



STATE OF NORTH CAROLINA, DEPARTMENT  
OF ENVIRONMENT AND NATURAL RESOURCES  
William G. Ross, Jr. Secretary

Land Quality Section  
Division of Land Resources  
James D. Simons, Director and State Geologist

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## Consider endangered aquatic species in erosion and sedimentation control planning

by Kelly Porter

A number of mussels and fish are federally listed endangered species in North Carolina. These species are sensitive to excessive sedimentation that can negatively impact their habitats, reproduction, growth and survival. With the current measures that are already in place to control erosion and sedimentation control, it is necessary to learn about the habitats that may be affected by land-disturbing activities so that we may be better informed. The U.S. Fish & Wildlife Service (USFWS) oversees the terrestrial and freshwater animals and plants on the endangered and threatened species list. It is their goal to conserve and recover these species.

The federally listed endangered and threatened mussels in North Carolina include the Appalachian elktoe, Carolina heelsplitter, dwarf wedgemussel, littlewing pearlymussel, James spiny mussel, and the Tar spynymussel. The federally listed endangered and threatened fishes in North Carolina include the Cape Fear shiner, shortnose sturgeon, spotfin chub, and the Waccamaw silverside.

### How are endangered mussels and fish affected?

Freshwater mussels are filter feeders meaning they feed on suspended organic matter, detritus, bacteria, phytoplankton, zooplankton, and diatoms. Their filtering aids in water clarity which is beneficial for aquatic life. They need water clarity for their reproduction cycle that includes a larval stage in which they cling to the gills, fins or lips of a fish host. When

they reach the adult phase they burrow into the sediment on the stream floor. Accelerated erosion rates decrease water clarity, especially during storm events. The suspended sediment can scour habitat and can physically impact mussels and their fish hosts. Once the excessive sediment settles, it can smother adult and juvenile life stages, reduce feeding, reduce respiration from clogged gills, reduce growth rates, and limit burrowing activity.

Fish are vulnerable to excessive sedimentation in many of the same ways as mussels. Reduced water clarity can limit the ability of sight-seeing fish to find food. Sedimentation can clog interstitial spaces where many fish lay eggs. As a result, fish habitat is reduced especially in early life-stages.

Other concerns related to excessive sedimentation include change in channel form and position as well as increased bank and substrate instability, which decrease habitat quality for these species.

In addition to sedimentation, there are other stressors that affect these endangered species, such as habitat modification (e.g., dams, channelization, etc.), exotic species, pollutants such as chlorine and ammonia,

predation, and disease. Regardless of chemical and habitat alterations, by virtue of population size, they cannot respond to stressors as well as robust species.

### What is our role in endangered species protection as it relates to sedimentation and other stressors?

Tom Augspurger of the USFWS's Ecological Services field office in Raleigh, mentioned, "Sedimentation should concern environmental managers. While most large-scale earthmoving activities will result in some additional erosion, there is certainly expertise within the State to help manage it. Applying the best management techniques to waters is important for imperiled species and essential for their conservation."

■ Follow the erosion and sedimentation control regulations as stated in the NC Sedimentation Pollution Control Act of 1973 (NC General Statutes Chapter 113A Article 4), and implement BMPs to maintain and improve water quality.

■ Know what the endangered species are and where they are located. Contact the

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## April and May actions of the North Carolina Sedimentation Control Commission

At its meeting on April 6, 2004 (postponed from February 18, 2004), the N.C. Sedimentation Control Commission (SCC) took the following action:

- Approved a request from Pitt County to assume the delegation of the Town of Ayden Local Program.
- Approved Dare County's request to receive \$8,939.98 to assist with the start-up of a local erosion and sedimentation program for all unincorporated portions of the county.
- Disapproved the Town of Washington Park's request for \$3,920 to build seven groins to prevent erosion along their waterfront park based on the project not being applicable to the purpose of starting or enhancing a delegated sedimentation and erosion control program.
- Approved partial funding of the Town of Cary's request for \$82,295 to assist with the continued operation of their local erosion and sedimentation control program. The amount approved was \$10,526.47.
- Disapproved the Town of Holly Springs request for \$19,240 to assist with the continued operation of their local erosion and sedimentation control program. The SCC recommended the Town of Holly Springs reapply once the position is filled.
- Approved Macon County's request for \$400 to purchase a digital camera, GPS unit, and on-line accessible cell phones to assist with the continued operation of their local erosion and sedimentation control program.
- Approved partial funding of Pitt County's request for \$21,429.80 to assist with the continued operation of their local program. The amount approved was \$4,380. Dr. Greg Jennings commented that since the Town of Ayden program is being added to the Pitt County local program

the staff position could be considered a start-up. It was recommended that Pitt County may want to come back with another request.

