

The Chattooga Quarterly

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Winter *** 2003

Conservation and Self Reliance



Bill Coburn and Peggy Waters get southern exposure in front of Bill's off-grid cabin.

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Director's Page

One of my favorite duties as Director of the Chattooga Conservancy is to produce an outline for the *Chattooga Quarterly*. In doing so I have but a few basic guidelines. First and most obviously, all articles must be linked to conservation. Second, a general theme is helpful for continuity. Finally, we strive to use credible sources and facts. This time the theme for the *Chattooga Quarterly* is "Conservation and Self Reliance." Also, don't miss the article on black bears and the usual update on happenings in the Chattooga watershed.

We went out into the watershed to document examples of people actually practicing self reliance for conservation. Our goal is to present inspirational efforts to utilize alternative energy sources and local sustainable agriculture.

This proposed shift is based on our belief that current dependence on a fossil and nuclear fuel economy contributes to global warming, climate change, and degradation of life support systems.

As a prelude to this winter issue, please indulge me a few lines to relate some thoughts and revelations about the topic at hand. What I learned about self reliance in research for this issue is that the subject's much more complex than I thought. I realize now that self reliance in the American vernacular is not at all linked to conservation. I want to be clear about the difference between this common idea of self reliance, and our brand presented here in the *Chattooga Quarterly*.

Take, for example, two of our most recognizable American folk heroes. Imagine the hulking Paul Bunyan standing with Babe, his blue ox, in the foreground of a vista of hundreds

of miles of stumps, or that of rugged Buffalo Bill striking a mock pose reliving his fight to the death with the savage Yellow Hand. If not for these two American characters the vast heartland would still be occupied by savages, oversized herds of buffalo, and trees dying of old age! These images say a lot about our national character, making it easy to understand the popular notion that our great country was built on the freedom to tame the wilderness, unencumbered by any law or regulation of our God given right, and to wisely put to work for our capitalist system all the great resources of this country.

Now the shocking reality is that our current great leader, Bush the Younger, has plunged himself headlong into the role of divinely inspired deliverance, and is poised to prove

I realize now that self reliance in the American vernacular is not at all linked to conservation. I want to be clear about the difference between this common idea of self reliance, and our brand presented here in the Chattooga Quarterly.

once and for all that we self reliant Americans will rid the world—alone if we must—of an evil tyrant. Besides, Sadam Hussein may sabotage the oil pipeline to our American dream. Let's take a look at this in more detail, from George Bush's point of view.

Well, we might never be able to ride our snowmobiles and ATVs on pristine public land. Wait! This could be worse than you think. Take this scenario: What if Ted Nugent couldn't get to his favorite hunting places? The loss of divine inspiration from his hunting trips could cause a chain reaction of events resulting in the loss of future great American musical classics such as "Cat Scratch Fever," for example, and therefore cause a whole change in American culture.

> Worse yet, the resulting spike in gas prices and transportation costs would preclude fast food producers like McDonalds from delivering cheap, high calorie food to the masses. This significant shift in diet (to beans, rice, and tofu) could cause a massive epidemic of flatulence resulting in even more air pollution in our atmosphere. This could have a "green house effect" on our planet causing temperatures to rise, melting polar ice caps, raising ocean levels, and inundating whole cities like New Orleans and Venice.

The *coup de grace* for us in the Chattooga watershed would be the complete disruption of essential forest management. For without cheap fuel, the massive infrastructure to maintain the necessary artificial habitat for game species such as deer, turkey, and hatchery raised trout, would dry up.

Valuable land management agencies, the Forest Service and the DNR, would cease to exist and the forest would revert to a wild and unproductive wasteland.

At this point, my original idea was to convince you that self sufficiency for conservation based on a shift to alternative energy and local agriculture would create jobs, be economical, do less damage to the environment, produce higher quality foods with no chemicals or antibiotics, and would restore local culture and cuisine. Upon further consideration, why bother with George making such a good case for the other side?

Grid-Free Livin'!

Carol Greenberger

Self sufficiency. Independence. Environmentalism. We all decide, consciously or involuntarily, how big a role these traits play in our day to day lives. For Long Creek, South Carolina resident Bill Coburn the choice was straightforward—self reliance, living simply and close to nature would be crucial elements of his existence.

Fulfilling a lifetime dream, Bill lived on a sailboat for six years. This was his introduction to living simply and to solar power. "It's natural to use the elements to your advantage," Bill said about life on a sailboat. He grew used to living without a refrigerator and countless items that many people consider necessities.

Back on land, Bill wanted to recapture the grounded feeling

of living close to nature that life on the sailboat gave him. He came to the Chattooga River to go kayaking and stayed, finding the sense of community he had been missing. In 1994 Bill bought six acres in Long Creek, surrounded on all four sides by Forest Service land. He knew then that he wanted to design and build his own home and that he wanted to be "off the grid" relying on solar power.

After having a well drilled, Bill started by building an 8'x10' structure using recycled materials as much as possible. This would serve as living quarters while building a house. In 1996 Bill began construction on the house he designed. He used hand tools as

much as possible in construction, utilizing a generator when power tools were required. Bill wanted to do as much as he could by himself but gladly accepted free labor from friends and hired one helper when needed. Homesteading and the old fashioned tradition of barn raisings, neighbors helping neighbors, were fundamental aspects of the project. Wanting to use local materials, Bill purchased the timber frame beams, wood siding and inside wallboards for the house from an environmentally friendly sawyer, Morris Turpin.

