



The Chattooga Quarterly

Summer

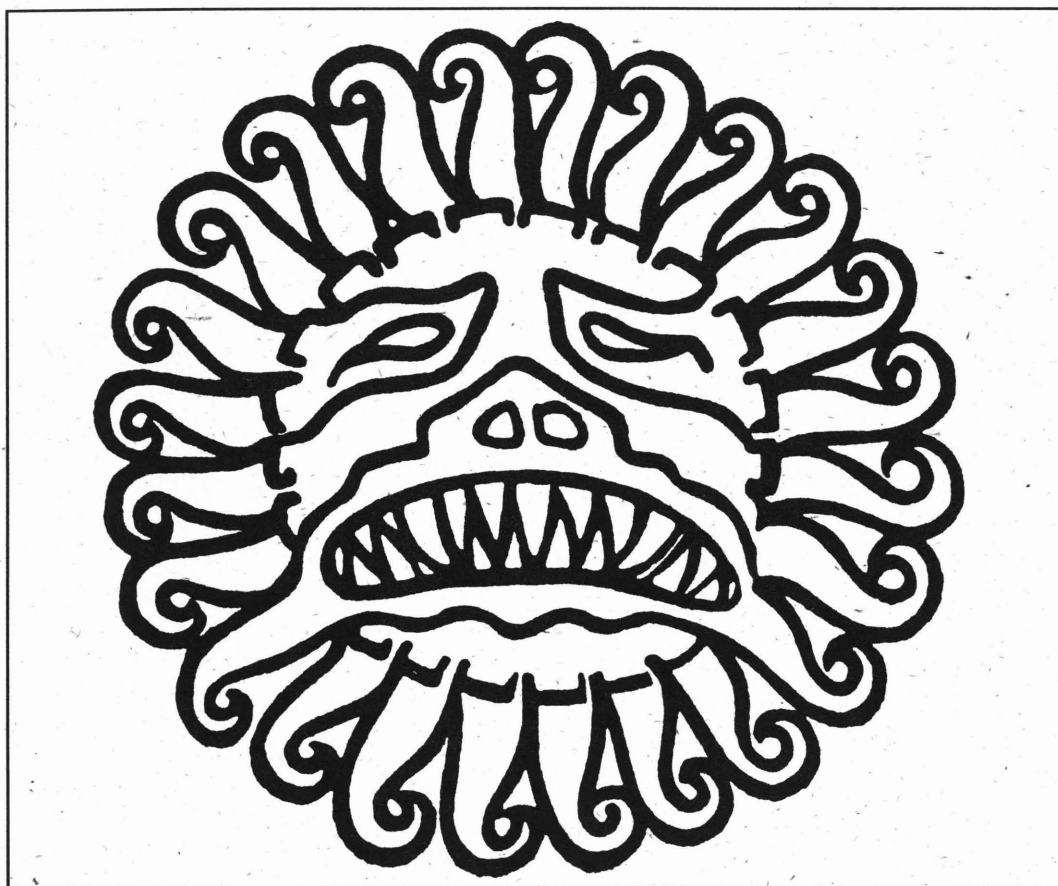


1998

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The Heat is On!

Fighting Fire with Fire



The mask of Mithras

Ancient Persian god of light and truth, opponent to darkness and evil

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Director's Page

Buzz Williams, CRWC Executive Director

Have you heard? Professional wrestling may be fake! In a recent announcement, attorneys for a "professional" wrestler announced that their client was suing the World Wrestling Federation for discrimination. The wrestler alleged that officials of the organization refuse to let him win any matches because he's black, hinting that the outcome is predetermined.

Let's face it: we all know that a 300 pound man cannot jump off the top rope of a wrestling ring and land on an opponent's head without smashing his skull. Yet, perfectly reasonable people will look you straight in the eye and tell you about witnessing the latest match between Hulk Hogan and The Macho Man as if it were real!

This comical situation illustrates a common human trait. That, of course, being when we engage in an innocent fantasy as a way to be distracted from the drudgery of "the grind". But when it crosses the line from harmless entertainment into something which may adversely affect the lives of real people, it is no longer harmless. It is when we cannot see the difference between fact and fiction that the potential for harm becomes real and therefore, immoral. In the case of the wrestler's lawsuit, it's not about whether wrestling is real, it is about discrimination.

This lawsuit promoted me to think about other situations where people choose to ignore the obvious. Take science for example. Personally, I have always felt that science is just one step behind common sense. But since in science a hypothesis must be proven, the obvious isn't sufficient. This is good, since "the masses" and their collective "gut reaction" can be heavily influenced by false information. Don't forget, a lot of people thought Columbus was headed to sail right off the edge of their world.

The problem is that science never proves anything completely. My scientist friends often escape taking an advocacy position on an issue by stating that, in fact, an investigation often raises *more* questions than it answers. There is always one unanswered question still left hanging.

Take global warming, for example. The atmosphere that surrounds our planet acts somewhat like the glass in a greenhouse. Sunshine passes through the

atmosphere, where some of the heat is absorbed and some is radiated back toward outer space. A portion of the radiated heat that is reflected back towards the atmosphere is prevented from further dispersal. In the greenhouse theory of global warming, manmade gases collect above "normal" levels in the atmosphere, and serve to increase the greenhouse effect by retaining excessive heat inside the Earth's atmosphere, thus contributing to global warming. No one has absolutely proved this yet, but most people can readily understand and accept the theory.

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Since in the time span of our lives, no scientist will be likely to prove that recent record temperatures are the result of global warming, should we continue lifestyles that are suspected and often theorized to be the cause of global warming? I pose this question because record temperatures and climate changes are no longer a matter of dispute. For example, industries fueled by petroleum consumption, which produces copious amounts of greenhouse gases, refuse to accept CO₂ emission limitations set by the Kyoto conference. They say no one

has proven the greenhouse theory of global warming. They often point to the fact that the Earth has been heating and cooling naturally for millions of years, and even produce their own scientists who refute this theory as another manifestation of "chicken little".

However, in uncharacteristic numbers scientists are emerging from their "ivory towers" to warn us of increased storms, floods, droughts, melting glaciers, collapsing ecosystems, rising sea levels and increased forest fires across the planet, all because of something they cannot prove and which is due to an escalating greenhouse effect.

I could relate many examples of what I believe to be evidence that global warming caused by the greenhouse effect is real, and that it is caused by *us*. That's right, humankind is in the process of destroying the planet for our children. I can't prove it incontrovertibly but I intend to do something about it, rather than take the chance. Denial is easy and especially if it is in your own special interest. This time, we have much scientific evidence *and* common sense. This time it is more than a game.

PS The Nature Boy *is* real! He lost the last match because of that worthless referee.



Flashes in the Night

Reprinted with permission from the Highlander newspaper of July 10, 1998

Don Hendershot

With bombastic Fourth of July over, perhaps a more muted fireworks display would be in order. A dark night and a small edge or clearing can produce a dazzling light display as fireflies dancing to nature's "procreation waltz" light up the night.

These interesting insects really aren't flies at all, but rather beetles from the family *Lampyridae*. *Lampyridae* is of Greek origin and is from the same root which gave us the word lamp. These luminescent beetles are the very envy of physicists around the world, because of their ability to produce "cold light". Light production in these creatures is very complex, and still not completely understood.

Because of their absence from the Near East, there is no reference to fireflies in the Bible, Koran or Talmud.

When Lucifer came into play in 1855, French physiologist Raphael Dubois named the two substances which combine to produce the lighting bug's glow luciferin and luciferase, after the Prince of Darkness.

The luciferin-luciferase system requires the catalyst, adenosine triphosphate (ATP). ATP provides the energy for muscle contraction in animals. In fireflies, it energizes the luciferin-luciferase interaction. The mechanics of this process are not fully understood, but scientists believe that the nervous system stimulates ATP.

It is evident that the firefly has control over its flashing and that different stimuli produce different flashes. It is believed that the primary function of the flashes is to identify potential mates. It appears that each species has

it's own flash pattern. There is, though, a species of the genus *Photuris* which mimics different species of the genus *Photinus* in order to attract and prey on them.

The other evening, as I lay in bed watching this organic light show, I noticed what I perceived to be a response to an outside stimulus. A thunderstorm in the distance produced flashes of lightening that appeared to excite the fireflies, and produce a nearly synchronous response. These flashes were so bright, they sparked a dim bulb in the back of my brain. I remembered receiving a missive and a short news article about synchronous fireflies in the Smokies.