- Approved a request to provide the *N.C. Sedimentation and Erosion Control Planning and Design Manual* in electronic format and make available on the LQS web site. Also approved converting manual to word processing format for editing based on lowest cost. Approved confirming the existing price of the manual at \$65 in-state and \$75 out of state.
- Approved LQS recommendation for continued delegation of the City of Raleigh local program.
- Approved LQS recommendation for continued delegation of the Wake County local program.
- Postponed taking probationary action on Jacksonville local program until the May SCC meeting.
- Approved appointment of a committee of Commission members authorized to propose amendments to Sedimentation Pollution Control Act and North Carolina Administrative Code. The committee will consist of Dr. Wendell Gilliam, Mr. Buzz Bryson, Dr. Joseph Rudek, and Mr. Roger Watson.
- Kyle Sonnenberg was appointed the Chairman of the commission.

At its meeting on May 19, 2004, the N.C. Sedimentation Control Commission (SCC) took the following action:

- Disapproved Pitt County's revised request for \$21,429.80 to add an additional staff person to its local erosion and sedimentation control program. Pitt County requested support for additional staff because it expanded its jurisdiction to cover the Town of Ayden and possibly other municipali-

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Send comments to Janet Paith, CPESC, NCDENR-Land Quality, 1612 Mail Service Center, Raleigh, NC 27699-1612. Email: Janet.Paith@ncmail.net. Send change of address and subscription information to WRRI, Box 7912, North Carolina State University, Raleigh, NC 27695-7912 (919/515-2815; water\_resources@ncsu.edu). Fifty-nine hundred copies of this newsletter were printed at a cost of \$1,433.80 or 24 cents per copy.

Personnel of the Land Quality Section of the N.C. Department of Environment and Natural Resources provide information and assistance for implementation of the N.C. Erosion and Sedimentation Control Program. For assistance, please contact the Regional Engineer or the Raleigh headquarters listed below:

H. Carson Fisher, P.E.  
2090 US Highway 70  
Swannanoa, NC 28778 (828) 296-4500

Gerald Lee, CPESC  
225 Green Street, Suite 714  
Fayetteville, NC 28301 (910) 486-1541

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Mooresville, NC 28115 (704) 663-1699

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512 N. Salisbury St., 1612 MSC  
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The North Carolina  
Sedimentation Control Commission

The Sedimentation Control Commission (SCC) was created to administer the Sedimentation Control Program pursuant to the N.C. Sedimentation Pollution Control Act of 1973 (SPCA). It is charged with adopting rules, setting standards, and providing guidance for implementation of the Act. The composition of the Commission is set by statute to encompass a broad range of perspectives and expertise in areas related to construction, industry, government, and natural resource conservation and quality. All members are appointed by the Governor and serve three-year terms, except for the Director of the Water Resources Research Institute of The University of North Carolina, who serves as long as he remains Director. The chairman of the SCC is named by the Governor.

Chairman:

Kyle Sonnenberg  
Southern Pines

Rep. Association of County Commissioners/  
N.C. League of Municipalities

Commissioners:

W. T. "Buzz" Bryson  
Cary  
Rep. N.C. Public Utilities

Hugh J. Franklin  
Marion  
Rep. N.C. Mining Com.

Phillip Ray Gibson  
Cullowhee  
Rep. Non-governmental Conservation

J. Wendell Gilliam  
Raleigh  
Rep. NCSU Dept. of Soil Science

Greg Jennings  
Raleigh  
Rep. N.C. Environmental Management Com.

Grover McPherson  
Winston-Salem  
Rep. N.C. Soil and Water Conservation Com.

Kenneth H. Reckhow  
Durham  
Director of Water Resources Research  
Institute of The University of North Carolina

Joseph Rudek  
Hillsborough  
Rep. Non-governmental Conservation

Ralph Stout  
Greensboro  
Rep. Carolinas Associated General Contractors

Mark A. Taylor  
Greensboro  
Rep. Professional Engineers of N.C.

F. Roger Watson  
Asheville  
Rep. N.C. Home Builders Association

## SCC *continued*

ties. The commission discussed changing the policy of supporting salaries of local program personnel. It was decided this would be discussed further at a Local Programs Committee meeting.

■ Approved putting the City of Jacksonville local program on probation for poor compliance with the Sedimentation Pollution Control Act of 1973.