Passive solar energy was a critical design element affecting decisions from the physical placement of the house on the property to flooring material choices. The 700 square foot post and beam house has large windows making up most of the south facing side. That feature along with the open floor plan and 16-foot roof peak give the house a much larger feel. A comfortable eat-in kitchen, living area, hallway with a computer work area and roomy full bath make up the downstairs, with a spacious bedroom in the loft overlooking



Bill and Peggy adjust the angle of the solar panel on top of their shed.

the main living space. All of the rooms take advantage of natural lighting as much as possible. Where artificial lighting is needed, Bill uses compact florescent light bulbs, for better energy efficiency.

Cooling was more of a concern in designing the house than heating. Bill insulated the walls with 3 1/2" Styrofoam stress panels. The roof is laid over 6" of foam and 3" of dead air space. A screened in porch and windows on the west side of the house take advantage of summer winds. Bill cooks and heats water with propane. The house is heated with a wood stove and passive solar, with a small propane heater available for back up if needed. After moving into the house, Bill began installing the solar power system. Solar power provides electricity for all of the electrical appliances in the house, including a computer

> system, television, DVD player, stereo, washing machine and a small refrigerator.

Solar power can be divided into two types of technology. Solar thermal technologies use the sun to generate heat. Passive solar heating falls into this category. South facing windows and building materials that absorb the sun's thermal energy are forms of passive energy. The second method for capturing the sun's energy is use of photovoltaics. Photovoltaics (PV) use the sun's light to create electricity. The photoelectric effect occurs when a beam of UV light strikes one part of a pair of negatively charged metal plates. This causes electrons to be liberated from the negatively charged plate. The free electrons are then attracted

to the other plate by electrostatic forces. The flowing of electrons is an electrical current. The electron flow can be gathered in the form of a direct current (DC). This DC can be inverted into alternating current (AC) which is the electrical power most commonly used in buildings. The electricity can then be stored in batteries.

Bill's 550 watt photovoltaic system is considered between small and medium in size. It consists of five solar panels mounted together, six batteries with 1060 amp/hours of capacity to store electricity, a 2500 watt inverter to convert power from the batteries to electricity for the house and a gasoline generator for back up. The system provides 1250 to 1500 watts per hour per day.

Bill installed his independent, off the grid power system in what was once living quarters and is now the shed. This is in part for safety—not having all your eggs in one basket, so to speak, and also not to take up valuable space in the house.

Grid-Free Livin'!

The shed is in a central location on the property and was positioned to receive the most sun. Bill chose a roof mounted system to have the panels out of the way and close to the batteries, to minimize power loss. The system is grounded to protect it from lightning damage.

The panels can be adjusted manually for tilt angle. Bill changes the position seasonally for maximum power generation. Panels can also be mounted with equipment that tracks the sun's movement throughout the day. This could make the system up to 25% more efficient. Bill is looking into creating a system using sensors and a small motor to accomplish that.

Maintenance for the solar power system is minimal. Bill monitors the batteries weekly to make sure they are charged to capacity. He doesn't let the batteries get below a 50% charge capacity. If needed, the generator can be used to

recharge the batteries. Power to maintain normal living conditions for 8 or 9 days is on hand when the batteries are fully charged. Monthly, the water level in the batteries has to be checked. The batteries have an average life cycle of 15 years. The panels came with a 20 year warranty and will last longer, although eventually they lose efficiency.

Currently Bill runs his generator ten minutes a day to pump water from his well to the 80 gallon storage tank that services the house. By spring he hopes to have his water system tied to the solar power, eliminating the need

to run the generator. A three season solar outdoor shower and wood fired hot tub complement the traditional indoor tub and shower unit. A solar hot water heater is also on Bill's list of future projects.

Bill is asked frequently about the cost of his system. "I hate to put a dollar figure on it, because by itself the number sounds like a lot. Money can hold people back. My system is in the \$5,000 to \$10,000 range. You see advertisements for systems installed from \$10,000 to \$20,000 but you can go smaller." Bill also cut his costs by installing the system himself. Bill explains that today solar energy is more expensive per watt than purchasing electricity from the power company. "You-don't do it for the money," Bill said. "Most people do it for the belief."

However, prices are dropping on solar power components. Bill found a 10% decrease in price in the panel he just purchased compared to a year ago. Inverter prices are holding steady but the technology is improving, so the same dollars get you a better unit. Over time it is expected that solar technologies will decrease in cost while dwindling fossil fuel supplies will drive up their prices. Bill thinks that as energy prices continue to increase, more people will use renewable energy to augment the grid.

Conservation and being aware of your energy usage are vital for an independent solar system household. Bill's system puts out 25 amps at a time. Small load items, such as lights, television, computer and kitchen appliances can all be used at the same time with no problem. Big load items have to be used with a little thought and advance planning. For instance, the washing machine, well pump and a hair dryer cannot be used simultaneously. Bill said, "I could buy a bigger system but that costs more and I'd rather conserve. You have to pick priorities." Bill doesn't have a microwave oven or clothes dryer because they use a lot of power and aren't necessities to him. There are also no appliances that use stand-by power except his refrigerator. Although he lived comfortably without a refrigerator for 12 years, Bill's

eyes lit up instantly when his girlfriend Peggy said, "Now we can keep ice cream."