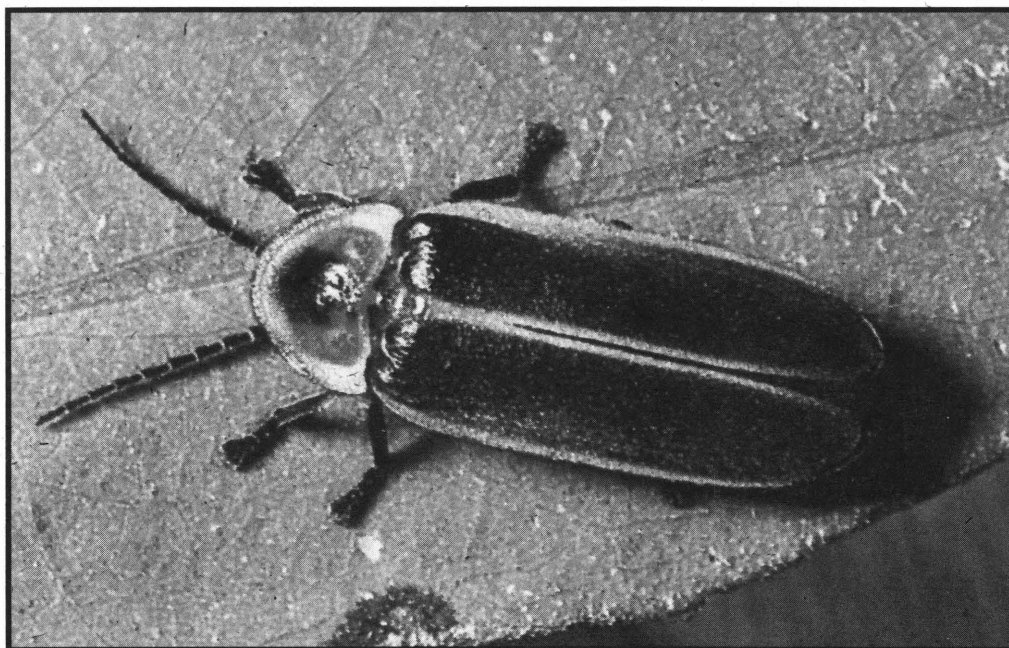
Synchronization in fireflies is not a new phenomenon.

Asia is renowned for it's "firefly trees," where the insects congregate by the thousands and flash on and off like Christmas lights. Until recently, scientists believed there were no synchronous fireflies in the United States. According to an Associated Press article from June 1994, however, this may not be

the case. Ethnologist John Copeland of Georgia Southern University has identified a North American species, *Photinus carolinus*, that appears to be synchronous.

Photinus carolinus is found in the Smokies, along the Tennessee-North Carolina border. The synchronization of this species isn't as precise as the Asian species, but according to the article, Copeland has no doubts about the synchronicity.

Synchronous or not, a night sky full of lightening bugs is a delight to watch. Take the kids along; they may get the idea that nature is cool.



Pyralis Firefly (*Photinus pyralis*)

Both sexes have flashing yellow light, that is smaller in the female, which does not fly.



Cicadas are Buzzing

Compiled from generic research notes

Cicadas are sometimes called harvest-flies, dogday cicadas, or "locusts" (real locusts are Old World grasshoppers). They are medium to large insects with long, lacy transparent wings that are held peaked over the body at rest. Their antennae are short bristles.

The harvest-fly or dogday cicadas (*Tibicen* sp.) are large, stout, dark insects with lighter markings and greenish margins on the wings. The dogday cicadas are up to 2 inches long, including the wings. At least seven species of *Tibicen* are found in North Carolina. One species of *Cicada* and one species of the petit *Cicadetta* also occur here.

The dogday cicadas or harvest-flies appear during the long summer days of July and August. These cicadas have 2 to 5 year cycles, but their broods overlap and some appear every summer. Dogday cicadas are larger than periodical cicadas and have brown-black bodies with whitish bloom and green wing margins. Annual cicadas do not ordinarily cause much damage.

There are six species of periodical cicadas (*Magicalada*).

Immature periodical cicadas (nymphs) develop underground, and suck juices from plant roots. Three species of periodical cicadas emerge every 13 years, and three emerge every 17 years. Different groups called "broods" emerge somewhere in the eastern United States almost every spring. Massive brood emergence is believed to overwhelm predators, which are mostly birds. This ensures that enough survivors will be left behind to reproduce. Adult periodical cicadas live for only two to four weeks, and during this short time they feed relatively little.

Life Cycle

After 2 or 13 or 17 years below the ground, in May or early June the mature nymphs bore to the surface, and sometimes even construct mud "chimneys" up to 3 inches tall. They climb onto nearby vegetation or any vertical surface. They then molt into winged adults. Their shredded outer skins or "exoskeletons" are frequently found attached to tree trunks and twigs. Their emergence is often tightly synchronized, with most nymphs appearing within a few nights.

The periodical cicadas are all similar in appearance; 1 to 1.5 inches long including the wings. The eyes, legs and margins of the wings are orange. Periodical cicadas sing and fly in spring, whereas other species of cicadas usually sing

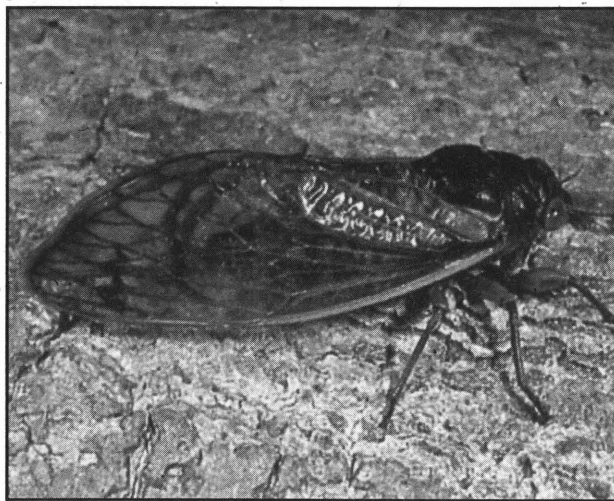
and fly during the summer.

Male cicadas begin to sing with a shrill, loud buzzing noise to attract females. Females are silent. Male cicadas sing by vibrating membranes on the underside of the first abdominal segment. Male cicadas are also capable of making a loud squawk when disturbed. It is believed that such droning and squawking may be effective in deterring predators.

The male's courtship songs attract females for mating. After mating, females use their saw-like ovipositors to split open the bark of hardwood twigs and insert eggs in two rows. They lay their eggs in twigs 1/4 to 1/2 inch in diameter. One to several dozen eggs can be laid in one branch, with up to 400 eggs being laid by each female in 40 to 50 sites. Cicada eggs remain in the twigs for 6 to 10 weeks before hatching.

After the eggs hatch, the tiny ant-like first stage nymphs drop to the soil to borrow in 6 to 18 inches underground to feed for the next 2 or more years. (Periodical cicadas develop for 13 to 17 years). The nymphs feed on the roots of many kinds of trees.

Farming and urbanization of suitable habitats have reduced the populations of many cicadas, and it is thought that some broods of the 13 and 17 year cicadas may be extinct.



Periodical Cicada (*Magicalada* spp.)

Unlike cicadas of other genera, periodical cicadas emerge only once every 13 or 17 years.

Cicadas

Marie Mellinger

The voice of summer is epitomized in the call of the cicada, a long, prolonged buzzing sound. Yet cicadas have no vocal chords. The Cicada song, which is "sung" only by the male, is produced when he vibrates a pair of sound chambers that are located at the base of the abdomen. However, it has often been described: "they make the sound by rubbing their wings together".

Cicadas begin to sing when the temperature reaches a certain level, usually around 70° Fahrenheit. If you hear the singers early, it is bound to be a hot day. Edwin Way Teale wrote: "Cicadas are intoxicated by the heat, shrilling away through the daylight hours".

They are a common insect, too common in some areas, where they are considered pests. Yet as part of the natural food chain, cicadas provide food for birds and animals.

*"If Cicadas sing in early morn, it is good for growing corn;
if Cicadas sing all day, it is time to gather hay;
if Cicadas sing at noon, it will be hot enough to swoon."*

Mark Catesby's Natural History of America

Reprinted with permission from the Philadelphia Print Shop,
8441 Germantown Ave., Philadelphia, PA 19118; www.printshop.com

