine nesting area was prohibited, whether in vehicles, on foot, by mountain bike or horseback. Conservation officers patrolled the area until the peregrine falcons finished raising their young and left the area.



DNR wildlife technician Ronnie Gravely (right) and his son, Chris, take a blood sample from a trapped feral hog. Biologists are hoping DNA tests on the swine may reveal where they are coming from.

DNR continues wild hog pursuit in Jocassee

Special night-hunting equipment used to dispatch destructive invaders

Jocassee Gorges Project Manager Mark Hall said he plans to make wild hogs, or feral swine, the most “endangered species” on Jocassee. Hall said, laughing, “They are certainly ‘in-danger’ because we are going to hound them until it is hard to find a hog track on Jocassee.”

Numerous herds of feral swine have sporadically appeared on Jocassee Gorges in the last two years. Hall suspects the feral swine were illegally transported and released in the area. “Some misguided hunters want to have hogs to hunt, but they have probably not thought it out in terms of impacts to trout streams and influence on the bear population,” Hall said. Feral swine rip up small streams and consume acorns before the bears and wild turkeys get a chance to eat. They are voracious consumers and their reproductive rate is about 20 times higher than that of the black bear, according to Hall.

Jocassee Gorges wildlife technicians have trapped and disposed of more than 100 hogs in the last two years. The carcasses are given to children’s homes or people in the community who want some meat to barbecue. Hall recently teamed up with the U.S. Department of

Agriculture Animal and Plant Health Inspection Service (APHIS) to put extra pressure on the Jocassee Gorges swine population. APHIS uses special, infra-red night hunting equipment and scopes to zero in upon, and ensure rapid death to the foreign invaders. Snipers use carefully calibrated rifles to take the animals and secure blood samples. APHIS is conducting disease profiles on feral swine in South Carolina and analyzes blood serum for swine brucellosis, pseudo-rabies, and hog cholera. Hall asked for additional DNA tests to determine the connection between subpopulations on Jocassee and also help determine where the hogs were transported from. “DNA does not lie,” Hall said, “and sooner or later we’ll be able to pinpoint the perpetrators and prosecute to the fullest extent of the law.”

Jocassee Gorges has always supported a few wild hogs, but the recent population explosion is abnormal. “We can live with a few lone hogs combing the mountainsides,” Hall said, “but we cannot tolerate herds of wild hogs tearing up our trout streams and eating the foods our native wildlife depend on.” DNR plans to step up its efforts in 2008 with additional traps and sniper teams to keep the feral swine population at a level that causes minimal impact to the environment. Watch for the results of the disease studies in future issues of the Jocassee Journal.



Jocassee Trout Club member Ken Sloan shows off an 8.33-pound brown trout caught on Lake Jocassee in summer 2007.

Jocassee Trout Club working to improve trout fishery

Group assists DNR in enhancing trout habitat at Lake Jocassee

By Ken Sloan

When I hear conversations about Lake Jocassee Trout fishing, it inevitably includes comments about “the good ol’ days” when an angler could expect to catch trophy trout on just about every outing. In fact, the state-record brown trout that weighed in at 17.9 pounds was caught more than 20 years ago in 1987, and the state-record rainbow trout that weighed in at 11.5 pounds was caught almost 15 years ago in 1993.

In recent years, serious Jocassee trout anglers took action in an effort to increase the quality and quantity of Trout on Lake Jocassee for current and future generations. As a result, these anglers formed the Jocassee Trout Club with the following mission statement:

- Conserve, protect and improve the trout fishery of Lake Jocassee.
- Work with constituted authorities and conservation organizations to promote programs of education and public awareness related to trout fishing on Lake Jocassee.
- Provide members with an opportunity for personal involvement in projects designed to preserve and enhance trout habitat.



- Provide members with the opportunity to fellowship, to share fishing experiences and to develop fishing techniques for Lake Jocassee.

The Jocassee Trout Club has been working with the S.C. Department of Natural Resources (DNR) to better understand trout habitat and to further understand how the Jocassee Trout Club can assist in sustaining and improving the fishery for years to come. Some of the club’s efforts include assisting with fin clipping, which is a process that allows DNR to monitor and capture data on fish growth. The club has created a lake-front data collection process that allows anglers to provide DNR with specific information about the fish that they caught and even information about the fish that were not caught.

In addition to assisting the DNR, the Jocassee Trout Club also has a sincere interest in keeping Lake Jocassee clean and pristine. Each year the club sponsors multiple lake clean up days whereby club members provide boats and garbage bags and spend the day sweeping the lake for trash.

For more information about the Jocassee Trout Club, please visit its Web site at <http://jocasseeoutdoorcenter.org/>.

(Ken Sloan is owner of the Jocassee Outdoor Center on Lake Jocassee and a member of the Jocassee Trout Club.)