How complicated is an independent solar power system to design and install? Bill did research and easily found all the information he needed. He subscribed to *Home Power*, an online magazine that contains how-to information as well as facts about related laws and finance. Bill also found several books that were very helpful. Calculations to determine what size system to use are readily available and not terribly complicated. Bill said that high school math is all

that is needed or a consultant can be hired to help design a system to meet an individual's specific needs. He also found his contacts at SC Solar, his source for panels, very helpful.

When asked what he would do differently if he did it all again, Bill immediately said that he wouldn't start off by buying a generator. He would buy panels and an inverter first and just start with a smaller system. "The generator causes the most maintenance problems in my whole system. It's noisy and pollutes and is a hassle," said Bill.

The benefits Bill finds in being off the grid are never being without power, never being cold and never being without hot water. "I don't feel like I'm on a moral crusade or higher ground because I use solar," Bill said. "I drive too many miles commuting to work to be on a moral high plane about energy consumption. This is just how I want to live."

For more information about solar power and photovoltaics, contact: Bill Coburn wcoburn@clemson.edu Home Power Magazine www.homepower.com SC Solar www.scsolar.com



Bill uses a Snorkel Stoves submersible wood stove for an off-grid hot tub.

MoreSun Solar Powered Enterprises

Dave Martin

So you think living sustainably in the southeast means casting off society and living in a tipi? There is hope yet for those of you who are a little less hard-core. Stephen and Chanda Morrison of Long Creek, South Carolina are amongst a growing minority of people who are willing to consider the environmental and cultural impacts of a modern American lifestyle, and take responsibility for the resources they consume. They have admirably incorporated modern technology with traditional building techniques and a commitment to simplifying their lifestyle, all while starting their own business based on these same principles,

The Morrisons' 960 square foot timber frame home, which Stephen built almost entirely out of timber from the

Chattooga Conservancy's own Brown Gap horse logging timber sale, (see article Brown Gap Timber Sale. Chattooga Quarterly Fall/Winter 1998/1999) reflects the same elegant simplicity that both he and Chanda express in their craft. Stephen notes that a small living space has its challenges, but keeps them focused on living more simply.

Currently under construction at the Morrisons' is a beautiful two story timber frame workshop, which Stephen

designed and built for their homebased business MoreSun Custom Woodworking and Design. The laminate. The laminate has three layers, each of which absorb a different spectrum of light. According to Mr. Walsh, the laminate product has several advantages over traditional solar cells. They are light weight, and do not require any penetrating roof mounts, allowing them to be used in combination with long-term roofing products. Rated at 64 watts, with relatively less surface area in comparison with other panels, the laminates seem at first to be less efficient. Because of their innovative three layer design, however, they actually produce the same wattage as other panels when averaged throughout the day.

are composed of a silicon based amorphous crystalline

The freestanding solar power sources include two different types of full-crystal panels. Twelve, 75 watt Siemens® SP75 panels are mounted on one steel pole, and eight, 110



Stephen and Chanda Morrison use solar power to meet most of their home and business energy needs.

two other poles. All of these panels are composed of singlecrystal cells, but the Astropower cells are unique in the fact that they use recycled. crystals, mostly from the computer industry. Both the Siemens panels and the laminte panels are linked in series with an electronic device that tracks the maximum power point in the voltage of the panels. The device is able to maximize the performance of the cells

watt Astropower ®

panels are mounted on

at any given moment, which, in the winter time, could mean between 15 and 30% more power.

The system's Surette® battery bank plays a unique role. Instead of acting as the system's primary power source, the relatively small bank serves as a buffer between the Morrisons' solar power and the local grid. It can provide up to 920 amp-hours in the case of an emergency power outage, but otherwise maintains a float-voltage, similar to a cup of water under a faucet that continually overflows, once full.

This process is monitored by the brains of the system, the inverter. The Morrisons' inverter, a Trace® SW 4048, takes the 48 volts DC coming from the battery bank, and inverts it to 120 volts AC, which then supplements the power usage in the Morrison's home and workshop. The device does this by monitoring the grid power patterns, and then synchronizing the solar power with it. If the Morrisons use

Morrisons boast that all of their products, from timber frame homes to fine cabinetry to reversible fleece hats and custom designed curtains are made using an average of 60% solar generated power, which comes from a system that resembles something out of a Star Trek episode.

Both the house and the workshop are hooked to a "gridintertied" 48 volt DC solar power system that was designed by Brian Walsh of Solar Connexion, based in Blacksburg, Virginia. "Grid-intertie" refers to a solar generating system that works in conjunction with the local power grid. Their photovoltaic power source includes twenty five roofintegrated panels atop the workshop and three free standing panel towers. The roof panels fit in the pan of standingseem (tin) roofing, and employ a technology that is fairly new to this country. While most photovoltaic cells are made out of wafers sliced from a single crystal ingot, these panels

MoreSun Solar Powered Enterprises

less power than they produce at any given time, then the inverter synchronizes the excess of power coming from the battery bank with the grid and their power meter actually turns backwards.