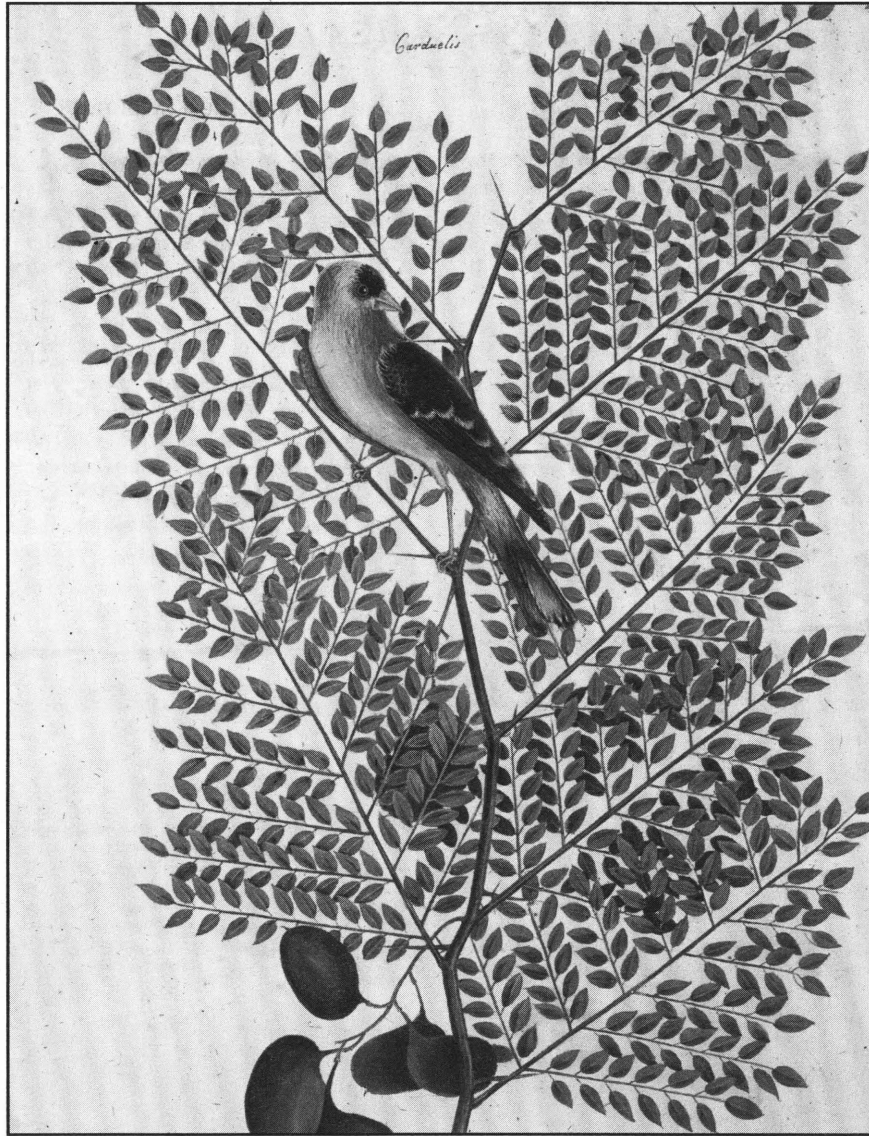
Mark Catesby's *Natural History of Carolina, Florida and the Bahamas Islands* was the first natural history of American flora and fauna. Issued between 1731 and 1743, this work would eventually include 220 prints, which systematically illustrated American birds, animals and plants for the first time.

In 1712, Mark Catesby made his first trip to America to visit his sister who lived in Virginia. He returned to England in 1719. On this trip Catesby became intrigued with the strangeness and variety of American plants, birds and animals, and decided to return again to the New World for another extended trip. For this second visit he acquired a number of sponsors for whom he was to collect and sketch botanical samples. Amongst his sponsors were William Sherard and Sir Hans Sloane, the founder of the British Museum. Catesby returned to America in 1722 (moving on to Bermuda in 1725 as the guest of Governor Phenny). On this trip he did collect the botanical samples for his sponsors, but he also took to sketching the birds, plants and animals that he saw on his wanderings throughout rural Southeastern America. Upon his return to England his friends and sponsors encouraged him to publish a book of his drawings and notes, which he did beginning in 1731. [See following pages 6, 7 and 8.]

Catesby's *Natural History* was almost completely a one man show. Not only did he do his own field research and sketches in his self-taught style, but since he could not afford a professional engraver, Catesby took etching lessons from Joseph Coupy and did his own etching of all the plates but two. His intense personal involvement in the work did not stop there, for he even supervised the coloring of the

first edition prints, though for the second edition his good friend George Edwards, an important natural scientist in his own right, did the coloring.

Besides being the first to produce an American natural history, Catesby was the first in a number of other items. He was the first to place his birds and animals in their natural habitats, a style of natural history representation that was later used by such artists as Alexander Wilson and John James Audubon. He was the first to abandon the Indian names for his subjects, trying to establish scientific names based on generic relationships. It is interesting to note that the great Linnaeus, working on his *Systema Naturae* at this time, used Catesby's work as the basis of his



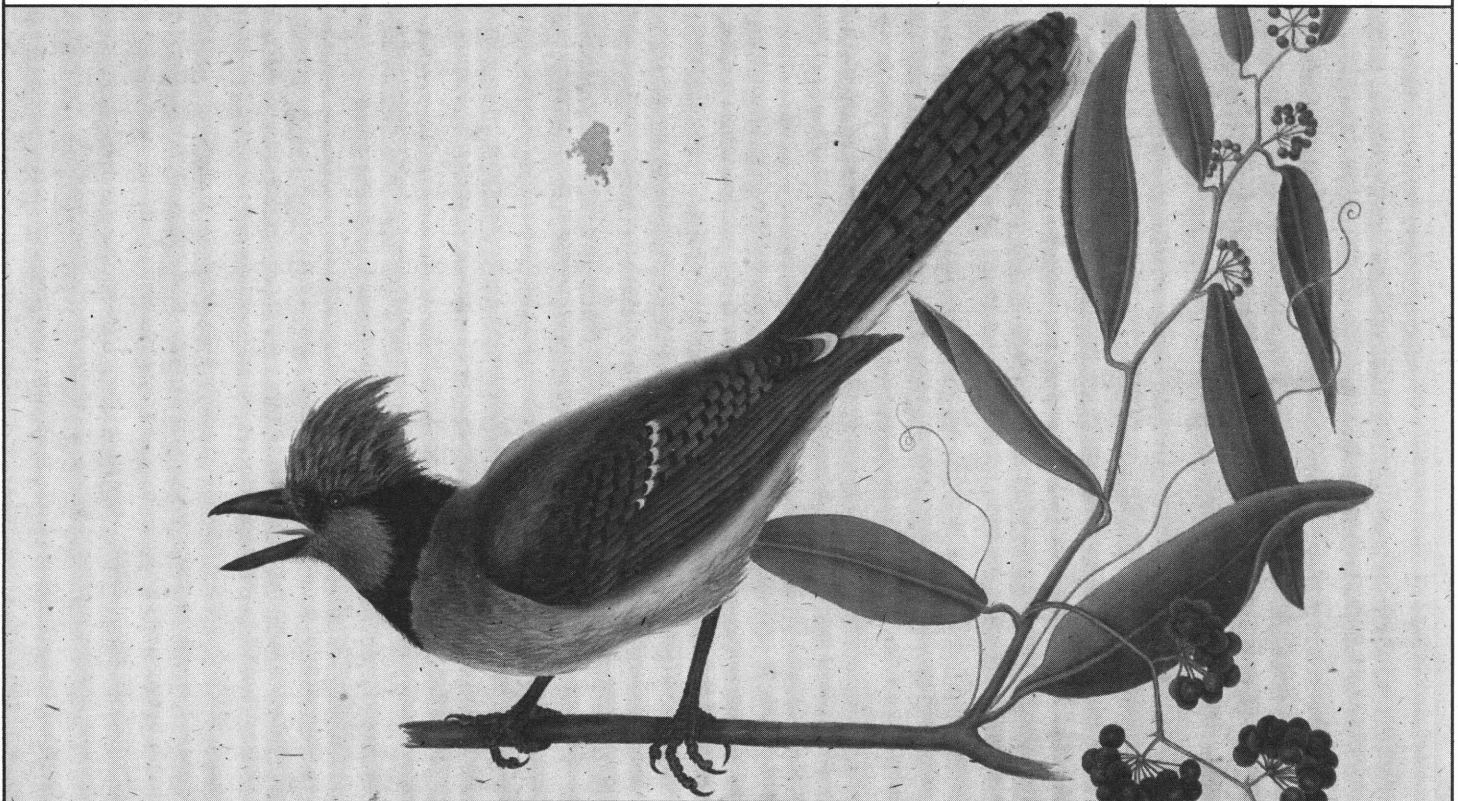
Eastern goldfinch *Carduelis tristis*; water locust *Gleditsia aquatica* (fruit);
and honey locust *Gleditsia triacanthos* (leaves).

system of binomial nomenclature for American species. For all these and many other reasons, these are magnificent prints both for their beauty and significance. As Elsa G. Allen has said, the quality of the work was so superior to foregoing accounts that Mark Catesby ranks as the first real naturalist in America (*American Ornithology Before Audubon*, p.465).

Catesby *continued*



Yellow-billed cuckoo *Coccyzus americanus*, and chinkapin *Castanea pumila*.