New vistas opened on Horsepasture Road

Stunning views can now be experienced without long drive to Jumping Off Rock

In early 2008, several new openings were created along the Horsepasture Road to improve long-range viewing opportunities. The openings, or "vistas," are certain

to quickly become favorite stopping points along the Jocassee Gorge's primary artery that runs the main ridges between US Highway 178 and Bootleg Mountain. The new sites will allow visitors to see spectacular views without having to travel the entire one-hour-plus ride to Jumping Off Rock. The Jocassee Forest Management Plan, approved in 2004, called for additional vistas.

Popular existing vistas include the North Carolina Overlook and Jumping Off Rock.

The North Carolina Overlook has a stone bench donated by the S.C. Bear Hunters Association. The view there begins with the Laurel Fork Creek Valley in the forefront and extends all the way to the Blue Ridge Parkway and several prominent points along that section of the Southern Appalachians. Jumping Off Rock provides a straight-away view of remote Musterground Mountain as well as a striking view of undeveloped Lake Jocassee. Both sites receive a lot of use when the roads are open in the spring and fall.

Mark Hall, Jocassee Project Manager said, "The

new vistas will relieve some of the pressure from the other popular viewing sites, especially the views over the upper Laurel Fork Valley. I'll bet we find some folks just sitting at the spots for hours taking in the views. I admit, I sometimes catch myself gazing for long periods at the ridges, points, lone pines, rock outcrops and ravines...it is just an awesome landscape!"



New vistas on Horsepasture Road provide some stunning views of South Carolina and North Carolina mountains. (DNR photo by Mark Hall)

in rough terrain work and professional tree-felling techniques. The cleared areas range in size from 1/2 to 3 acres and will provide some important shrubby habitats for wildlife where songbirds, bears, ruffed grouse and other animals are sure to benefit. Trees were dropped in place and the soils were left undisturbed.

Whether it is spring or fall, the areas are sure to lure photographers from near and far. Images of the views will certainly find their way to the cover of magazines and other periodicals in the near future. If you visit, be sure to keep a wary eye open for wildlife using the areas...they will range from tiny songbirds to 200-lb.+ furry denizens of the mountains.

361 acres of mountain land added to Jocassee heritage preserve

Land on state line was in danger of being developed

An important addition of 361 acres has been added to the Jocassee Gorges complex in northern Pickens County. The Smoak/Cathcart Addition to Laurel Fork Heritage Preserve is on the North Carolina state line and protects the northern boundary of the Jim Timmerman Natural Resources Area at Jocassee Gorges.

The 361 acres is an addition to Laurel Fork Heritage Preserve within Jocassee Gorges. The S.C. Department of Natural Resources (DNR) purchased the land from Chinquapin Hollow Inc. for \$2,404,260 with funds from the Heritage Land Trust Fund. This was below the appraised value of \$2,530,000. The owners of the property were Lois Cathcart of Chapin and Copley Smoak of Arkansas, formerly of South Carolina.

"I want to congratulate the DNR for its effort to acquire this property," said state Sen. Larry Martin of Pickens. "This addition to the Jocassee Gorges will allow protection of the northern boundary of Jocassee and provide the people of South Carolina more beautiful areas to enjoy."

The 361-acre addition to Laurel Fork Heritage Preserve, which features mature forests of oak, hickory, hemlock, white pine and yellow poplar, as well as the headwaters of Rock Creek, is land that was prime for development, according to DNR.

"If we had not gotten this land, there would have been large houses overlooking the upper portion of the

Jocassee Gorges tract," said Mark Hall, DNR Jocassee Gorges project manager. The land, known as Chinquapin Hollow, adjoins the north side of Laurel Fork Heritage Preserve in the heart of the Jocassee Gorges.

The former owners wished this land to be protected in a natural state and worked with DNR to sell the land below market value. "We can all be grateful that DNR saw fit to protect this area," said Copley Smoak, one of the owners. "It will be part of a wild treasure, saved for us and for future generations."