All of this is a very new concept to the Blue Ridge Electric Co-Op, the local power provider. Their largest concern has been that if the power grid were to fail, that the Morrison's system would back-feed power, causing a safety hazard to power line workers nearby. The Trace SW 4048 is designed to stop synchronizing in the event of a power outage, but Blue Ridge plans to test the system soon, just to make sure. Walsh says that Blue Ridge Electric has been very open to these new concepts, and willing to work with him to ensure

that the inverter synchronizes safely with the power grid. If you have more questions about the Morrison's solar electric system, they have offered to let anyone who is interested check out their system. You can reach Brian Walsh and the Solar Connexion at (540)-961-5120, or by going to www.moonlightsolar. com. Please note that the website simply provides contact information, and brief product descriptions. Solar Connexion is not a web-based company.

Their home is heated by a geothermal heat pump, another simple, yet effective technology that uses well water as a constant-temperature source. Because water has a high specific gravity, it can easily transfer its temperature to a. refrigerant gas, which has a much lower specific gravity. This transfer occurs in the heat pump's innards, and then the refrigerant is compressed, which raises its temperature. (You might remember from your high school physics class that the yolume and temperature of a given substance are inversely proportional).

The increase in heat is transferred to the air through a refrigerant-to-air heat exchanger, and then passes into the house through conventional heating ducts. During the summer, the same process is used for air conditioning, except in reverse, so the refrigerant is *decompressed*, resulting in proportionally cooler temperatures.

The MoreSun workshop is still under construction, but already impressive in its layout. A radial arm saw stands against the back wall, framed between two naturally forked posts that have been cut and used as they grew, both silhouetted by south-facing windows. The message is clear; this shop is a space where nature is not simply a raw material to be bent into submission, but a source of inspiration. Stephen solidifies this impression by explaining, "In my woodwork, I try and show respect for

The Morrisons employ high-tech roof integrated laminate panels in their solar electric system.

where the wood has come from. It takes a long time for Mother Nature to grow trees that will provide 8" x 10" beams, and such a thing shouldn't be taken lightly. Anything you build should last long enough for the wood to be replaced. When you build to last, wood truly can become a renewable resource."

While many artists get carried away with inspiration and neglect practicality, it is clear that function is a priority in the Morrisons' work. Chanda's business, MoreSun Designs, produces a variety of fleece hats, jackets, home décor, pet accessories, "useful sundries" as well as custom made products, all with small details that catch the eye, such as a hidden pocket in the top of the fleece hats. Like Stephen's

> woodwork, Chanda's sewing incorporates a simple yet innovative style with usable practicality. Working together when possible, Stephen and Chanda often integrate unique fabrics with custom wooden joinery.

Stephen suggests that anyone who intends to use solar power ought to first work towards reducing their general power consumption, and also consider the trees that must be removed in order to provide sufficient exposure. He also says for people who might choose a similar path not to get overwhelmed, and to tackle one aspect of your lifestyle at a time, as many projects that lead toward self-sustainability are labor intensive, time consuming and expensive. "Now more than ever," the Morrisons advise, "people should research their options as consumers and focus on how they can directly improve their lifestyles, businesses and communities with the choices they make."

While singular in their philosophy of living simply and responsibly, the Morrisons have slightly different perspectives on the future of their respective MoreSun enterprises. Chanda believes that in order for MoreSun Designs to become a profitable home-business, she will need to expand, and hopes to hire a few folks from the local community to work with her in the new sewing studio. Stephen hopes that MoreSun Custom Woodworking will never outgrow his new shop. Given the care and consideration that has gone into the 2500 square-foot shop's design, it seems that there is plenty of room for both to realize a comfortably successful business in harmony with a strong conservation ethic.

For more information on MoreSun products and services, contact the Morrisons at 864-647-0068, 864-710-6373 (cell). Email Chanda at shesewcrazy@bellsouth.net, or Stephen at kleansteve@bellsouth.net.

Yard Birds and Yurt

Buzz Williams

We didn't have to look far to find more folks pursuing selfsufficient lifestyles. Featured here are the Williams/Hayler and McWhirt families. For those of you who may not know, the Williams is me, the Hayler is Nicole, my wife and Development Director here at the Chattooga Conservancy, and the McWhirts are our neighbors—Steve, Sarah and their two kids, Holt and Branch. Nicole and I have one child, Jasmine.



The McWhirt and Hayler/Williams families take time to enjoy a day in the snow.

In 1991 the WcWhirts and Nicole and I collectively purchased 115 acres of the old Swafford farm in Long Creek, South Carolina. The property is nestled in a cove at the headwaters of Fall Creek, which is a major tributary to



Jasmine rides piggy-back while Nicole hauls fresh potatoes from the garden.

the Chattooga River, and we live surrounded by the Sumter National Forest within hearing distance of the river. Both families enjoy being as self-reliant as possible, though to different degrees and interests.