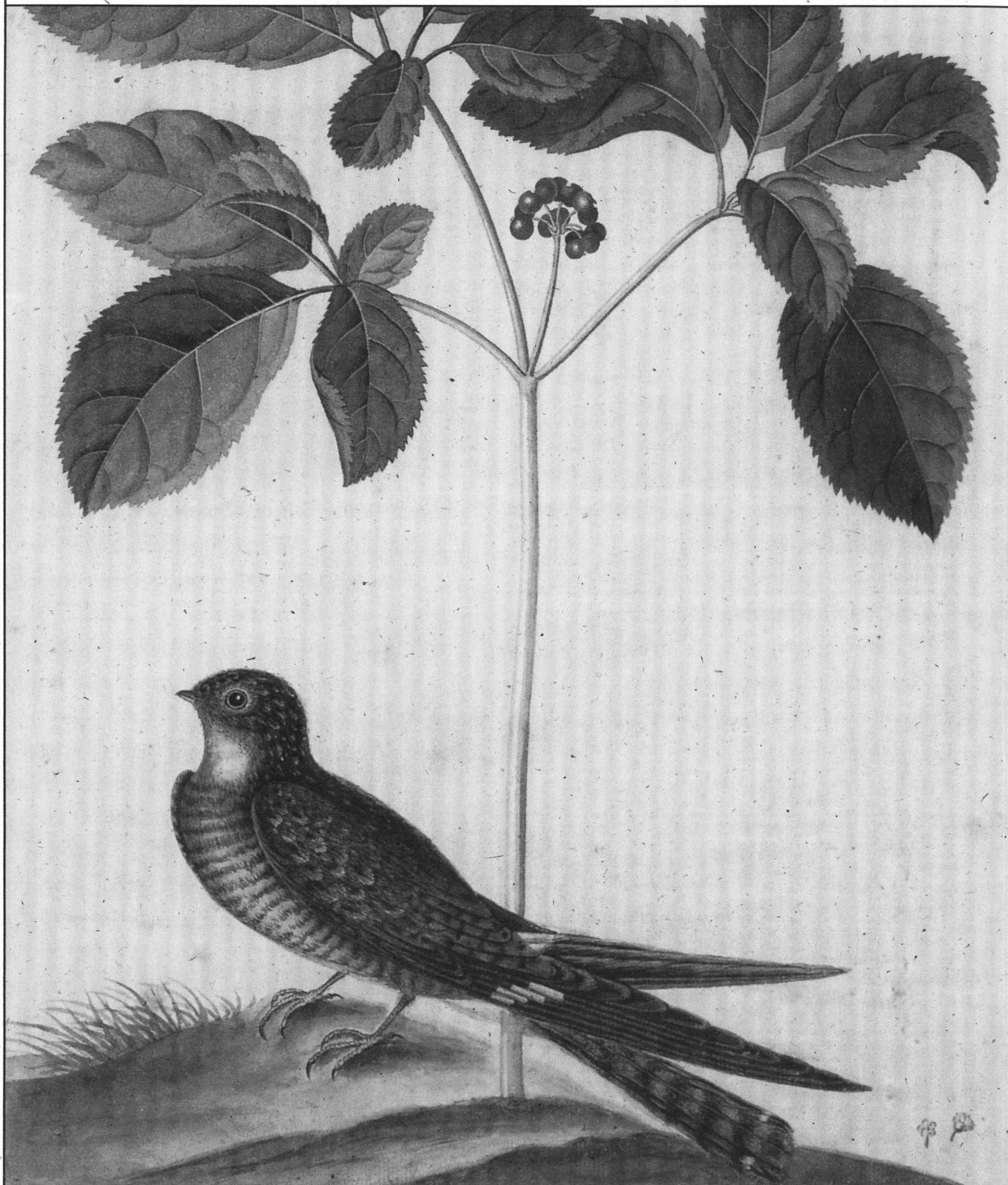
Blue jay *Cyanocitta cristata*, and bay-leaved smilax *Smilax laurifolia*.

Catesby



Tufted titmouse *Parus-bicolor*, pinxter flower *Rhododendron nudiflorum*,
and yellow star-grass *Hypoxis hirsuta*.

Catesby



Common nighthawk *Chordeiles minor*, and ginseng *Panax quinquefolium*.

Oconee Nuclear Station

Buzz Williams

Listening to the car radio while driving home from the office, I heard that on July 7th the Duke Energy Corporation had applied to the Nuclear Regulatory Commission (NRC) for a forty-year extension of their license to operate the Oconee Nuclear Station. The reactors are located in Oconee County, South Carolina—just 20 miles from the Chattooga River. The local newsmen on the radio continued to read from the press release: “Duke’s application for the extension is only the second such request from the nuclear

industry in the United States”. The report brought back memories of all the excitement and bustle over the concerns for public safety when the fledgling nuclear industry entered the public utility markets in the 1950’s. I couldn’t help but wonder about the implications of the NRC giving the nod for Duke to continue their operations at Oconee, given that it is old and and some would say—obsolete.

Duke Energy Corporation (Duke) began operating nuclear power plants in South Carolina in the 1970’s, and met very little resistance from the state. But activism against the nuclear industry here and across the nation was growing. Incidents at Three Mile Island and later at Chernobyl prompted public scrutiny of the industry. Specific concerns included the potential effects of exposure to radiation from nuclear plants, both from normal operations and in case of an accident, emergency planning, disposal of spent fuel, aging of the containment vessel, and the public’s “right to know”.

Duke Energy’s recent re-licensing application resurrected my concerns about Duke’s ability to operate safely at Oconee, and prompted me to conduct some research into the matter. To a large degree, I was curious about the potential precedent that is about to be decided in our own “front yard”. The following is a brief account of what I found.

Duke Energy Corporation is based in Charlotte, North Carolina, and is one of the largest nuclear power

producers in the Southeast. In the early years, the nuclear industry targeted the Piedmont of the Carolinas and the Midwest as good locations to build nuclear power plants. The Carolinas offered abundant, cheap, non-union labor and a favorable political climate. In South Carolina, people were already familiar with the “nuke” industry. The Savannah River Site at Barnwell was established by the federal government in 1950 to produce special radioactive isotopes for “national security” (plutonium-239 and tritium). South Carolina politicians including Solomon Blatt, the “grand old” Speaker of the SC State House,

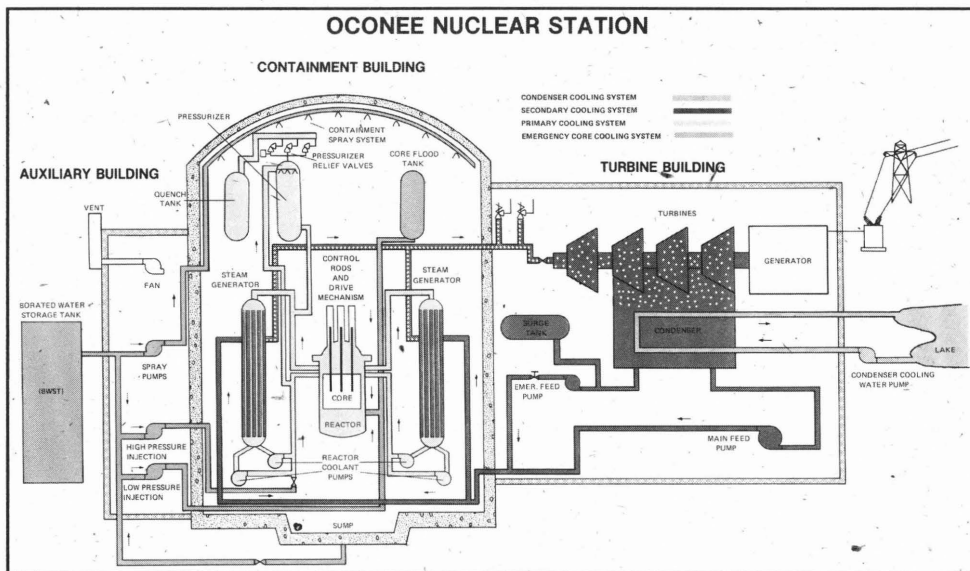
wielded great influence in paving the way for the nuclear industry in the state. Blatt and other powerful political figures were able to sell the nuclear industry, invoking the argument of jobs and tax revenue.

In 1974, Duke Energy Corporation

finished construction of the Oconee Nuclear Station on the Keowee River in Oconee County, at the foot of the remote Blue Ridge

Escarpment. The construction project included two man-made lakes. The largest is Lake Keowee, covering 18,500 acres and which was built at the station site. Lake Jocassee was built at a higher elevation to serve as a pump storage lake for hydroelectric power generation and covers 7,656 acres, impounding the waters of the Whitewater, Thompson, Horsepasture and Toxaway Rivers. Lake Keowee’s function was for conventional hydroelectric power production, and to supply water for the cooling system of the three nuclear power reactors that lie near the Lake Keowee dam site.

Local officials welcomed Duke with open arms, in anticipation of an economic boom and millions of dollars in tax revenue. Inspired by the arrival of Duke, Oconee County created a logo to display their civic pride. The image was of a Native American Indian, with a background of the whirling atom symbol and captioned “Oconee—Arrowheads to Atoms”. In fact, Duke initially invested approximately 600 million dollars to build the Oconee Nuclear Station, which in turn by 1992 had boosted the tax



Oconee Unit 2 is a record setter, producing more electricity than any other nuclear station in the US, and also breaking the world record for continuous operation of a light-water reactor.

Oconee Nuclear Station

base of the Oconee County school system to approximately \$225 million, one of the best-funded in the state. From the perspective of cash flow, Duke had delivered on their promise of economic prosperity. Duke also gained a reputation for running a shrewd and efficient operation.

Then, in 1979 the tragedy at Three Mile Island made national news. The unthinkable occurred: the reactor's cooling system failed, which caused a partial exposure of the core. This accident narrowly avoided a "meltdown" of the system. The reactor type at Three Mile Island is a nuclear steam supply system manufactured by Babcock & Wilcox, which is the same type of reactor as those at Oconee. Consequently, after the accident at Three Mile Island one of the first to arrive on the scene were top executives of Duke Energy Corporation. It is believed that Duke had a lot to do with negotiating a retrofitted design for the pressurized water reactor at Three Mile Island, which smoothed over further questions concerning this type of nuclear reactor.