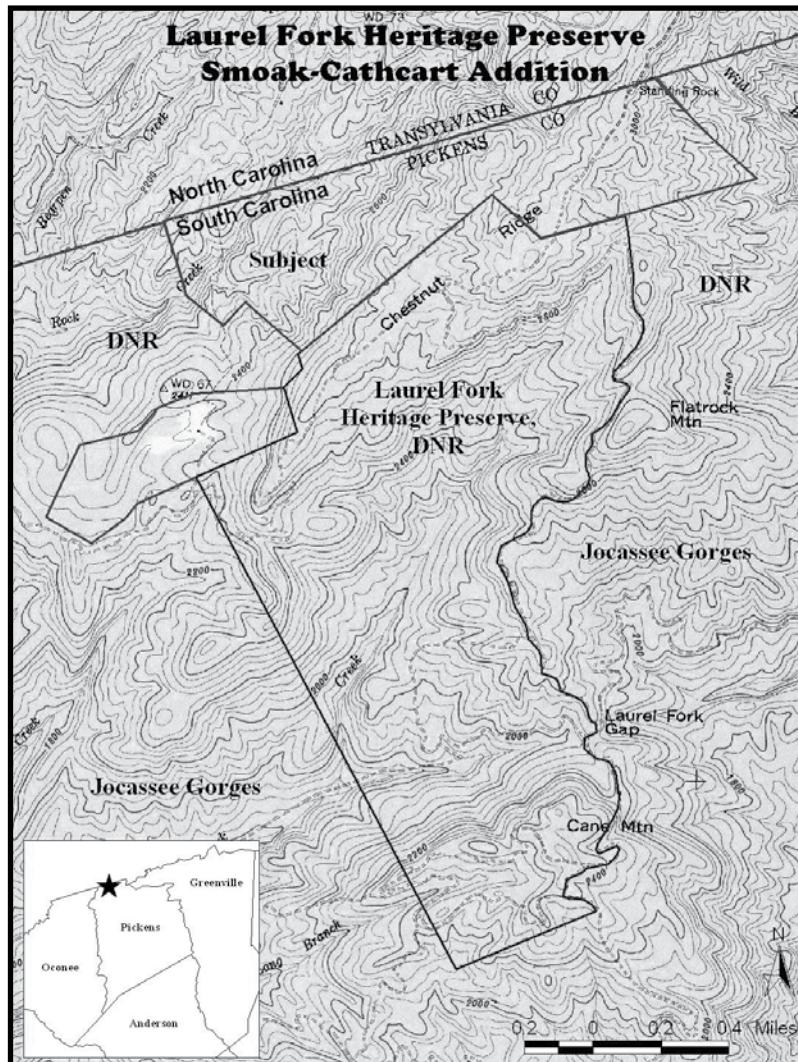
The Heritage Land Trust Fund, source of the funds to purchase Chinquapin Hollow, comes from a small portion of revenue collected from documentary stamps required in South Carolina property transactions. The funds may be used only for acquiring and managing significant natural and cultural areas. The Heritage Trust Program protects significant natural and cultural lands in South Carolina. Formed by state law in 1976,

Heritage Trust has

protected 82,230 acres on 70 state heritage preserves found throughout South Carolina. Find out more about Heritage Trust managed lands at: www.dnr.sc.gov/managed/index.html.

Correction

An article on Ellicott's Rock on Page 11 of the Fall/Winter 2007 edition of Jocassee Journal incorrectly identified Elberton as the capital of Georgia in 1811. In fact, Milledgeville was the capitol of the Peach State in 1811.





Darrell Harrison with the Foothills Resource Conservation & Development Council (center) receives the Trout Unlimited Palmetto Award from Tom McInnis, chair, and Meta Armstrong, chair-elect, both of the South Carolina Council of Trout Unlimited.

Trout Unlimited honors Partners for Trout

Upstate group receives Palmetto Trout Award from South Carolina Council

The South Carolina Council of Trout Unlimited has presented its 2007 Palmetto Trout Award to Partners for Trout, a coalition comprised of the Pickens, Greenville and Oconee Soil and Water Conservation districts, U.S. Fish and Wildlife Service, U.S. Natural Resources Conservation Service, S.C. Department of Natural Resources, Trout Unlimited, private landowners and the Foothills Resource Conservation & Development Council.

Partners for Trout is committed to restoring and enhancing trout streams in South Carolina. The presentation was made by Tom McInnis, South Carolina Council chair, at the council's meeting on Nov. 17, 2007, at Jones Gap Park. McInnis said Partners for Trout was being cited for its long-term partnership with Trout Unlimited in South Carolina, and its shared interest in protecting South Carolina's rare trout waters.

Since its inception in 1997, Partners for Trout has done stream-bank, riparian and in-stream restoration on six miles of streams. One major project involved a half-mile of stream restoration on the Eastatooe Creek in the Jocassee Gorges region of northern Pickens

County. The degraded stream channel was improved to allow more natural water flow by installing a number of different in-stream structures. The stream banks were also planted with hardwood trees to reduce erosion and to provide cooling shade for the stream in the summer. Partners for Trout has also installed 17 bottom-water-release structures on dams, which has improved water quality by reducing downstream water temperatures in summer in more than 50 miles of streams.

Susan Guynn, chair for the Foothills Resource Conservation & Development Council, expressed her appreciation for Trout Unlimited's long partnership with the coalition. Guynn said the success of this project is because of the dynamic partnership that exists. Darrell Harrison, secretary/treasurer for Foothills Resource Conservation & Development Council, accepted the award, which consisted of a plaque and a handsome brook trout statuette, on behalf of Partners for Trout's member organizations.

The South Carolina Council of Trout Unlimited is composed of the three Trout Unlimited chapters and 1,200 members in South Carolina. Trout Unlimited's mission is to conserve, protect, and restore North America's coldwater fisheries and their watersheds. For more information on Trout Unlimited, visit www.tu.org.