Nicole, Jasmine and I live completely "off the grid." We pump our water by hand (for now), utilize a self composting toilet, filter gray water back to the earth through a small artificial wetland, and grow much of our food in a raised bed garden. We also harvest black walnuts, muscadine grapes, "cressy" salad (a wild mustard green), mountain mint and other wild herbs. I don't have much time to hunt, but did harvest a deer last year that was browsing our small orchard of apple, peach and pear trees. We enjoy a bountiful crop of domestic blueberries and raspberries along with wild blackberries, and can about 40 quarts of garden produce in addition to putting up garlic, winter squash, and root crops such as Irish and sweet potatoes,

While we are in the process of designing our "dream

house," we live comfortably (albeit at close quarters) in a home made "yurt" that is constructed of bamboo, straw, red clay, cement, and a little chicken wire for reinforcement. The yurt is 20 feet in diameter with a skylight, gravity water, and flagstone floor. We get hot water during the summer from a series of passive solar panels, and in the winter months from a copper coil that circulates water through the wood stove. For heating, we cut wood on our property and harvest dead trees locally. To the greatest



Buzz and Jasmine prepare to pump water for their wood-fired water heater.

extent possible we harvest our own building materials from local sources, which include timber generated from the Chattooga Conservancy's Brown Gap Timber Sale project. High quality salvage such as old windows, doors, "recycled" timber and bricks complement our stockpile of building materials.

Living in this manner certainly requires a strong dedication to simple living and other conservation values. Many may view our lifestyle as extreme, but its simplicity and self reliance offer a rejuvenating balance to an increasingly homogenous and automated world. A local logger who hauled pulp wood from our pasture area called this lifestyle "pay as you go," and we were fortunate to find the land for this experiment.

The McWhirts live across the creek at about "hollerin" distance. Both families get together as much as possible, and our favorite excuse is to churn a batch of homemade ice cream. Thanksgivings are also a treat due to Sarah's gourmet cooking and Steve's pumpkin pies and home brewed beer. The McWhirts are so good at living close to

Yard Birds and Yurt



Steve draw-knifes the bark off of a white pine cabin log. After the logs were peeled, they were milled into beams and boards for the McWhirt's cabin.

the land that I am offering here a short interview to let you in on some of their best strategies.

I stopped by to ask a few questions and found Sarah making chicken soup with one of her "yard birds." Steve happened to have a day off, as well.

Buzz: "What brought you here to the Chattooga River?".

Sarah: "After graduating from college in the spring of 1998, we passed through the area on our way down to the Florida Keys. We had a cousin working on the river, so we stopped for a visit. We really liked the community of people, the solitude, and of course we were interested in learning how to paddle. So we came back to stay that spring."



Holt and Branch share an apple with their chickens.

Buzz: "What do you like about the self reliant lifestyle?"

Steve: "We really like the independence of living off our own land, and especially growing some of our own food."

Buzz: "What are you getting out of your garden right now?"

Steve: "Right now we are harvesting mixed greens, kale, and turnip greens. We also have some of our beds in cover crops. Raised beds are good for cutting down on erosion and use less water."

Buzz: "Is your production 'organic'?"

Steve: "We don't use pesticides or chemical fertilizer. We harvest hardwood leaves to put in the pig pen to produce good fertilizer for the garden."

Buzz: "Right now you have pigs and chickens. What kind are they?"

Sarah: "We raise Buff Orpington chickens



Sarah enlists the help of some loyal friends on hog killing day.

because they are a dual purpose bird. They are good layers and they produce high quality meat. They are heavily feathered and will lay all winter."

Steve: "We have raised both Durock and Yorkshire pigs. They're both good."

Sarah: "Pigs are the best protein converters of all farm animals. We usually buy a piglet in September at about 50 pounds, and it grows out to about 350 pounds by January or February."

Buzz: "You built your log cabin from wood harvested right here, didn't you?"

Steve: "Yes; we hired a friend to cut and skid the logs from our woods with horses. We used a portable band mill to saw the timber on-site."

Buzz: "Do you recommend this lifestyle for other folks?"

Sarah: "This lifestyle isn't for everybody. We make sacrifices to live here. If everybody lived this way, it would be a little crowded up here."

Buzz: "Do you think self reliance is a statement for conservation?"

Steve and Sarah: "Yes."

Sarah: "People today are out of touch. They go to the grocery store in January and demand watermelons. I don't buy them because they don't taste good, and it costs too much both in terms of money and the environment. Also, I don't think it's truly sustainable."

Black Bears

Eric Orr

In Our Southern Highlanders, Horace Kephart recounts bold tales of men chasing bears through the Southern Appalachians, not too far from the Chattooga River watershed. In those days men would walk for miles and miles toting guns and equipment with dogs in tow. People. were scarce. Vast disjointed, wild lands were the norm, and bear hunting was an honest and necessary means of survival for mountain folk. It was their job. Armed with cap-andball guns, determination, and courage, gaunt mountaineers would often track bears through the harshest of landscapes for days. They were sparsely clad in tattered clothes and carried just enough food to get by. The hunters followed the sounds of their dogs baying at the trail of a bear, and the first man on the scene took the first shot. Some hunts were fairly uneventful. Some resulted in a dead dog or two. And, on occasion, bear prevailed over man. If the beaten man was lucky he hobbled out on a broken leg. Once a bear was

remote areas of the mountains and swamps. The death of the American Chestnut further hindered the black bear's recovery, along with large scale replacement of native hardwood stands with pines.

1945 marked the first year of regulated hunting in the United States. Imposing bag limits and set hunting seasons has drastically improved the viability of the species. Recovery efforts were reinforced by the creation of bear sanctuaries, large tracts of land where hunting is prohibited. The first one in North Carolina was established in 1971. There are currently 28 sanctuaries in that state. The original purpose of maintaining these preserves was to provide refuge for breeding females. Female bears are generally easier to hunt than males because of their smaller ranges. The intent was to protect the mama bears so they could increase the game animals available to hunters. Thirty years later, extensive human development has made sanctuaries critical for maintaining a healthy bear population.

killed, he was tied to a sapling and carried several miles back to camp. Then they repeated the whole affair the next day. After taking as many animals as they thought they needed, the hunters skinned and butchered their game. Every man got a share of meat and money from sold hides. Bear meat helped sustain the mountaineers and their families in the forthcoming cold and lean months. The hides provided people with the

few store bought items they could not make themselves.



