Preserving the Headwaters
A group of scientists works to reclaim a vital stream
Comments from the Provost

It is difficult to describe all of the activity that we place in the general category of “research” at Appalachian; in fact, we often use the terms “research,” “scholarship,” and “creative activity” to describe the different but overlapping elements that make up this area of faculty work. This issue’s faculty members work in areas as diverse as conceptual art and stream preservation. How are these activities connected? Although “research” is traditionally associated more with scientific inquiry than artistic expression, an area of common ground is suggested in the perhaps unlikely field of conceptual art.

For Jody Servon, whose installation art has earned national recognition, “art is problem solving,” and I think all the faculty members in this issue can be seen as participating in a similar venture. While Servon must solve the problem of how to communicate an aesthetic idea in a variety of media and spaces, John Whitehead’s problem is how to balance the competing demands of commercial and environmental interests in the fishing industry. In our main feature, an interdisciplinary team of scientists from geology (Bill Anderson), chemistry (Carol Babuk) and physics and astronomy (Chris Thaxton) attacks a very local problem: how to preserve the environmental integrity of Boone Creek, a designated trout stream that runs right through Appalachian’s campus.

Two other interrelated concerns occupy this problem solvers: the direct application of solutions to the local environment and strong connections between research and teaching. The Department of Geography and Planning’s Jana Carp involves her students in the restoration plans for Boone Creek; they learn first-hand how both science and city planning can address a very local environmental problem. Michael Windelspecht brings his biological research into the classroom; both he and Undergraduate geology major Joey Anderson measures water level measurements throughout summer and fall 2006 to assist a team of faculty with its research.

Environmental supply and demand
An economics professor studies the value of natural resources in order to promote sustainability.

Jody Servon: conceptual artist
This Appalachian artist reframes human experiences in a variety of media and locations.

Environmental supply and demand
An economics professor studies the value of natural resources in order to promote sustainability.

A Creek Runs Through It
Scientific data gathered by Appalachian faculty on Boone Creek are aiding community efforts to restore the stream to its more natural condition.

Research Notes
Cover photos: A section of Boone Creek, also known as Kraut Creek, runs past Appalachian’s steam plant. Inset, undergraduate geology major Joey Anderson measures stream velocity to calculate volumetric flow. Anderson took water level measurements throughout summer and fall 2006 to assist a team of faculty with its research.
The balance of environmental supply and demand

A professor studies the economic impact of management and climate change on North Carolina’s beachfronts and recreational fishing.

By Kate Cahow

Economics is the study of the allocation of scarce resources, John Whitehead, an environmental economist in the Walkertown, North Carolina, said. “As an environmental economist, I try to estimate the value of those resources in order to promote sustainability.”

Whitehead got into the environmental side of economics because he wanted to help protect the environment. A professor in Appalachian’s Department of Economics, he says he has found that his research requires him to maintain a precarious balance between protecting scarce and disappearing resources, and the wants and needs of groups that consume and utilize those resources.

Environmentalists want to shut down a certain amount of economic activity so that our forests are protected and our water is clean. People on the industry side want to make as much money as possible, he said. “Economists’ prescriptions for the allocation of these resources usually come down somewhere in the middle, where none of the groups are too happy about it.

The value of a fish

Whitehead has created a research niche for himself in marine recreational fishing. He works with the South Atlantic Fishery Management Council on its scientific and statistical committee.

“My role on the committee is to work with quota allocation and other issues,” he said. “We have models that can be used to estimate the economic value of each fish caught. How much fish the commercial industry gets to catch versus how much fish recreational anglers get to catch is a big issue in marine fishing.”

People have known for a long time that fish species, such as king mackerel, snapper and grouper, are diminishing, said Whitehead. And, despite regulatory and management efforts to protect fish stocks, they continue to shrink.

“Our hope is that better management techniques will be developed, and that some of these species, like mackerel, grouper and snapper, will make a come back,” he said. “In the meantime, we try to keep both the commercial and recreational groups happy, which is pretty tough. Both want all the fish, and as we know, the fishery resource is limited.”