■ Approved four workshops (two in the fall and two in the spring) to train erosion and sedimentation control design professionals. It was stated that the SCC and Land Quality Section sent a letter to NC State University requesting a waiver for indirect costs, as it is the policy of the SCC not to pay indirect cost.

■ Approved continuation of *Sediments* newsletter for the next fiscal year on recognition that the SCC and Land Quality Section sent a letter to NC State University requesting a waiver for indirect costs, as it is the policy of the SCC not to pay indirect cost.

■ Approved continuation of the Land Quality Section student intern position.

■ Approved continuation of the Muddy Water Essay contest for high school students.

■ Approved a Land Quality Section request to use \$4,400 for purchase of promotional materials.

**Note:** All approved local program and contract monies are subject to availability of appropriated funds.

## EPA Source Water Protection Grants

Funding of a local erosion and sedimentation control program is one of the allowable uses of Source Water Protection grants periodically available from the U.S. EPA for local governments that implement a program to protect their sources of drinking water.

To receive funding information, contact Sherry MacQueen, Source Water Protection Coordinator with Public Water Supply at [sherry.macqueen@ncmail.net](mailto:sherry.macqueen@ncmail.net).

## Endangered *continued*

North Carolina Natural Heritage Program in Raleigh at (919) 715-4195 or visit their web site at <http://ils.unc.edu/parkproject/nhp/index.html>.

■ Develop an appreciation for the aquatic environment. Learn more by visiting the USFWS web site: <http://www.fws.gov/>, visiting the USFWS Ecological Services in North Carolina web site at <http://nc-es.fws.gov/> or calling their offices at 919-856-4520 in Raleigh or at 828-258-3939 in Asheville.

■ Involve review agencies early in those projects which may require Endangered Species Act consultations (e.g., those that use federal funds or require federal authorizations/permits).

■ Call 1-866-STOPMUD (786-7683) to report possible violations of the North Carolina Sedimentation Pollution Control Act.

For more information see the following scientific journals and web sites:

Box, Jayne Brim and Joann Mossa. 1999. Sediment, land use, and freshwater mussels: prospects and problems. *J.N. Am. Benthol. Soc.* 18(1): 99-117.

Henley, W.F., M.A. Patterson, R.J. Neves, and A. Dennis Lemly. 2000. Effects of sedimentation and turbidity on lotic food webs: a concise review for natural resource managers. *Reviews in Fisheries Science* 8(2): 125-139.

Watters, G Thomas. 2000. Freshwater mussels and water quality: A review of the effects of hydrologic and instream habitat alterations. *Proceedings of the First Freshwater Mollusk Conservation Society Symposium*, 261-274.

USFWS Ecological Services in North Carolina: <http://nc-es.fws.gov/>

NC Sedimentation Pollution Control Act of 1973: <http://www.dlr.enr.state.nc.us/erospca.html>

## Order of the Long Leaf Pine awarded to Ralph Stout

Mr. Ralph Stout was presented with the Order of the Long Leaf Pine before the Sedimentation Control Commission (SCC) meeting on May 6, 2004, by Deputy Secretary of the Department of Environment and Natural Resources, Mr. Dempsey Benton. The award is among the most prestigious presented by the Governor of North Carolina.

Mr. Stout is president of Southern Seeding Service in Greensboro, NC, and currently serves as the representative of the Associated General Contractors on the SCC. He was originally appointed to the SCC in 1989 and was reappointed in 1996, each time serving multiple terms. He served as Commission Chairman from 1993 to 1996. During his tenure he served on the commission's education and



*Mr. Ralph Stout holds his plaque and is joined by (from left) Janet Paith, Sediment Education Specialist; Gray Hauser, State Sediment Specialist; Jim Simons, Director of Division of Land Resources; Mell Nevils, Chief of Land Quality Section; and Sonya Avant, Assistant State Sediment Specialist.*

technical subcommittees.

In the words of Mr. James D. Simons, Director of the Division of Land Resources:

“Because of his excellent personal reputation, his involvement and support bring tremendous credibility to the [Sedimentation Control] program. Mr. Stout’s devoted service to the citizens of North Carolina, over the years, through the State Sedimentation Control Program is most worthy of recognition.”

The Order of the Long Leaf Pine is given to outstanding North Carolinians who have a proven record of service to the state. Guidelines for consideration of candidates include contribution to their communities, extra effort in their careers, and many years of service to their organizations.