Nevertheless, questions do remain about the potential for "breaching" in pressurized water reactors. A breach in a pressure vessel is the worst case scenario because the pressure vessel is the last line of defense to prevent the core, which houses the nuclear fuel, from "spewing its guts"—and setting off a meltdown. A meltdown would produce a cloud of potentially lethal radioactive gas that is released into the atmosphere. According to NRC officials, one of the most likely causes of breaching is "embrittlement" of the pressure vessel as a result of continued bombardment of the vessel walls by neutrons radiated from the reactor core. Embrittlement is more likely to be a factor in breaching at low temperatures. Under normal conditions, these 8-inch thick metal vessel walls can stand temperatures as low as 0-40 degrees Fahrenheit, but with age and routine neutron bombardment the vessels become more vulnerable, especially when subjected to "sudden" cooling.

Nuclear reactor core temperatures under pressure reach as high as 560 degrees Fahrenheit. When the hot vessel walls are cooled from within, the inner face of the wall tries to contract. However, the outer wall cools more slowly and prevents this contraction. One expert described the process: "If the core remains highly pressurized, the vessel experiences tensile stresses superimposed on thermal stresses that result from the thermal gradient across the vessel wall." Cracks in the wall may then form. If a pressure vessel is accidentally over-cooled in an event the NRC calls "pressurized thermal shock", the result is disaster.

According to the records in the Oconee County Public Library, on June 22 of this year NRC held a "pre-decisional enforcement conference" with Duke Energy Corporation in Atlanta. The meeting's purpose was to discuss certain regulatory concerns associated with the Oconee Nuclear Station's borated water storage tanks and

reactor building emergency sumps at all three of the station's units. These concerns are directly related to the cooling systems at Oconee and according to the NRC, "...could have led to problems in certain accident situations."

The NRC is the primary watchdog agency for the nation's 140 nuclear reactors. In a statement this spring by the NRC to the Senate Appropriations Committee, NRC Chairman Shirley Jackson expressed concerns for recent proposed budget cuts for the agency in which she said, "Every member of the Commission believes that a full reduction of the magnitude proposed would limit the NRC's ability to adequately protect public health and safety." Therefore, the pending budget cuts for the NRC could become an important factor in ensuring the safety of the aging Oconee Nuclear Station, especially in light of the very recent safety hearings.

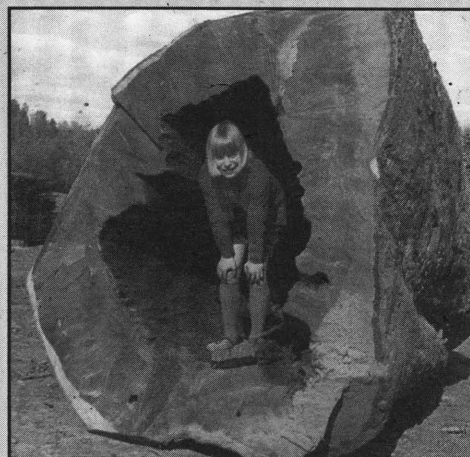
In case of an accident at Oconee, there is bad news and good news concerning other significant safety and environmental issues. First, regarding removal of spent fuel: so far all spent fuel has been

continued on page 15

Ancient History Beneath the Lakes

Beneath the lakes of Keowee and Jocassee lay some of the most ancient and significant Native American and early European archaeological sites in the Southeast. The sites include Fort Prince George, an early British military outpost, and the Cherokee village site at Keowee, which during the eighteenth century served as the capital of the Lowerhill Cherokee.

Construction of these two lakes required harvesting the wild timberlands in the lake basins, including some of the last stands of native old growth forest in the southern Blue Ridge Mountains. These lakes also inundated some of the best bottomland in upstate South Carolina. When Crescent Land and Timber Company, a subsidiary of Duke Energy, finished the clearing operation in the fall of 1969, they had harvested 17.5 million board feet of pine sawtimber, 15 million board feet of hardwood sawtimber and 51,800 cords of pulpwood. Duke boasted about the timber harvest in a brochure, and said that this was enough sawtimber to build 2,350 six-room houses and that the pulpwood would load 2,250 railroad cars. Some of the Yellow poplar trees that were harvested in the ancient forest of Jocassee were reported to be 200 feet tall, seven feet in diameter and over 200 years old.



Large Yellow poplar harvested by Crescent

Responding to the Threat of Climate Change

Reprinted and condensed from Worldwatch Institute Report: *State of the World 1998*.

Christopher Flavin and Seth Dunn

In December 1997, representatives of more than 160 nations assembled in Kyoto, Japan, to sign an historic protocol to the 1992 Framework Convention on Climate Change. Over the last 10 millennia, the relative stability of the climate has nurtured the evolution of human society and the natural environment. Today, however, human activities are rapidly disrupting this stability, placing both in peril.

Global emissions of carbon—which in the atmosphere form carbon dioxide (CO₂), the most important greenhouse gas released by human activities—from the burning of fossil fuels reached a record 6.2 billion tons in 1996, having increased nearly fourfold since 1950 (see Figure 1). The postwar emissions binge is a planetary experiment unlike anything we have ever tried, overwhelming the natural cycling of carbon by oceans and forests and bringing the atmospheric CO₂ concentration to 29 percent above its pre-industrial level, higher than at any time in the last 160,000 years. The Intergovernmental Panel on Climate Change (IPCC), which in 1995 confirmed a “discernible human influence on global climate,” estimates that a doubling of CO₂ concentrations—likely to occur late next century if we stay on the current path—will increase global temperature by 1-3.5 degrees Celsius.

This rate of change, the fastest in the last 10,000 years, poses substantial risks to the natural world and human society in coming decades. While the complexity of the Earth's climate system makes it impossible to know

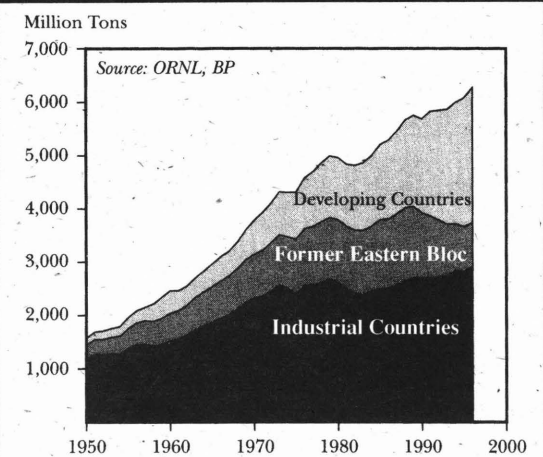


Figure 1 World carbon emissions from fossil fuel burning by economic region, 1950-1996.

precisely the effects of rapid changes in the composition of the atmosphere, scientists around the world have concluded that flooded cities, diminished food production, and increased storm damage all seem likely, and could well produce catastrophic economic consequences.

Luckily, the premium for climate protection has dropped dramatically during the 1990's as many promising

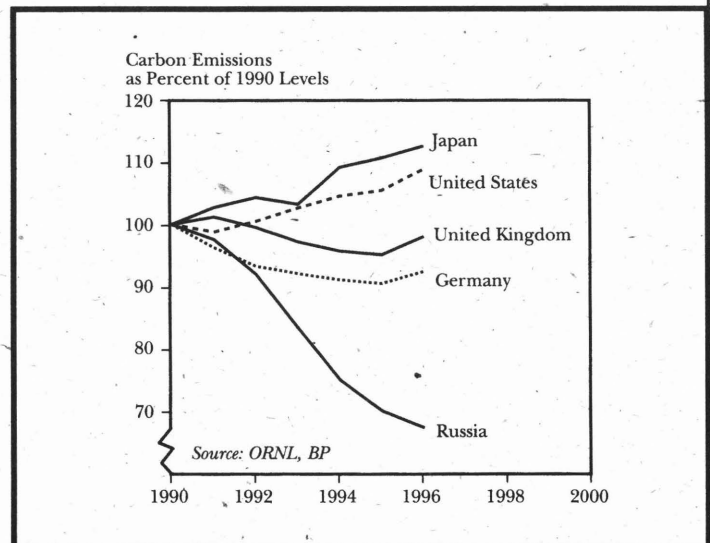


Figure 2 Carbon emissions trends, selected industrial and former Eastern Bloc countries, 1990-1996.

new technologies have moved quietly but decisively from experimental curiosity to commercial reality. These new inventions allow rapid improvement in the efficiency of energy use and can economically turn sunlight, wind and plant matter into electricity and other useful forms of energy.

Sweeping changes in the world's energy system will unfold rapidly enough only if government policies—many of which support the status quo and retard the development of alternatives—are transformed. Efforts to cut fuel subsidies, improve energy efficiency standards, and support the accelerated use of renewable energy are among the initiatives that have proved effective in reducing emissions. Indeed, if all nations had by now adopted the most effective policies already taken up piecemeal by one or more countries, global greenhouse gas emissions might now be headed down.

Industrial countries are responsible for 76 percent of the world's cumulative carbon emissions since 1950. Signatories to the 1992 climate change treaty agreed that these countries should take the lead by voluntarily holding emissions to 1990 levels by the year 2000. But this goal has disappeared in the cloud of greenhouse gas belching from automobiles and smokestacks of industrial countries. Farthest off track among emitters are the United States, Australia and Japan, whose carbon emissions in 1996 were 8.8, 9.6, and 12.5 percent above 1990 levels (see Figure 2).