As an economist, Whitehead’s goal is to balance the value of commercially caught fish with the value of recreationally caught fish.

“For example, dolphin fish, also known as mahimahi, are an important recreational and commercial species,” he said. “Though this species is not currently over fished, the South Atlantic Fishery Management Council is taking no chances.”

The council recently instituted new commercial and recreational regulations for the fish in Florida; a 20-inch minimum size limit. The regulation is designed to protect the stock of fish and commercial catch.

“As part of a Marine Fisheries Initiative project I’m involved with, I estimated a demand model for dolphin in Florida, and simulated the effects of the new size limit on anglers,” said Whitehead. “Preliminary research found that the impact on anglers is about $15 for each fish they have to throw back. While the total cost to recreational fishing might be in the millions of dollars, the benefit is a healthier and more sustainable stock of fish.”

The economics of climate change

Other topics on Whitehead’s research roster include natural hazards, hurricane evacuation, sports economics, outdoor recreation, wetlands and water quality. This past summer he was involved with a climate change study funded by the Bipartisan Policy Center, a think tank in Washington, D.C. The project examined the impact of a warmer planet on various parts of the country.

“My role was to look at the economic impact of climate change on recreational fishing and beach recreation in North Carolina,” he said. “The current estimates of erosion rates for the southern coast of North Carolina are two feet per year. According to these models, a 100-foot wide beach would be gone in 50 years.”

When asked if this model applies to the rest of the country’s coastline, Whitehead said, “Yes. We’re basically losing our beaches. And, the damage estimates of such a loss for North Carolina alone are extensive. My estimates of welfare costs for our fishing and beach recreation industries are between $6 and $17 billion.”

The bright note is we can save our beaches, according to Whitehead. “There are options, such as pumping in sand from the ocean or the mainland, or moving houses and buildings away from the beach. But, these are very expensive options,” he said.

Sobering data such as these point to the validity of Whitehead’s statement that environmental economists aren’t able to make everyone happy. But, if this information is critical to North Carolina’s future, then it is information that must be heeded.

John Whitehead can be reached at whiteheadjc@appstate.edu.

Family Colors, 2005. Latex paint and vinyl on museum walls, with paint colors derived from body parts, such as a toenail, stretch mark or mole. 10 by 22 by 10 feet. Image from Avampato Museum, Charleston, W.Va.


Family Colors, 2005. Folk art wishbone people, one of 130 objects purchased as “art” from eBay.

Items Matching [ART], 2000. One of 32 digitally printed images mounted on fiberglass. 18.5 by 6 inches. Each image was installed on streetlight poles throughout Delray Beach, Fla.

Illume, 2003. One of 32 digitally printed images mounted on fiberglass. 18.5 by 6 inches. Each image was installed on streetlight poles throughout Delray Beach, Fla.

Jody Servon:
conceptual artist

By Linda Coutant
For artist and curator Jody Servon, art is problem solving. She identifies an idea or issue, then figures out the best way – and most appropriate media – to share it with others. Her art might fill a room, or hang on streetlight poles. It might be photographs of relatives’ belongings, or merchandise purchased from eBay.

“I don’t think artists necessarily are working in one medium anymore,” says Servon, an assistant professor of art and director of Appalachian State University’s Catherine J. Smith Gallery.

“People are doing many different things. Just as there’s a mixing of cultures, I think it’s a lot more natural for people to make different kinds of work. This younger generation is using sound, and including video, photography, sculpture – it can all work together,” she said.

Servon, a recipient of two North Carolina Arts Council grants in 2006, is highly regarded for incorporating all these elements into what is known as installation art.

Her “Hanging On and Holding Out” project – which reflects her revelations following the death of her father – consisted of painted walls, projected video, sound, drawings, photographs and sculptures. It might be photographs of relatives’ belongings, or merchandise purchased from eBay.

“I think of installation art as like a painting or drawing in space. It doesn’t make sense for me to paint a chair if I can use a chair. For me it’s three-dimensional drawing,” she said.