Bringing back the brook

Coalition looking to restore brookies to their rightful place in mountain streams

By Dave Van Lear

It is a hot and steamy June morning and a crew of biologists, technicians, and Trout Unlimited volunteers are knee-deep in a small, cool stream in Oconee County in the Sumter National Forest. Dan Rankin and Jeanne Riley, fisheries biologists with the S.C. Department of Natural Resources U.S. Forest Service, respectively, are leading the team in search of Southern Appalachian brook trout.

About 100 of these native fish, captured from another small stream on the Sumter National Forest, had been stocked here the previous fall after non-native species had been removed. The effort is part of a major brook trout restoration program in the eastern United States called the Eastern Brook Trout Joint Venture, a coalition of state and federal agencies, academic institutions, and conservation organizations whose goal is to restore healthy, fishable populations of Eastern brook trout throughout their eastern range.

Using backpack electroshockers, the team moves slowly and steadily upstream, probing under dense thickets of doghobble and rhododendron that cloak the small stream. The electric current that runs between the probes stuns any nearby fish, causing electrotaxis of their nervous system. The stunned fish floats lazily to the surface for a few moments, allowing it to be netted by technicians or volunteers. Rankin and Riley want



Partners for the South Carolina brook trout restoration include the South Carolina DNR, U.S. Forest Service, Trout Unlimited, and the Eastern Brook Trout Joint Venture.

to know if the brook trout they stocked earlier are still alive and whether they have reproduced. Brook trout are fall spawners, and if they spawned, young-of-the-year reproduction should be present.

"There's one," shouts Rankin, as he spots a bright 7-inch brookie that floats to the surface after being shocked from its hiding place. A netter quickly scoops up the trout before it can recover and dart away. "That's a real beauty," says John Garton, one of the Trout Unlimited volunteers, as the crew admires the beautifully marked fish. On its olive flanks are vivid red spots surrounded by pale blue halos. "It's easily to see why old-timers called them specs," Garton says. Along its darker back are yellowish worm-like markings, called vermiculations by fisheries biologists, and the belly of this male is a flaming orange. Even the fins are spectacularly colored, with leading margins of ivory followed by black and orange streaking.

The Eastern brook trout in the Southern Appalachians is in trouble. The brookie has been declining since the mountain hardwood forests were heavily cutover by the timber barons more than a century



A Southern Appalachian brook trout is the object of desire of a coalition of agencies and organizations seeking to restore the fish to its traditional range in the South Carolina mountains.

brook trout in South Carolina



ation program included electroshockers from Unlimited, and the S.C. Wildlife Federation.

ago. Removal of forest cover caused water temperatures to rise beyond the brook trout's tolerance and intense wildfires in the logging debris caused erosion and heavy sedimentation. Railroads and roads followed the stream bottoms into the mountains in those days and, in many cases, especially in steep "hollers," the stream channel itself was used as the road bed. Aquatic ecosystems were severely damaged by this type of exploitative logging and brook trout populations declined dramatically.

The forest gradually grew back and the brook trout would have come back too, except for the fact that rainbow trout from the Western United States and brown trout from Europe were stocked in the brook trout's habitat. These non-native fish were available for stocking by the early 1900s, thanks to the efforts of early fish culturists in the United States. They grew faster and larger than the brook trout and gradually dominated the streams where brookies once thrived. Only in tiny headwater streams did the small size of the brookie give them a competitive advantage over the rainbow and brown trout.

In the Southern Appalachian Mountains, there

is a distinct genetic strain of the brook trout that differs from that found in the northeastern United States and Canada. The Southern Appalachians were not glaciated during the last Ice Age, when the Laurentide Ice Sheet reached its maximum extent about 18,000 years ago. The ice sheet only reached the present-day Ohio River at that time. As a result, brookies in the valleys of the Southern Appalachians had millions of years to develop into the unique strain that they are today.

Today only a few streams in South Carolina have the pure strain of Southern Appalachian brook trout. Rankin explains: "The Southern Appalachian brook trout proved to be extremely difficult to raise in hatcheries, much more difficult than northern strains. As a result, hatchery managers raised northern strains, and they were stocked in streams throughout the Southern mountains. In many cases, the northern and southern strains interbred."

But it is primarily this unique Southern Appalachian strain of brook trout that the DNR and its partners are striving to restore. All trout species and strains are important, but the Southern Appalachian brook trout is a unique part of the southern mountain heritage and deserves special consideration for restoration. The brook trout is South Carolina's only native trout (it is actually a member of the char family, but most anglers care little about the minor physical differences that separate trout from char) and the Southern Appalachian strain of brook trout is unique to the southern mountains. Although the habitat abuses of the first half of the 20th century seldom occur today, other threats have arisen in recent decades. Air pollution

Continued on page 9



Electroshockers walk a restored brook trout stream to determine if the brookies are reproducing.

Southern Appalachian brook trout unique part of mountain heritage

Continued from page 9

and habitat fragmentation from development are now the most dominant threats in many states and continue to contribute to the brook trout's decline.