A chief culprit in recent emissions growth is the transportation sector, which is the fastest growing source during the past two decades. Much of this is due to the automobile fleet, which has surged from 50 million to 500 million since 1950 and is projected to double over the next quarter century as millions of people in developing countries purchase cars for the first time. In industrial countries, meanwhile, cars are being sold in larger sizes and being

Climate Change *continued*

driven greater distances with each passing year. At the same time, the popularity of larger homes with ever more electrical appliances is also increasing energy use and carbon emissions. These trends, supported by low fuel prices, have overwhelmed the energy efficiency improvements of the last decade.

The record in industrial countries is not universally bleak, however. The collapse of energy-intensive industries in Eastern Europe and the former Soviet Union lowered Russia's carbon emissions 33 percent between 1990 and 1996. Emissions have dropped 7.6 percent in Germany as a result of energy policy reforms and the forced shutdown of inefficient, coal-based industries and power plants in its new eastern states. The United Kingdom and France also kept their carbon emissions below their 1990 levels through 1996.

The fastest growth in greenhouse gas emissions in recent years has been in the developing world, where industrialization is still gathering speed (see Figure 3). By 1996, carbon emissions in developing countries were 44 percent over 1990 levels, and 71 percent over 1986 levels.

Rapid economic growth, particularly in East Asia and Latin America, is driving emissions up as growing numbers of people are able to afford home appliances,

Carbon Emissions
as Percent of 1990 Levels

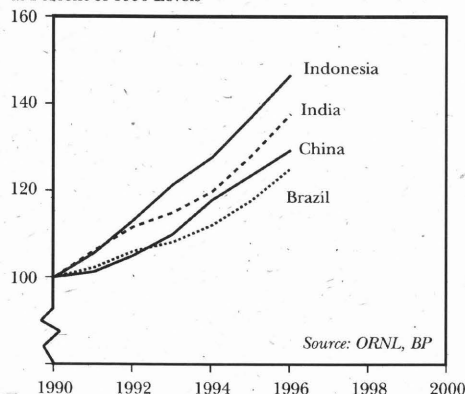


Figure 3 Carbon emissions trends, selected developing countries, 1990-1996.

motorcycles, cars and other energy-intensive amenities of a "modern" lifestyle. The International Energy Agency projects that without additional policy initiatives, global carbon emissions from fossil fuels will exceed 1990 levels by 17 percent in 2000 and by 40 percent in 2010, reaching 9 billion tons per year.

The lead-up to Kyoto saw angry finger-pointing between industrial and developing countries over the division of responsibilities agreed to under the climate convention. But such conflicts pale in comparison to the common interests and benefits of cooperating to slow global warming. John Holdren of Harvard University likens the energy economy to a supertanker headed at full speed for a reef, asserting that: "We all need to steer cooperatively, not argue who's at the wheel."

Solar Energy Emerging

Reprinted with permission from the Atlanta Constitution

Samar Abulhassan

As costs drop, researchers predict more use of this alternative in the United States as well as in developing nations.

Washington—Fueled by falling costs of photovoltaic cells, world solar markets are growing 10 times faster than the oil industry, the Worldwatch Institute reported Thursday, July 16th. The cost of solar cells, closely related to silicon semiconductor chips found in computers, has fallen by 80 percent since 1980, the environmental group reported. This is making electricity affordable to the more than 2 billion people worldwide not connected to power lines, as evidenced by a 40 percent rise in sales last year.

"It is the largest increase in a decade," said Christopher Flavin, a Worldwatch senior researcher, who co-wrote the report with researcher Molly O'Meara. While solar power still makes up a tiny fraction of all power generated, it "has the potential to move from the margins of the global energy market place right into the mainstream."

Solar power is not yet economically competitive in the United States, where it still costs two to five times more than electricity generated by nuclear or fossil fuels. But as technology matures in the next decade with the use of technology such as "thin film" photovoltaic material, scientists believe costs could dip as much as 75 percent. In much of the Sun Belt, where air conditioning drives up power demand, this price would make solar power competitive with electricity from fossil fuels, Worldwatch said.

Still, integrating solar cells into roofing tiles and even window glass—which allows homes and buildings to generate some of their own power and even sell electricity back to the utility—is beginning to be used in a few pioneering communities such as Sacramento, California, where the local utility company has partly subsidized rooftop solar systems for 420 homeowners. Worldwatch found that much of the recent growth in solar sales was spurred by rooftop solar programs, spotlighted by President Clinton's goal of installing solar energy systems on the roofs of 1 million U.S. buildings by 2010. Japan is the world leader so far, with 9,400 solar home systems installed in 1997.

Scott Sklar, Executive Director of Solar Energy Industries Association, said it is uncertain whether Congress will provide sufficient funds to achieve the "million roofs" goal. But solar power can't become competitive in the United States until people can choose the kind of electricity they want, he said. "Once we deregulate our electricity market, one of 10 homes will use solar power."

The United States is the number one producer of solar cells, primarily for the export market. But without market reforms to encourage solar power at home, Flavin said, "the current strong U.S. leadership could be lost, because the industry is likely to migrate where markets are developing."

Legislative "Riders of the Night"

Cindy Berrier

with assistance from Greenlines Legislative Reports

As predicted in the Spring '98 edition of the *Chattooga Quarterly*, a number of influential Senators and Congressmen are working relentlessly, through the federal budgetary appropriations process, to dismantle or block positive steps towards environmental protection and restoration. At this point in time, there are 18 anti-environmental riders attached to the Interior Appropriations bills.

The rider process has become the ideal way for our Members of Congress to get controversial bills attached to federal spending bills. Probably the most important reason that this tactic is employed is that riders do not have to be openly debated or introduced as stand-alone bills; they just "ride piggy-back" on essential funding bills. Oftentimes, the rider is totally unrelated to the funding measure that carries it. For example, the recently passed (Fiscal Year '98) Emergency Supplementation for Natural Disaster Relief Act had riders attached by Senator Larry Craig (Republican from Idaho backed by the timber industry) and Senator Pete Domenici (Republican from New Mexico backed by the finance and oil industry). Senator Craig's rider basically nullified the 18-month National Forest Roads

Moratorium, which was proposed by the Chief of the Forest Service and hailed by many citizens as a great step toward protection and restoration of our national forests (that contain more miles of roads than the interstate highway system). However, with this rider attached the moratorium is ineffective. Senator Domenici's rider adjusted the boundary of the Petroglyph National Monument to allow construction of a multi-lane highway to facilitate the sprawl of Albuquerque suburbs. The attachment of these riders, which have nothing to do with emergency disaster relief, were savvy political moves to get special interest legislation passed while knowing full well that the Disaster Relief Act was greatly needed by people suffering from this winter's natural disasters.

Currently in Congress, the Fiscal Year (FY) 1999 Interior Appropriations bills are being gutted, twisted and torn to facilitate certain Members of Congress' personal agendas and the special interests of those who have made

large contributions to their re-election campaigns. The Senate version of the Interior Appropriations bill has so many anti-environmental riders attached, and the House version has four so far, that we should see that the will of the majority of citizens to preserve and restore our environment, is being subverted by back door legislation. The following list describes some of the riders to the Senate's Interior Appropriations bill.

- *Sec. 117 Bureau of Land Management (BLM) Mining Regulations:* Would halt the current review of hard rock mining regulations, which would have started the long overdue process of mining regulations reform for public lands. The rider would halt this process for up to 18 months while a study is done to determine the effects of any new regulations; current regulations date from the year 1872.
- *Sec. 120 Glacier Bay National Park and Preserve:* This rider would prohibit the use of funds for the purpose of enforcing regulations to stop commercial fishing in this National Park, which is the only National Park where commercial fishing is allowed. The National Park Service wants to phase out commercial fishing here and restore the park to its intended purpose, which is preservation, public enjoyment and scientific study.
- *Sec. 123 Public Lands Grazing:* Would allow the BLM to re-authorize grazing permits on public lands without allotment-specific National Environmental Policy Act documents, Endangered Species Act requirements or Federal Land Policy Management Act analysis through FY 1999, or until the Bureau completes permit processing. This provision provides an escape clause for the BLM that allows the agency to delay the analysis required by law, as recently interpreted by federal courts.
- *Sec. 126 Izembek National Wildlife Refuge Road:* Would authorize construction of a 30 mile gravel road through the Izembek National Wildlife Refuge and Wilderness Area for the estimated cost of 30 million dollars. The project's purpose is to service the town of King Cove, whose population is about 800. This project would set a bad precedent for building roads through wildlife refuges and wilderness areas, and also would waive all environmental laws during the road's construction.

Riders do not have to be openly debated or introduced as stand-alone bills, they just 'ride piggy-back' on essential funding bills.

Riders *continued*

Transportation Unions contributed heavily to the coffers of the Senator who attached this rider.