“It’s a different way of working, because you really think about the floor, the ceiling, even the smell sometimes,” she said. “I think about the materials that make the most sense for my idea. I don’t limit myself, my work can be all over the place.”

For “Items Matching [ART],” she explored Americans’ inherently personal definition of art by filling a room with more than 130 items purchased online from eBay, all under $10. A New York Times review described the exhibit as “an absorbing slice of American life.”

In the public art project “Illume,” she solicited volunteers to photograph details of their daily life and work in Delray Beach, Fla. Their images were mounted on 18.5-by-6-inch fiberglass and displayed on 32 streetlight poles throughout the city.

In “Above and Below,” she created a 22 by 31 foot shadow of an airplane by placing grass carpet at the bottom of a hotel swimming pool that is in direct line with traffic from Palm Beach International Airport, thus “silencing” the disturbance under rippling water.

Servon is equally known as a curator, having organized numerous exhibitions focused on contemporary art. Exhibition reviews have appeared in ARTnews, South Florida Times, The Miami Herald, Neural Online and El Pais.

As a teacher, Servon enjoys encouraging Appalachian students to think creatively and to find just as unique ways to express themselves and their ideas.

“I want students to be creative thinkers and effective problem solvers, and to be culturally aware that you have the possibility to excite people with interesting ideas no matter what you do,” she said. “Art doesn’t always have to be in a museum. It can happen in all sorts of places.”

Jody Servon can be reached at servonjm@appstate.edu.
Researchers contribute to Boone Creek’s healthier future

By Kate Cahow

Through downtown Boone and Appalachian State University’s campus, a gentle creek winds its way past businesses and academic buildings. Boone Creek bears little resemblance to the idyllic stream in Robert Redford’s film “A River Runs Through It,” but it is a designated trout stream. And, many proponents

Bill Anderson, assistant professor in the Department of Geology
Carol Babyak of the Department of Chemistry with student assistant

in the area want to see it restored to a more natural condition.

“This is a designated trout stream right on campus that can, theoretically, be fished in trout season,” said Bill Anderson, an assistant professor in the Department of Geology who assembled a team of researchers to monitor and assess the creek’s condition. In Boone Creek’s current condition, it’s unlikely anyone would be caught fishing there. But, Anderson and his colleagues, Carol Babyak of the Department of Chemistry and Chris Thaxton of the Department of Physics and Astronomy, hope their findings will make a difference in the creek’s future.

“Part of our vision for the stream is to see it restored to a condition that can sustain naturally occurring habitats, like trout,” said Anderson. “Our goal is to provide data that can be used to correct what’s been done to the creek over the past 100 to 150 years.”

Since spring 2006, Anderson, Babyak and Thaxton have been collecting data on the creek to get a handle on its current condition. They recognize the value of the creek as a natural laboratory that just happens to flow directly through campus. They also recognize that what has been detrimental to the creek—its proximity to downtown Boone and the university—may ultimately be itssaving grace.

“One of Appalachian’s primary initiatives is to become the environmental school in the UNC system,” said Thaxton. “This type of directive resonates quite nicely with our work on the creek.

“We have the opportunity to become a leader in how communities treat their urban streams,” said Thaxton. “Of course, we’re not going to get the stream back to the condition it was in before Boone grew up. But, there are things that can be done to greatly improve the health of the creek.”

The creek’s path

Boone Creek, commonly referred to as Kraut Creek, is a high-grade or steep headwater stream in an urban environment. Its path through downtown Boone and Appalachian’s campus begins west of town, near the Cooperative Extension office. It flows east along Rivers Street, much of it underground, channeled and in pipes, and joins up with Hodges Creek and Winkler Creek near Wendy’s restaurant, eventually flowing into the South Fork of the New River.

Jana Carp, an assistant professor in the Department of Geography and Planning, has worked with students in some of her classes to design restoration and enhancement plans for the creek. Anecdotal information she and the students collected shows the creek got its nickname because of its proximity to a local sauerkraut packaging plant.