Restoration efforts in South Carolina are led by DNR and Forest Service fisheries biologists, but other partners are making substantial and essential contributions also. The South Carolina Council of Trout Unlimited has provided much-needed funds for the restoration efforts and supplied volunteers to help with stream clearing and electroshocking. The South Carolina Wildlife Federation also helped with funding the projects. Biologists and technicians from the Great Smoky Mountains National Park assisted with removal of non-native species from the stream segments to be restored, an essential part of the restoration of brook trout. Clemson University scientists are monitoring effects of the restoration efforts on critical parts of the aquatic ecosystem, such as macroinvertebrates and amphibians and reptiles.

Brook trout restoration efforts are targeted for the small headwater sections of streams identified by DNR and Forest Service biologists. An essential feature of these stream segments is that they must have an impassable waterfall at their lower end to block upstream migration of non-native species. If sustainable populations of Southern Appalachian brook trout can be established in selected streams or stream segments in the mountains of South Carolina, anglers might dream of the day that they will be able to catch a virtual grand slam of rainbow, brown, and brook trout in a single day.

Back on the stream where this story began, there is evidence that this dream may soon become a reality. "Look at that little beauty," says John Garton as he scoops a 3-inch brook trout from beneath an

overhanging rhododendron limb. "That's what we were hoping to find," says Rankin, examining the small, delicate trout. "This little guy is the offspring of the brookies we put in here last September. At this stage, we call them young-of-the-year." As the electroshocking crew moved further upstream, many more adult and young-of-the-year brookies were caught and released, signaling at the very least early success for the program.

However, more stockings may be needed to build up the population before it reaches a fishable level.

At this time, two streams in the Andrew Pickens Ranger District of the Sumter National Forest have been stocked with Southern Appalachian strain brook trout.

Another stream in the Forest has been stocked with wild mixed-strain brookies—brookies that have genes of both Northern and Southern Appalachian strains—as has a stream in



Dr. Dave Van Lear (left), Trout Unlimited member and retired Clemson University forestry professor, talks about brook trout restoration with Dr. Michael Steinberg of the University of Alabama alongside King Creek in Oconee County (DNR photo by Greg Lucas)

Table Rock State Park. Soon other headwater streams will be targeted for restoration to brook trout

The South Carolina partnership believes that the Eastern brook trout, and especially the Southern Appalachian brook trout, is worth saving. It is a part of our region's heritage, and our children and grandchildren should have the opportunity to enjoy them. The partners in this conservation effort all agree that we would not be good stewards of our resources if we were to let the brook trout vanish from our streams. As Aldo Leopold, the father of wildlife management, said decades ago, "The first rule in successful tinkering with forest ecosystems is to not throw away any of the pieces." (*Dave Van Lear is a retired forestry professor at Clemson University and a longtime member of Trout Unlimited.*)



Fishing is one of the most popular activities in Jocassee Gorges, according to a research project conducted by Clemson University, (S.C. Forestry Commission photo by Jennie Morris)

Recreation survey reveals who uses Jocassee Gorges

Two-year research project was conducted by Clemson University

By Dr. Bill Hammitt

The Jocassee Gorges is about 44,000 acres of wildlands in Pickens and Oconee counties, the majority of which is managed primarily as a Wildlife Management Area by the S.C. Department of Natural Resources (DNR). Outdoor recreation activities managed for and regulated in the Jocassee Gorges by the DNR include: hunting, fishing, hiking, camping, horseback riding, mountain biking, off-highway vehicle/ATV riding, rock climbing, plus various associated sub-activities (e.g., photography, sightseeing, etc.).

As with any form of natural resources management, it is essential that managers have baseline information on the organism and habitat interactions within a management area. Humans are no exception, for they are organisms that use and impact the various habitats and resources of the Jocassee. Use inventories and user baseline information are necessary to properly

manage the human dimension aspects of the Gorges.

To manage the outdoor recreation users and uses of the Jocassee, we must understand who uses the area, what they do and for what purposes, where they go within the area, and when they visit and frequency of usage. This information is commonly referred to the four W's of outdoor recreation inventories: the Who, What, Where, When. Because this baseline information did not exist for the Jocassee Gorges, an on-site visitor use survey was conducted in 2005.

The Survey

On-site users were contacted while in the Jocassee Gorges and asked to complete a survey concerning their use of the area. A total of 263 visitors were contacted, of which 247 agreed to complete the survey, resulting in a participation rate of 94 percent. The on-site sample was conducted during the spring, summer, fall, and winter of 2005, involving about 575 hours of fieldwork.

During the intercept survey, users were asked to volunteer participation information relating to activity, use patterns, and locations of use. A map was provided

Continued on page 12

Hiking and fishing are two most popular activities at Jocassee Gorges

Continued from page 11

to users and they were asked to identify frequently used areas and their corresponding types of use. Past use history, as well as anticipated future use, were also collected from respondents. Background and user profile characteristics were obtained to describe who uses the Jocassee Gorges Area.