- **Sec. 127 *Land Acquisition in Alaska*:** Would prohibit the Secretary of the Interior from spending any funds for land acquisition in Alaska, unless the Secretary first seeks to exchange unreserved public lands for the parcel desired. The language would block the federal government's ability to acquire inholdings from willing sellers in a prompt manner, therefore jeopardizing rare opportunities to obtain key private land parcels and inholdings.
- **Sec. 131 *Oil Royalties Rule*:** Would further delay the long awaited Oil Valuation Rule from going into effect, thus allowing oil and gas industries to dodge payment of \$86 million in royalties to the federal government until October of 1999. The new rule has been in the works for the last two years, and was scheduled to go into effect this summer.
- **Sec. 321 *National Forest Planning*:** Would impose a funding limitation to halt the revision of any new Forest Plans not currently in progress until new National Forest Management Act regulations are adopted. Potential changes to this Act include dropping measures that are designed to ensure species viability on public lands.
- **Sec. 322 *Forests & Rangeland Renewable Resources Planning Act*:** Would halt all funding to carry out strategic planning under this Act. Sec. 329 exempts existing Forest Plans from current revision deadlines outlined in the National Forest Management Act and the Forests & Rangeland Renewable Resources Planning Act.
- **Sec. 332 *Prescribed Burning*:** This rider would require the removal of all "economically viable, commercial wood products" prior to conducting prescribed burning in national forests. This is an oxymoron, as the very reason for the prescribed burns is to mimic the natural fire disturbance that has been suppressed for many years, and which plays an important role in the natural disturbance regimes of the forest. With this rider, the larger trees are considered more "economically viable" and therefore would be logged thereby undermining the ecosystem instead of restoring it, which is the intended purpose of the burns.
- **Sec. 336 *Snow Basin Road*:** Would authorize \$13.9 million for a three mile road to a ski resort. In 1996, a rider attached to a national parks bill enabled a developer to acquire national forest land through a land exchange, in order to develop a ski resort to be used for the winter Olympics. The road to access this site would be built at taxpayer's expense to benefit the site's private development plans and projected (private) profits. That amounts to costs to the taxpayer of \$4.6 million per mile, to a resort where the developer will reap private windfall profits.
- **Sec. 337 *Interior Columbia Basin Ecosystem Management Project*:** This rider would strip multiple federal agencies of any decision making authority, essentially removing coordinated ecosystem planning from this project. The rider also would allow site specific activities, such as timber sales, to go forward even if the cumulative effects of those activities would jeopardize species listed under the Endangered Species Act.
- **Sec. 338 & 340 *Logging in the Tongass National Forest and Timber Pricing in Alaska*:** The first rider would mandate that the Forest Service to offer and allow logging next year of 90% of the timber volume proposed by the Tongass Land Management Plan, which currently is under appeal. This would force the agency to allow a 150% increase in logging volume from 1997 levels. Sec. 340 addresses timber pricing in Region 10, which includes the Tongass. This national forest system is still under the old method of pricing, which ensures a loss to government coffers and a huge profit for private timber companies.
- **Sec. 342 & 343 *Grizzly Bear Reintroduction & Salmon Recovery*:** Sec. 342 would prohibit the US Fish & Wildlife Service from spending any money to reintroduce grizzly bears into the Selway-Bitterroot ecosystem in Idaho and Montana. This reintroduction is vital to the grizzly bears recovery in this area as it is one of the largest remaining roadless area in the lower forty eight states. Sec. 343 would prohibit any changes in the operation of any federally-licensed dam in the Columbia River basin without specific Congressional approval. The rider severely hampers any effort to restore the Pacific salmon, if that effort involves modifying any existing commercial use of the Columbia River basin, including hydropower.
- ***Title II Road Decommissioning*:** This rider would prohibit funds to be used to decommission or fix national forest system roads, until all "unauthorized" roads are decommissioned or fixed. System roads are used for logging, and many are in terrible condition and are contributing to mudslides and habitat fragmentation. "Unauthorized" roads are temporary roads or paths carved by off-road vehicles, which are less harmful and oftentimes not even recorded as roads. In order to fix or decommission these roads, they would first have to be inventoried; inventorying these roads would cause lengthy delays as well as shifting of resources away from fixing the problems that already exist. This rider is perhaps one of the most pointed

Riders *continued*

attempts to block sound funding for restoration of watersheds and wildlife habitats.

- **Title II Wilderness Act Implementation:** This rider seeks to abolish Forest Service regulations which are designed to promote solitude in certain Wilderness Areas by setting limits on the number of people in these areas. The rider also shifts Wilderness Area management more towards increased human activity and recreation.

The House of Representatives' version contains very similar riders having to do with roads being built in places they shouldn't; ecosystem management funds being held hostage; using Knudsen-Vandenburg Funds for Forest Service administrative overhead (which is not allowed); and removing sensitive lands from the Coastal Barrier Resources Act, so that they may be developed. We anticipate more Members of Congress will jump on the rider bandwagon by adding other special interest agendas to the Interior Appropriations bill, which will be voted on in August.

The White House has hinted a veto of the whole bill will occur if the riders aren't removed. However, this becomes a heated political tug-of-war, because the body of the spending bills are necessary, justifiable and should be passed. Yet the President no longer has a tool called line item veto to "pare the pork". This power was revoked in June by the Supreme Court: the line item veto was declared "unconstitutional". If the President vetoes the Interior Appropriations bill, it will go back to both Chambers and various Committees; the process starts over, unless the veto is overridden. This scenario has the potential to develop into a game of trade-offs, for very bad legislation for not-as-bad legislation.

What you can do: Call, write, email or visit your Senators and Representatives. Tell them that this is not an acceptable way to legislate! If you would like to know if your Members of Congress have a tendency to offer special interest legislation, you can go to the web site called Center for Responsive Politics, at www.crp.org/index.htm and find out everything you want to know about their campaign money and where it comes from, even what industrial sector, and personal financial statements. This web site is very informative and enlightening. Then, if you want to find out how your representative voted on a particular environmental issue, go to the League of Conservation Voters web site at www.lcv.org. Constituents armed with knowledge about their representatives' campaign money and voting history have more of a chance of being heard!



Oconee Nuclear Station *continued from p. 10*

kept on site due to the controversy over potential repositories, such as the Yucca Mountain site in Utah where questions of ground water contamination have delayed the opening of this facility. At some point, questions concerning the adequacy of Duke's spent fuel containment facility will most certainly become a factor in this re-licensing decision.

The good news is the Oconee County Emergency Preparedness Office has a detailed plan for handling an accident at the nuclear site. This strategy features a four-tiered plan that is geared to the degree of the accident and potential dosages of radiation to surrounding areas due to the quantity of the radioactive release as well as atmospheric conditions at the time. This plan also encompasses a protocol for a chain of command, and includes well thought out evacuation routes. Yet, these plans also raise other, not so often thought of concerns such as the potential for a breach of the reactor due to an earthquake (the Brevard Fault runs within 10 miles of Oconee Nuclear Station), tornado, terrorist or missile attack, and operator (human) error.

Nonetheless, Duke Energy Corporation and advocates of the nuclear industry staunchly defend the position that catastrophes such as Three Mile Island or Chernobyl are remote. I tend to agree. I would, however, wonder about the odds that Oconee might be a likely candidate "if" a major accident did happen. To date, Duke is pushing forward with their request to extend the life of its Oconee Nuclear Station. NRC seems content to wait and see how much risk a community is willing to accept in return for jobs and taxes. It remains unclear how much input the public will have in the ultimate decision whether or not to re-license this nuclear power plant.

In the Soviet Union where people once had little opportunity to speak out, nuclear power plants were built with extremely lax safeguards. Of the 135,000 people who were evacuated from a 18.6 mile radius around Chernobyl at 8:00 a.m. on that April morning, 36 hours after the reactor "blew", the majority had an estimated exposure "within the established limits" according to the official report. The response to the disaster was reported to be "exemplary".

The question of re-licensing the Oconee Nuclear Station is very complex. There are some things we know. For example, we know that the odds of something happening at Oconee that might result in a catastrophe are much less than the odds were at Chernobyl. However, there are many questions still unanswered by the NRC and Duke Energy concerning the long term safety of the facility at Oconee. These questions are much too broad and important to address in one short article. There is one question, though, which is easy to answer. This question is about public education and the right to participate in the decision to re-license or not. In the coming months, the Chattooga River Watershed Coalition will be watching the process of Duke's request to re-license the Oconee Nuclear Station. Stay tuned.



Watershed Update

US Forest Service Projects

Tallulah Ranger District (Georgia)

Compartment 32: District Ranger David Jensen has issued his decision to proceed with the timber sale in Compartment 32, which is located in the Warwoman Wildlife Management area between Sarah's Creek and Pounding Mill Creek. The sale consists of 225,000 board feet of mostly pitch and white pine, with .4 mile of temporary road construction and a temporary log stringer to be constructed across Hickory Bottoms Creek. We oppose this sale as we believe this stand of timber would be best managed for old growth; in addition, the project appears to be another instance of converting a predominantly hardwood stand into pine. Comments and or appeals are due September 8th, 1998.

Highlands Ranger District (North Carolina)

Land Exchanges: The Nantahala National Forest has proposed two land exchanges within the Chattooga River watershed, in order to acquire two critical inholdings that border on Big Creek and the Chattooga River. The CRWC commends the Highlands Ranger District for this proposal and approves of these exchanges, which will benefit the long term health of the aquatic ecosystem.

NC Department of Transportation

Bullpen Road: The NC Department of Transportation has indicated that they may reconsider their recent decision about the Bullpen Road widening project. The CRWC offered a proposal to modify the project, to address both safety and environmental concerns. CRWC Director Buzz Williams will be meeting with the Secretary of the NC DOT to discuss the possible implementation of all or parts of the proposal. We will keep you posted on the outcome of this meeting.