Before ATVs, hunters transported their bears by tying them to saplings.

During the 2001 hunting season 426 bears were killed in the mountains of North Carolina. Georgia recorded 96, and South Carolina finished their 2001 season with 21 bears killed. On average, population and harvest numbers have been steadily increasing since the early 1970's, about the time official record keeping began, and the harvest is usually split evenly between male and female

bears. David Gregory, wildlife biologist for the Georgia Department of Natural Resources (DNR), says

Truth is, that picturesque painting tends to lose its luster when you pitch in a few radio collars, walkie-talkies, and ATVs. Twenty-five men walk into the woods with radios, big guns, and a pack of dogs wearing high-tech collars. Fido trees a bear and his master tracks him with a radio receiver. Dogs and bear are located. The hunter either makes the kill or radios the group and waits for a shooter. The men field dress the bear and drag it as close as they can get it to the nearest ATV trail or road. After the bear is hauled out on a 4-wheeler or a truck, it gets cut and divvied up between the hunters. The man responsible for the kill gets first dibs on the skin, which may or not get thrown away. The whole thing takes place in a few hours. Please note that the Georgia DNR does not allow the use of dogs to hunt bears.

By the early 1900's, unrestricted hunting and habitat destruction had taken a huge toll on the black bear population. The few that remained took refuge in the most bear seasons are generally planned around deer season. He says it makes sense, because the hunters will already be in the woods. The Virginia Department of Inland Game and Fisheries has been successful at increasing the Virginia bear population by scheduling a late hunting season. Since pregnant females are the first to hibernate, the bear harvest consists mainly of males and non-pregnant females.

Black bears now occupy 20% of their original territories, but their range has increased dramatically since 1970. In the Southeast, the flat tillable Piedmont was settled first, eventually leaving only the coastal plains and mountains as suitable bear habitats. One of the biggest threats to a healthy bear population is the construction of roads. Most bears will not cross heavily used roads, and when they do, a significant number are killed by vehicles. Roads also provide hunters with admittance to lands that would otherwise be difficult to access, which leaves bears with

Black Bears

fewer sanctuaries. Perhaps the most devastating effect of roads is the fragmentation inflicted upon the black bear gene pool. The majority of black bear core areas lie within the boundaries of public property, but development threatens the private land corridors that link the areas together. Huge tracts get chopped up into small islands creating little pockets of bear populations. These pockets often rob the species of genetic diversity, and in turn, hinder the adaptability afforded by a more varied selection of animals. A typical male bear has a summer range of about 8 square miles and 14 square miles in the fall, while females use about 4 square miles throughout the year. About one bear per square mile is a normal population density. Their relatively large ranges and low densities intensify their need for roadless corridors.

According to Skip Still, wildlife biologist for the South Carolina DNR, black bear populations are directly .

months of December, January, or February.

David Gregory, Georgia Department of Natural Resources biologist, says the outlook for bears in the Southeast is good. He claims the biggest limiting factor is "cultural carrying capacity." Populations are on the rise in all three states human and bear. As city creeps into wilderness, we will inevitably share some uneasy encounters. Coexisting with bears will become increasingly challenging. Usually human-bear conflict can be avoided by thoughtful management of trash, pet food, and other attractants. Once a bear becomes "human habituated" it becomes a threat. Most wildlife agencies deal with the problem animals by relocating them in more remote areas. In a highly populated region like the Southeast, it is nearly impossible to find any place isolated enough to keep habituated bears away from people. The range of bears is so extensive, they almost always find their way back to civilization. Some wildlife

proportionate to available food sources. In the springtime they emerge from hibernation sometimes 40% lighter than their fall weight, still drawing from the precious fat reserves that were stored earlier. They feed primarily on greenbriar leaves, grasses, and various other herbaceous browse. Summer brings about a new crop of soft mast including blueberries, blackberries, and

cherries. The largely herbivorous diet is supplemented by insects, small mammals, and carrion.

After feeding on the high carbohydrate diet of soft mast through the warm months, fat is a welcomed resource in the fall. Hard mast sustains bears throughout the fall and winter. They rely heavily upon the high fat content of acorns and other nuts. Without adequate fat reserves a bear may not survive the winter. The female's ability to reproduce and the likelihood of the cubs' survival are also affected by the availability of hard mast. Bears begin breeding in June and finish up the mating season at the end of July. Females are typically ready to breed when they reach 2 ¹/₂ to 3 years of age, while males usually start a little later. Once pregnant, the gestation period lasts from 200 to 250 days. They normally give birth to 2 or 3 cubs, though litter sizes of up to 6 babies have been documented. Birth takes place in the den of a hollow log or a cave during the



A mother bear usually gives birth to 2 or 3 cubs in December, January, or February.

hunting is an effective form of aversive training, as well.