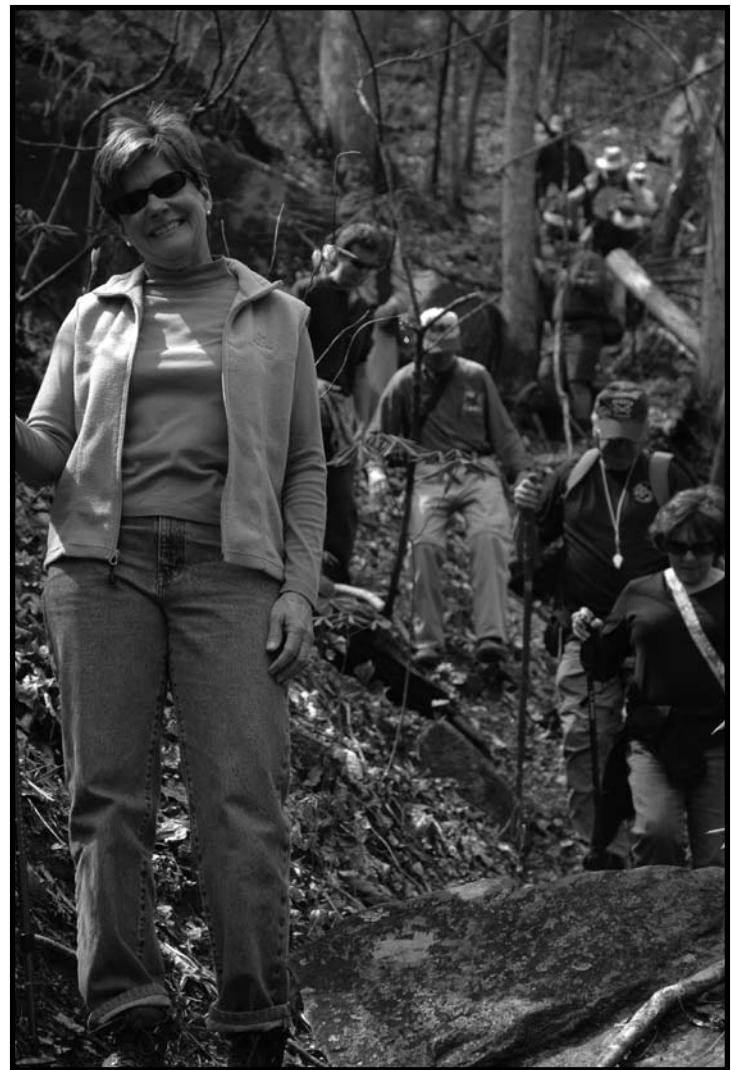
Who visits Jocassee Gorges?

The average user of the Jocassee Gorges is 42 years of age, but ranges in age from 15 to 75 years. The most common age group includes users in their 40s. Not surprisingly, nearly four (83 percent) of every five users are males. Jocassee users are fairly highly educated, with 47 percent having a college degree and another 18 percent having an associate's degree. Professional occupations (i.e., physicians, attorneys, engineers, teachers, business people) are most commonly represented (28 percent), followed by laborers (15 percent) and retirees (11 percent).

The users of the Jocassee Gorges are primarily South Carolinians (79 percent), followed by residents of North Carolina (9 percent) and Georgia (8 percent). Other states reported by users included Florida, Tennessee, Pennsylvania, Michigan, and Missouri. Residents of the city of Pickens accounted for 13 percent of users, followed by users from Greenville (12 percent). Other cities and towns having notable representation are Easley, Seneca, Anderson, Six Mile and Clemson, accounting for an additional 24 percent of visitors from the Upstate. Thus, these six Upstate towns/cities account for 62 percent of South Carolina visitors to the Jocassee Gorges.

What do they do?

The most popular activity of Jocassee users is day hiking, with more than a third of users participating. Nearly 25 percent went fishing. The next two popular activities are overnight backpacking and hunting, each representing about 10 percent of users (Table 2). Another 10 percent of users drive the property to sightsee and to drive ATV/OHV's. Jocassee visitors were also asked if they had a secondary activity during their outing. Of those users participating in a second activity, day hiking was most frequently mentioned (35 percent), followed by fishing (21 percent) and nature photography (10 percent).



Day hiking was ranked the number one activity in Jocassee Gorges in Clemson University survey. Here Osher Lifelong Learning Institute (OLLI) at Clemson University members hike on the Palmetto Trail near Table Rock State Park as part of their Jocassee Gorges class. (DNR photo by Greg Lucas)

Managers need to know not only what people do in the Jocassee area but also, how often they do it. Within the last 12 months, users reported the following average number of days of Jocassee participation: watched wildlife (37 days), went fishing (26) went hunting (20), drove ATV (15), and looked for wild flowers (14). Because hunting and fishing are popular activities that people participate in frequently, additional information was obtained for target species. Deer hunters are the most common, followed by bear and small game. Some deer hunters hunted for more than 17 days in the Gorges Natural Area. In terms of length of stay at the Jocassee during activity participation, the majority of day users stay about four hours and backpackers one night. However, nearly 17 percent of backpackers stayed four or more nights per trip.