CRWC Kid's Geography Contest Winner

Congratulations to Jane Inman of Clinton, South Carolina, who correctly identified the rivers in the kid's geography contest. Jane will be awarded a float trip down the Chattooga River. The correct answers were: 1) Chattooga; 2) Chauga; 3) Tallulah; 4) Chattahoochee; 5) Little Tennessee; 6) Nantahala; 7) Horsepasture; 8) Toxaway; 9) French Broad; 10) Tuckasegee; and, 11) Hiawassee.

Acknowledgement

Mr. Thomas Feters authored the article entitled "Loggers of the Blue Ridge Mountains", which appeared in the recent, Spring '98 issue of the *Chattooga Quarterly*. This article was excerpted from Mr. Feters' book, *Logging Railroads of South Carolina*, and was published by Heimburger House Publishing of Forest Park, Illinois.

The Appalachian Forest

A Search for Roots and Renewal

Writer Christina Bolgiano will sign copies of her new book (named above) at Cyrano's Bookshop in Highlands, North Carolina, from 1-3 p.m. on Friday, September 25th. This book includes a chapter that explores the work of the Chattooga River Watershed Coalition, and features Coalition Director Buzz Williams. Come and meet this highly acclaimed conservation writer.

Memberships and Donations

Many Thanks to the individuals listed below, who recently renewed their memberships to the Chattooga River Watershed Coalition, and made generous donations in support of the Coalition's conservation work. Your contribution is greatly appreciated!

John Austermann
Katherine Baer
Johnny Bailey
Lee Barnes
Sam Booher
Peggy Boozer
Charlie & Jody Bryan
Jim & Monique Cooper
Frances Close
Anna Davis
Mollie & Russ Dobbins
Mason K. Edwards
Robert & Nancy Fichter
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Robert Stowell
Mark Theis
Joe Wheeler
David Wheeler
Bruce Williams
Peggy Woodruff

Please check your mailing labels!

Membership expiration dates are printed in red; please renew to support the CRWC's work, and to continue receiving the *Chattooga Quarterly*. Also, remember to notify us of address changes.

USFS Line Officer in Region 8 Gives Her Directive



United States
Department of
Agriculture

Forest
Service

Southern
Region

1720 Peachtree Road NW
Atlanta, Georgia 30367-9102

File Code: 2430

Date: January 29, 1998

Subject: FY 98 Timber Program

To: Forest Supervisors except Caribbean NF

The purpose of this document is to convey my concern to you about our current year Green Timber Sale Program attainment. In FY 96 and 97, our timber sale offer accomplishment has fallen short of expectation. In both fiscal years, R-8 reported 84% attainment in timber volume offered for sale. This was accompanied by a reduction, each year, in the program goal. The same is true for FY 98. Our green timber sale program declined from 137272 MCF in FY 97 to 109455 MCF in FY 98.

As a result of past shortfalls, we are monitoring our progress on a monthly basis this FY. You were previously notified of the status of your pipeline as of October 1, 1997 (see our 2430 memo dated 10/29/97 enclosed). Concern was expressed then that R-8 had 962,226 CCF (529 MMBF) through GATE 2 and 330,380 CCF (182 MMBF) through GATE 3. Yet, as of Dec 31, we offered for sale, only 11228 MCF (62 MMBF) or 10% of our green program.

Now, one month later, we have still offered only 11% of our green program.

I am concerned that we are on a track to repeat problems of past years where a large amount of volume is offered for sale in the last quarter of the FY to meet program goals. This is not acceptable as we've stated previously. Our goal is to offer fully 50% of our program by March 30 (see our 2430 memo dated 10/29/97). It appears that this objective will be difficult to attain, given our current situation.

Accomplishments for each Forest as of 12/31/97 are shown on the enclosed chart.

Some Forests have done exceedingly well. Some are on track with sales to advertise in the next couple of months while others need significant improvement. Some have litigation barriers they are seeking to overcome. I fully expect that each Forest Supervisor will take a personal interest in ensuring that wherever possible, barriers to meeting our program goal will be overcome and that this goal is accomplished. If you cannot meet your budgeted target, we will move both target and dollars to a Forest that will perform - enabling the Region to comply with Congressional intent. To that end, we will be monitoring your individual progress and periodically discussing it with you. This will also be a discussion item at your midyear performance review.

/s/Elizabeth Estill

ELIZABETH ESTILL
Regional Forester

Enclosures

Memo to All Forest Service Employees from Chief Mike Dombeck

The following narrative is excerpted from a letter written by the Chief of the Forest Service, Michael Dombeck, to all employees of the Forest Service, dated July 1, 1998.

"Today marks the 100th anniversary of Gifford Pinchot's first day on the job as a Forest Service employee. I took this opportunity to discuss the natural resource agenda and what it means to be a conservation leader with the National Leadership Team. I'd like to share that discussion with you before the holiday weekend celebrating our nation's birthday. As an organization, we pride ourselves for our conservation tradition and expertise. I'd like to get a little beyond the sloganeering and examine what that truly means. As Pinchot said, 'we must go vigorously forward, apply what knowledge and common sense we (have) to the task ahead, and everywhere and always prefer results to routine.'

"To me, a conservation leader is someone who consistently errs on the side of maintaining and restoring healthy and diverse ecosystems even when--no, especially when--such decisions are not expedient or politically popular. If we are to redeem our claim to be the world's foremost conservation leader, our job is to maintain and restore ecologically and socially important environmental values. A highly diversified society increasingly demands that our stewardship results in a legacy of healthier landscapes.

"I recently read a letter from a line officer who chided local managers for being behind schedule relative to meeting the region's 'timber targets.' My expectation is that line officers will demand similar accountability for meeting watershed restoration, fish and wildlife habitat, riparian, recreation, cultural resource, and wilderness management goals.

"We need to do a better job talking about, and managing for, the values that are so important to so many people. Values such as wilderness and roadless areas, clean water, protection of rare species, old growth forests, naturalness--these are the reasons most Americans cherish their public lands.

"I recently read a letter from a line officer who chided local managers for being behind schedule relative to meeting the region's 'timber targets.' My expectation is that line officers will demand similar accountability for meeting watershed restoration, fish and wildlife habitat, riparian, recreation, cultural resource, and wilderness management goals."

"Fifty years ago, Aldo Leopold wrote his seminal work, A Sand County Almanac. In it, Leopold spoke of his personal land ethic and the need for land managers to extend their own ecological conscience to resource decisions. The Forest Service natural resource agenda is an expression of our agency's land ethic. If we are to redeem our role as conservation leaders, it is not enough to be loyal to the Forest Service organization. *First and foremost*, we must be loyal to our land ethic. In fifty years, we will not be remembered for the resources we developed; we will be thanked for those we maintained and restored for future generations."



Chattooga River Watershed Coalition

*We are a 501C3 non-profit organization.
incorporated in Georgia.*

Staff:

*Executive Director
Buzz Williams*

*Development Director
Nicole Hayler*

*Administration & GIS
Cindy Berrier*

Board of Directors:

*Friends of the Mountains
GA Forest Watch*

*Western NC Alliance
SC Forest Watch
Sierra Club*

*The Wilderness Society
Association of Forest Service
Employees for
Environmental Ethics*

Newsletter:

*Editors, Buzz Williams &
Nicole Hayler*

*Production and Layout,
CRWC Staff*

*Printing,
Gap Graphics*

Endorsing Organizations

*Foothills Canoe Club
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Georgia Canoeing Association
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Join the Coalition and help protect the Chattooga River Watershed.
Your contribution is greatly appreciated. Donations will be used to support the Coalition's work, and guarantee you delivery of the *Chattooga Quarterly*. We're a non-profit organization, and all contributions are tax-deductible.

THANK YOU!

Send to:

Chattooga River Watershed Coalition
P.O. Box 2006
Clayton, Georgia 30525

Chattooga River Watershed Coalition

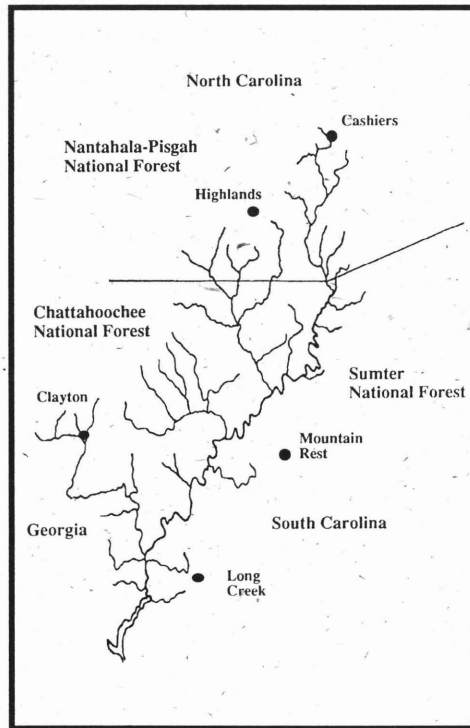
PO Box 2006
Clayton GA 30525
(706) 782-6097

(706) 782-6098 fax crwc@acme-brain.com Email

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:

CRWC Members and Volunteers
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Alex Walker Foundation
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The Barstow Foundation
Smithsonian Institution CTSP
Frances Allison Close



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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