In order to maintain a contented relationship with bears, we should strive towards educating ourselves in the needs of bears. Continuing to work towards responsible game management is a key ingredient of bear health. A management plan that focuses on indigenous ecosystems would be beneficial not only to deer and turkey, but also to bears and other wildlife. Ethical hunting should be addressed, as well. To provide bears with the hard mast they need to ensure successful breeding seasons, forest management should be geared toward restoring native forests and not the timber industry. Perhaps the most important thing we can do for bears is to focus on low impact development. Preserving roadless areas and wildlife corridors will ensure a healthy population capable of sustaining itself.

successful in reinstilling fear into problem bears through aversive conditioning. Loud noises, pepper spray, dogs, and rubber bullets are employed to scare the nuisance animals. This scare tactic has proved to be a very effective means of dealing with the problem. The bears renew their instinctive fear and flee human contact under by their own volition. Obviously

Watershed Update

HEADWAY MADE TOWARDS SUPPRESSION OF THE HEMLOCK WOOLLY ADELGID

Though the battle against the non-native Hemlock Woolly Adelgid is just beginning, we are pleased to announce that through the collaborative efforts of the Chattooga Conservancy, Jackson-Macon Conservation Alliance, Preserve the Hemlocks fundraising group, National Forest Foundation, Clemson University, US Forest Service, and generous individual donors, \$200,000 has been raised for establishing a predator beetle breeding facility at Clemson University. These beetles, Pseudoscymnus tsugae, feed exclusively on adelgid species, and once reared they will be released at carefully selected sites in the Chattooga River watershed. Ideally, the predator beetles will establish themselves and keep the adelgid at bay. Forging this cooperative project is a major accomplishment for the Chattooga Conservancy. We are proud to be working with the above-named organizations in the name of preserving one of the Chattooga watershed's keystone trees.

STEKOA CREEK GROUP

In a parallel effort to address Georgia's Total Maximum Daily Load (TMDL) Consent Order, the GA Environmental Protection Division (EPD) contracted with the state's Rural Development Commission to work with local watershed groups, county governments and other stake holders, to come up with strategies for reducing pollutants in impaired waterways (for a more indepth history of this Consent Order, please see "Total Maximum Daily Loads: What's All the Fuss About?" in the Winter 2001 *Chattooga Quarterly*).

Our local effort is called the Stekoa Creek Group, and several meetings have been held to prioritize areas of concern, and to come up with a TMDL Implementation Plan for helping reduce pollutants in Stekoa Creek as well as other "impaired" streams in the Georgia portion of the Chattooga watershed. The Chattooga Conservancy has participated in this process every step of the way.

We have encouraged the group to act upon a clear agenda to identify the specific sites (point sources) along Stekoa Creek that are major pollution sources, and then use positive incentives and enforcement to encourage compliance with water quality standards. To date, no such identification has taken place, perhaps because many of the stake holders in the group feel that this would alienate private landowners and create an impasse for corrective action. A Forest Service representative set the tone for the last meeting by exclaiming, "The minute this committee starts to point fingers [and name specific polluters] is the minute the Forest Service steps down from this committee."



Mayflies are one of the best indicators of good water quality. Illustration by Rod Lawrence.

Stekoa Creek's "TMDL Implementation Plan" for both fecal coliform and sediment was submitted to the EPD in December 2002. Unfortunately, these generic documents lack the detail needed for taking steps now to improve Stekoa's woeful water quality. Nevertheless, the Chattooga Conservancy will continue to participate in the Stekoa Creek Committee as an advocate for reasonable, concrete actions that will make the TMDL program work to clean up our drinking water sources, and favorite fishing and swimming holes.

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PUBLIC MEETING SCHEDULED FOR CULLASAJA CLUB'S Sewage Treatment Plant

A public meeting is scheduled for 7 p.m. on March 13th at the Highlands (NC) Recreation Center, to hear citizen's concerns about renewing the discharge permit for the Cullasaja Club's waste water treatment plant. This sewage treatment plant discharges directly into Norton Mill Creek,

> which is an "impaired" waterway that flows into the Chattooga River. The sewage plant's permit was issued in 1986, and since then it has been the subject of notable controversy. The dispute revolves around the further degradation of Norton Mill Creek vis-àvis the permit's provision that sewage discharge into the creek would not be allowed "except in cases when spray irrigation [of treated wastewater onto the golf course] is not usable." To date, the Cullasaja Club has failed to employ the spray irrigation option, instead pouring all of the effluent from the sewage treatment plant directly into the Chattooga River's headwaters.

Recently, scientists from the North Carolina Division of Water Quality (DWQ) talked in a public forum about the Highlands Plateau's impaired streams. The area's golf courses were identified as one reason why some of the plateau's streams are polluted. DWQ scientist Andrea Leslie suggested that "the community needs to get together...to see what can be done." The Chattooga Conservancy encourages citizens concerned about improving Norton Mill Creek's and the Chattooga River's water quality to voice their concerns at this important public meeting.

ADOPT A STREAM PROGRAM

The Chattooga Conservancy is at the outset of developing an Adopt A Stream program for impaired streams in the Chattooga watershed. This program is part of the Water Protection Branch of the Georgia EPD. Adopt A Stream's goals are to increase public awareness of Georgia's nonpoint source pollutants and water quality issues; to provide

Watershed Update

citizens with the tools and training to evaluate and protect their local waterways; to encourage partnerships between citizens and the local government; and to collect baseline water quality data. We will soon begin a monitoring program on Stekoa Creek, and Law Ground Creek, which is a tributary to the West Fork of the Chattooga. If you or your group are interested in participating, please contact us. This will be a great way for citizens to "get your feet wet" in conservation work, while learning about stream health. We hope to provide baseline stream quality information to the public and the local government, to identify specific nonpoint sources of pollution, and to encourage a more accelerated approach to improving water quality in these streams.