Historical use of the Jocassee Gorges indicates

Continued on page 13



Hunter Dennis Chastain poses with a black bear that he harvested during bear hunting season several years ago. Many hunters reported using the Jocassee Gorges during the Clemson University recreational survey.

Many hunters use Jocassee Gorges

Continued from page 12

that many users are long-time users (Table 3). The average number of years recreationists had been using the property is about 10.5 years, however, nearly 19 percent have used the area between 10 and 20 years, and 15 percent for over 20 years. At the other extreme, more than 20 percent were first-time visitors. The average number of times all user-types used the areas was about 17.5 times per year. This average of 17.5 times per year is inflated because 20 percent of users reported more than 20 visits per year.

Where do users go?

Almost half of visitors were able to give an approximate destination for their journey within the Jocassee Gorges. The most frequently-traveled-to destination is Whitewater Falls (35 percent) followed closely by the Eastatoee River (27 percent). The Foothills Trail is the most popular trail, while the Eastatoee Creek Heritage Preserve trail is second in usage. The most popular secondary destinations are Horsepasture Road and Bad Creek access. Among anglers, Eastatoee Creek and Lake Jocassee are the major use areas. About twice as many (32 percent) anglers fished rivers and streams

within the Jocassee Gorges as Lake Jocassee. Anglers who report Eastatoee Creek as their fishing destination were asked to report if they were using the upper or lower parts of Eastatoee Creek. Upper Eastatoee Creek anglers represented about 15 percent of Eastatoee anglers, while those fishing the lower Eastatoee Creek represented 19 percent of Eastatoee fishermen. The anglers who reported Eastatoee Creek as their destination accounted for 76 percent of anglers who reported their specific fishing destination, followed by anglers going to Whitewater River and Horsepasture River, which both represented 7.4 percent. Laurel Fork Creek and the Thompson River both accounted for 3.4 percent of anglers. The Toxaway River and Cane Creek had small representations of Jocassee Gorges anglers.

Although many Jocassee Gorges visitors were not able to report where their primary and secondary areas of use were located with the Jocassee Gorges, the location of the researchers' user-intercept samples provided some insight into the spatial distribution of use in the Jocassee Gorges. The access area with the most intercepts of visitors was the Bad Creek Hydro Project

Continued on page 14

Jocassee Gorges hikers crave waterfalls

Continued from page 13

access, accounting for 44.1 percent of the sample. The Horsepasture Road represented 27.5 percent of visitors, Dug Mountain Angler Access Area 21.9 percent of users, and Shooting Tree Ridge Road access 6.9 percent. Visitors were asked how they learned of Jocassee Gorges. However, the question was added to the intercept survey during the final sampling dates, and therefore the resulting sample was small. Friends or family were the largest information source followed by users who had been born in the area. Written publications represented only 15 percent of the sample, and the Internet accounted for 12 percent of users. When do visitors use Jocassee Gorges?

The majority of use on the Jocassee property occurs in the spring and fall and on weekends. Day hiking is particularly high in March through May during wildflower season, fishing is heavy during the spring, and hunting is most popular during spring-fall hunting seasons. Because the Jocassee Gorges is managed primarily by DNR as primarily a Wildlife Management Area, some of the road access to users is determined by regulated hunting seasons. Thus, the big game hunting seasons for the spring and fall 2005 were equivalent to the sampling of users for the Jocassee area. However, we did sample use on Sundays even though no Sunday hunting is allowed on Wildlife Management Area lands.

Summer and winter use for the Jocassee is significantly less than Spring-Fall. Road traffic counters located at entrance points of Horsepasture Road and Shooting Tree Ridge Road reveal that spring use is greatest during the week of April 10-16 for both sites, with the two preceding weeks (March 27-April 9) receiving the next most use. Fall use was greatest during the weeks of October 24-30 and November 21-27 at both sites, followed by the two week period of October 10-23. These peaks in use are directly related to the opening of bear and small game hunting seasons.



Waterfalls, like The Narrows at Eastatoee Creek Heritage Preserve, are a popular destination for Jocassee Gorges hikers. (DNR photo by Greg Lucas)

Summary

The average Jocassee Gorges visitor is 42 years old and male. The majority are college educated and employed in professional positions. They come from a family of four, are residents of the State of South Carolina (from a town or small city), and most often reside in the town of Pickens or city of Greenville.