“Effluent from the factory was released into the creek, which made it smell like sauerkraut. Hence the name,” Carp said. “We also found a 1940 Sanborn fire insurance map that indicates insecticide storage near the creek. In general, the creek collects a lot of trash. It has not been used as an asset for the town.”

According to Anderson, there are more than 70 pipes along the creek used primarily to dump storm water runoff into the stream.

Carp believes the creek’s fate today has a more promising outlook, and one lots of people in the High Country support. Carp and her students’ efforts resulted in the formation of the Kraut Creek Committee, a group consisting of Appalachian administrators and faculty, local business owners and landowners, the Boone Area Chamber of Commerce, the Downtown Boone Development Association, Mountaineerkeepers, Cooperative Extension, The Boone Town Council, the National Committee for the New River, and the Town of Boone Public Works Department.

“All kinds of people are excited about the possibility of doing something good for the creek,” she said. “We (the Kraut Creek Committee members) now have a planning grant from the Clean Water Management Trust Fund to do a feasibility study addressing property stabilization along the creek, improving water quality, and beautification of the creek. We hope that the area will become a green corridor that would link the town and the university in a beautiful way.”

Gathering baseline data

The work by Anderson, Babyak and Thaxton add scientific data to the creek’s portrait. They’ve set up monitoring stations on the creek near the Cooperative Extension Office, at Jimmie Smith Park, and at Appalachian’s steam plant. Financial support from the university has purchased monitoring equipment and paid for one student per researcher to help with the monitoring, collection and analysis of data.

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“The primary reason for collecting this type of data is to understand the impact of external forces on the creek,” said Babyak, whose work as an environmental and analytical chemist focuses primarily on monitoring water quality.

“For example, there’s been talk of restoring the creek,” said Babyak. “But, how can we know what type of restoration design will work best if we don’t know what needs to be fixed? How will we know if the restoration is successful if we don’t have pre-restoration data to compare it to? By gathering baseline data we can acquire a picture of how the stream typically functions. This information will help us answer these and other questions.”

The research team has discovered that the creek is, in many ways, like other streams in a high-grade urban environment.

“Headwater streams in steep areas are flashy,” said Anderson. “This means that during rainfall events, water from the surrounding area flows into the creek to make it rise to a peak and then drop quickly, or in a flash, as the flood wave moves through.”

According to Anderson, Boone Creek’s flashiness is just one of a variety of stream dynamics for which he, Babyak and Thaxton are monitoring and collecting data. Others include stream temperature, turbidity (the murkiness of the water), levels of dissolved oxygen in the water, alkalinity, the presence of metals, and the stream’s rate of flow.

“By dynamics we mean understanding how various parameters vary over time. For example, how does the stream respond to a three-inch rainfall that occurs in two hours? How does the rising and falling of the water level affect the stream bank’s stability during a high-flow event? By understanding these and other dynamics we can offer advice on how to lessen impacts on the creek,” said Anderson.

Babyak and some of her students have been taking monthly samples to identify levels of alkalinity and the presence of chemicals and metals in the creek. They’ve found the creek’s levels for metals, such as iron and manganese, are below detection levels at most of the sites, said Babyak. But, the creek’s alkalinity level, or its ability to neutralize acid, is consistently at the low end of the normal range.

“This is part of the creek’s character,” she said. “It doesn’t have naturally occurring elements, like limestone or other minerals, to neutralize acids. And, though the creek is not currently impacted by acid, if something occurred to contaminate the creek with acid, it would have difficulty neutralizing the contamination.”

Stream temperatures, dissolved oxygen and turbidity levels are consistently near or beyond acceptable limits, which is of concern to the researchers primarily because of the creek’s designation as a trout stream. Trout require water that is relatively cool and infused with oxygen. Babyak, Anderson and Thaxton have found that the

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For Babuk, that common vision must incorporate a functional design that resonates with the ecological health of the creek, and one that ponders the meaning of a beautiful creek.