FEDERAL REGULATION AMENDMENTS PENDING

Citizens continue to lose footing as short-sighted politicians scramble to sell off our public lands. But don't get overwhelmed. Keep yourself informed and exercise your right to public comment. The Bush Administration recently proposed three amendments to the Code of Federal Regulations (CFR). If passed, these amendments will adversely affect Forest Service policy and public participation. Please take the time to visit www.regulations. gov and comment on proposed amendments to the following regulations:

36 CFR 215 National Forest System lands; projects and activities: notice, comment and appeal procedures. Comment due date: February 18, 2003 This amendment proposes to "clarify and reduce the complexity of the rule; elicit more effective public participation by seeking public comment early in the process; provide for electronic submission of comments; result in more consistent application of the rule; simplify the language; and reorganize the rule into a more logical sequence." If passed, the amendment would remove the requirement to issue a Decision Notice or Decision Memo, and loosen up the language that would allow the Forest Service more discretion with regards to whom they consider to be an "interested party." Instead, planners would only be required to consider "substantive comments" from citizens they deem to be immediately affected by the scope of a given project on our public lands. Send your written comments to USDA FS. Appeal Rule Content Analysis Team, P.O. Box 9079, Missoula, MT 59807; by email to 215 appeals @fs.fed.us; or by facsimile to (406) 329-3556.

36 CFR 219 National Forest System land and resource management planning. *Comment due date: March 6, 2003* This infamous amendment threatens to remove public participation from the forest planning process, and severely limit current requirements for the scientific review of proposed projects on National Forest System Lands. It includes provisions to eliminate the requirement to account for viable populations of native species in forest planning,, and it will allow forest supervisors to issue four-year interim forest plan amendments that can circumvent all public involvement, and cannot be appealed or formally objected. Send written comments to: USDA FS Planning Rule, Content Analysis Team, PO Box 8359, Missoula, MT 59807; via email to planning rule@fs.fed.us; or by facsimile to Planning Rule Comments at (406) 329-3556.

36 CFR 251, 261, 295 Special use authorizations.

Comment Due Date: March 24, 2003 If passed, this amendment would allow the Forest Service to claim old trails, wagon ruts, dry stream beds, ancient logging roads, and many other tracks that have not been in use for decades, as "system roads." This would greatly hinder any effort to establish, and in some cases maintain, existing roadless areas. Send written comments to Forest Service, USDA, Attn: Director, Recreation, Heritage and Wilderness Resources (RHWR) Staff, (2720), Mail Stop 1125, Washington, DC 20250-1125 or to rhwr--rule@fs.fed.us

POWER LINE CONTROVERSY CONTINUES

On January 13, 2003 the Georgia Supreme Court struck down Rabun County's ordinance prohibiting the construction of new 115 kV power lines in the county. The court stated that local bans on new power lines are unconstitutional, and that Rabun County has no right to question the necessity and appropriateness of power line projects. The ruling reinforced Georgia Electric Membership Cooperative's exclusive power to decide how and where to expand their electricity grid, as well as their ability to seize private property through the power of eminent domain.

In the meantime, Georgia citizens have rallied to launch a state-wide effort to reign in the unlimited eminent domain rights of electric power companies. Four other north Georgia counties (Forsyth, Dawson, Cobb, Fulton) have followed Rabun County's lead by enacting moratoriums against various intrusive power line construction projects. A statewide coalition of citizens have banded together to form "HOPE of Georgia" (www.hopeofgeorgia.com), whose mission is to insure that every citizen, municipal government and county government in the state has the right to public oversight, equal protection and fundamental fairness before routes are selected and land is taken for power transmission lines." HOPE of Georgia provides technical assistance and networking to county organizations, and coordinates state-level public policy advocacy for legislative reform. The Georgia State Legislature is in session now, and the days are dwindling to change state laws governing eminent domain. We urge citizens to contact their representatives and members of the judiciary committee to support urgently needed reform. With new power lines planned all over Georgia, the next property condemnation case may affect you!

Member's Page

MANY THANKS to all who recently renewed their membership, or joined the Chattooga Conservancy. Your generous contributions will help us continue to work on all of the important conservation issues facing the watershed.

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Chattooga Conservancy

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Winter 2003

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Chattooga Conservancy

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Purpose: To protect, promote and restore the natural ecological integrity of the Chattooga River watershed ecosystem; to ensure the viability of native species in harmony with the need for a healthy human environment; and, to educate and empower communities to practice good stewardship on public and private lands.

Made Possible By: Members and Volunteers Merck Family Fund Turner Foundation Patagonia, Inc. Frances A. Close The Sapelo Foundation Environmental Systems Research Institute



Goals:

Monitor the U.S. Forest Service's management of public forest lands in the watershed

Educate the public

Promote public choice based on credible scientific information

Promote public land acquisition by the Forest Service within the watershed

> Protect remaining old growth and roadless areas

Work cooperatively with the Forest Service to develop a sound ecosystem initiative for the watershed

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