The average Jocassee Gorges user has been using the area for 10.5 years. They come for a day-trip-stay of four hours or an overnight camping trip of about two days within the Gorges. The usual primary, as well as secondary, activity of Jocassee Gorges visitors is either day hiking or fishing. Day hikers usually hike about 11 days each year; most of the time to find waterfalls, and anglers spend more than 25

days fishing each year in the Gorges. Anglers fished the Eastatoee Creek most often and usually for one to four days each year. The typical Jocassee Gorges user enters the area at either the Horsepasture Road access or the Bad Creek access (Musterground Road).

We have presented a profile of the Jocassee Gorges user and uses for the year of 2005. Undoubtedly, the users and uses will experience successional change in the future, just as non-human organisms and their habitats experience successional change over time. Monitoring of users and their uses will be required in the future to effectively manage the human dimensions of resources management in the Jocassee Gorges.

To view the entire Jocassee Gorges recreation survey, visit <http://www.dnr.sc.gov/managed/wild/jocassee/research.htm>.

(Dr. Bill Hammitt is a retired Parks, Recreation and Tourism Management professor at Clemson University. The Jocassee Gorges recreation survey was coordinated by Clemson University graduate student Thomas Warren as part of his master's degree program. The recreation survey was funded by State Wildlife Grant funds from the U.S. Fish and Wildlife Service.)



Birding in the Jocassee Gorges

Dr. Drew Lanham (left), a Clemson University forestry professor and ornithologist, calls in a bird during a birding field trip that was part of the Osher Lifelong Learning Institute (OLLI) at Clemson University Jocassee Gorges class. For more information on OLLI classes, visit www.clemson.edu/OLLI. (DNR photo by Greg Lucas)

SC MAPS program transfers to USC

Jocassee Gorges is one of the study sites used in natural history curriculum

Effective April 1, 2008, the distribution center for the SC MAPS program moved from Clemson University (Department of Environmental Engineering and Earth Sciences) to the South Carolina Geographic Alliance, housed in the Geography Department of the University of South Carolina in Columbia.

SC MAPS provides topographic maps, aerial photography, and satellite imagery of selected study areas throughout South Carolina along with corresponding K-12 student activities and teacher background information that has been correlated to the South Carolina academic curriculum standards. The Jocassee Gorges area is one of the SC MAPS study sites, and topographic maps and aerial photographs of the Lake Jocassee region are available through the SC MAPS Program. Student activities for the Lake Jocassee region address environmental topics such as watershed

management, power production (including nuclear, hydroelectric and pumped storage engineering), and land-use issues (including point source and non-point source pollution).

SC MAPS was developed in the 1980s through a partnership involving the S.C. Department of Natural Resources, the S.C. Department of Education and Clemson University. In 1995, the program was made more interdisciplinary with the addition of student activities focusing on language arts, social studies, and mathematics. The South Carolina Geographic Alliance has plans for upgrading the program further, through a greater use of technology and the incorporation of computerized earth science databases.

For more information or to order maps, visit <http://www.cas.sc.edu/cege/scmaps/>, or contact Dr. Jerry T. Mitchell, director of the Center of Excellence for Geographic Education at USC's Department of Geography, by calling (803) 777-2986, or send an e-mail to mitchejt@gwm.sc.edu.



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Duke mapping shores of Lake Jocassee

Sensitive environmental habitats to be identified

Duke Energy scientists are moving forward in mapping the shores of Lake Jocassee in the development of a shoreline management plan for the pristine lake that graces the Golden Corner.

The shoreline management plan is a comprehensive exercise to map current and future uses of the shoreline and identify sensitive environmental habitats along the water's edge of Lake Jocassee. Scientists, via visits by boat, will identify and document the existing condition of the shoreline, including critical environmental areas and existing facilities.

"The shoreline management plan will help locate sensitive environmental areas and place restrictions on what activities are allowed in those locations," said Kelvin Reagan, with Duke Energy's Lake Services. "These restrictions will help protect habitat for both fish and wildlife."

Lake Jocassee was created in 1973 as part of Duke Energy's Keowee-Toxaway Project and encompasses some 7,500 surface acres and 75 miles of shoreline. Lake Keowee is also part of the project and

in December 2006, a shoreline management plan was submitted for Keowee. This new tool (along with the existing shoreline management guidelines) helps guide and manage lake activities to provide public and private access while protecting the lake's natural and cultural resources.

Duke Energy felt it would be of value to do the same thing for Lake Jocassee even though the majority of Jocassee is already protected. The mapping will provide documentation and may identify new habitat areas.

"As the shoreline mapping is complete, draft maps will be available for public review and comment," Reagan said. "These maps will be an important tool for Duke Energy's Lake Services as well as state and federal agencies as they review applications for proposed projects."

The shoreline management plan is scheduled to be complete and filed with the Federal Energy Regulatory Commission in late 2008. Additional information on shoreline management plans is available on Duke Energy's Web site <http://www.duke-energy.com/environment/water-quality/shoreline-management.asp> or by contacting Duke Energy's Lake Services at 1-800-443-5193.