“The term beautiful when used with regard to a creek is relative, but that’s what we’re concerned with here,” she said. “To us, a creek like this, in a very urban environment, is beautiful when it functions ecologically.”

When asked to identify restoration methods that address this concept, the group offered up a list of options. For example, riparian buffers, or strips of native vegetation such as grasses, shrubs and trees adjacent to a stream, hold a stream’s bank in place, prevent erosion, and filter pollutants that flow into the stream during rain events. Wetlands and bio-retention ponds slow down storm water, which helps control the potential for flash flooding, filters chemicals, and allows sediment to settle out of the stream.

“It’s easy to speculate that incorporating these and other low-cost methods along the creek would improve the temperature and turbidity problems we’re seeing,” said Thaxton. “But, these methods can only help so much. We need to eliminate the outfall pipes along the creek, and stop treating the creek as a glorified storm drain.”

Finally, in looking at Boone Creek as a small part of the ecological whole, Anderson reflects upon the bigger picture of the group’s work.

“This is just one small stream, but it’s a headwater stream that eventually flows into the New River,” he said. “Every small stream has an effect downstream. We’d like to see Boone Creek become a model for the good that can be done to improve a small stream in an urban setting.”

To provide a central contact for research and project partnerships between the two organizations, Appalachian has appointed Nova Specht of the Department of History as liaison between the university and the Blue Ridge Parkway.

“The overall goal is to find mutual beneficial projects on which we can collaborate,” said Provost and Executive Vice Chancellor Stan Aeschliman. “We bring faculty expertise and students who are eager to work on such joint projects.

“Having another institution looking at the parkway from a different perspective will generate new ideas for us,” said Bambi Teague, the Blue Ridge Parkway’s chief of resource management and science. “Teague said the university’s application-oriented research will help the parkway with programs and activities that it wants to accomplish.

Specht recently taught a graduate class in public history that focused on the Moses Cone Estate, located along the parkway outside Blowing Rock, “The class had a different way of looking at the history of the house,” Specht said. As a result, the students created a notebook with information about Cone Manor, completed in 1901, and the wealthy textile family that lived there, for park rangers to use in their public programs. An interior design graduate student is creating renderings of how the estate’s rooms may have looked during that time period.

University partners with Blue Ridge Parkway

The proximity of the Blue Ridge Parkway to the Appalachian State University campus means it’s an easily accessible, sub” that offers many options to the faculty and student research. In the past, projects have been conducted by faculty in marketing, management, biology, anthropology, geography and planning, and history.

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Humanities ‘clusters’ spark interdisciplinary research

Writing Center Director Beth Carroll sees students with various types of learning disabilities and physical challenges struggle with their writing skills. As someone who teaches students to write as writing consultants and teachers, she wants to know how to best prepare them to respond to the required writing assignments innovative.

“The Humanities Research Clusters are an excellent opportunity to show what the humanities can contribute to many areas of the university, and I am grateful for that opportunity,” Hall added.

Carroll plans to publish some of what she’s learned in a journal, but more importantly, apply it to helping her students become better writing teachers. “I want to be able to help my students see that they may have students in their classes with a disability but who don’t look like someone with a disability. 1 wish to prepare them to feel confident that they can work with all students,” she said.

The Humanities Research Clusters will present their findings at an on-campus conference April 15.
His Teeth, 2006. Ultrachrome, 34 by 44 inches

Artist Jody Servon recalls that her grandfather’s dentures were a strange thing to receive in the mail. But, her aunt who sent them after cleaning out her late grandfather’s chest of drawers suspected that Servon could use them creatively some day.

This photograph appeared in her installation work “Hanging On and Holding Out,” a collection of images, sculptures, drawings and more that capture the parent/child/family relationship – what Servon describes as “the things you hang on to and the things that you let go of and the memories that you have.” (See story on page 7.)

Of this image, Servon says, “The mouth is something so personal. It’s the way to communicate, and what happens when you have the device left but not the person who surrounds it? It’s this larger than life presence.”