## 2004 Muddy Water Essay Contest Winners

by Janet Paith

On April 13, 2004, the regional winners of the 2004 Muddy Water Essay Contest met for the final state competition in Greensboro, NC. Each student came prepared to present their papers to three judges: Mr. Gray Hauser, State Sediment Specialist; Ms. Kim Bowen, DPI-English Consultant; and Dr. Eleanor Hasse, DPI-Science Consultant. After the final winners were chosen, twenty-six attended the awards luncheon at the Koury Convention Center. Mr. Mark Taylor of the Sedimentation Control Commission delivered a speech to encourage the students to continue their education on environmental issues and to be vocal about bringing positive changes to the environment. Mr. Mell Nevils, the Land Quality Section Chief, announced the winners:

■ First prize (see picture) went to Mr. Tyler Hinton, 10<sup>th</sup> grade, who

received \$1200. His teacher, Ms. Flo Gullickson, received \$1,000, and his school, Southwest Guilford High School, received \$800.



*Mr. Mark Taylor, SCC member, presents first place award to Mr. Tyler Hinton and Ms. Flo Gullickson.*

■ Second prize went to Mr. Quint David, 12<sup>th</sup> grade, who received \$600. His teacher, Mr. Mike King, received \$500, and his school, Ayden-Grifton High School, received \$400.

■ Third prize went to Mr. Andrew Otey, 11<sup>th</sup> grade, who received \$300. His teacher, Ms. Ramona Hedrick, received \$250, and his school, East Mecklenburg High School, received \$200.

The students learned a lot about erosion and sedimentation control, even the ones that did not win. Ms. Kim Bowen of the Department of Public Instruction stated, “The essays and presentations were all so good that it was difficult to choose among the contestants this year.” The outstanding work included creative demonstrations, costumes, handouts, and power point slides set to music.

*continued next page*

# Southeast International Erosion Control Association Conference well attended

by Janet Paith

What a multi-state venture! Did the attendees realize the resources, training, and information available to them? Rich McLaughlin, Chair of the SEIECA Board organized this wonderful event. His time, effort, and energy were well noted. Not only did participants see excellent presentations on the concurrent sessions of erosion and sedimentation control (E&SC) and stream restoration, but also there were interesting preconference workshops and a post conference tour.

Registrants attending the field tour had the opportunity to see the latest E&SC research implemented under active field conditions. The site was NCDOT I-485 Outer Loop construction. Viewers saw demonstrations using polyacrylimides in floc logs, filter bags, and sediment traps. Alternative sediment basin designs implementing baffles, skimmers, and forebays were being utilized too. At another stop, there was a large area dedicated to experimenting with various groundcover techniques from broadcasting to hydroseeding to compost mulching. All research activities ultimately culminated in the testing of nearby streams for influence to water quality conditions.

The conference brought together 291 participants and 34 vendors with various backgrounds in E&SC research from the states of Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee. The states benefitted from each other by showing their experience with E&SC practices and techniques. Listen to what other conference attendees had to say about the workshop:

“The ‘Sediment & Erosion Control Solutions for the Southeast’ held in Charlotte, NC March 17 - 19, 2004, was the best organized and presented meeting that I have attended. We had nationally recognized professionals in the erosion control field presenting outstanding sessions. Pre-conference workshops were held for several specialized topics. Also included was an excellent trade show displaying the latest erosion control products. The event was sold out with a waiting list of attendees. The information presented was outstanding! I was proud for North Carolina to be the host for such a great meeting.”

*Ralph Stout*

*Southern Seeding Service and NC SCC Member  
Greensboro, NC*

“The conference was a great opportunity to showcase our ‘BMP plants.’ The enthusiastic, dedicated audience was open to new technology for controlling erosion and sediment. I was able to sit down with researchers and educators and brainstorm solutions for the problems they were having getting vegetation established.”

*Ellen Colodney*

*Speaker and exhibitor; Coastal Plain Conservation Nursery  
Edenton, NC*

“I enjoyed the feedback from vendors who attended breakout sessions. They provided in-the-ground experiences to presenters of what E&SC

technologies worked from their experiences. As well as the vendors, the presenters were graciously readily available for sidebar consultation. What was very encouraging about the industry’s seminar was the level of self policing they are capable of because they recognize if you are in the industry to make a quick buck then you are potentially damaging to the overall efficacy of the ESC industry.”

*Sean Groom*

*Consultant, New Urban Stormwater Solutions  
Apex, NC*

Designers, inspectors, and educators got exposure to many modern erosion and sediment control products and techniques. Each new technology option can be carefully considered to fit certain site conditions. Education is key to the success of changing attitudes regarding land disturbing activities. North Carolina has such great expertise in the area of erosion and sedimentation control research. The ultimate mission is to overcome the impediments that hinder the implementation of old and new technologies for active protection of our land and water resources.

## Personnel Changes

**Leslie Childers** is the new Environmental Technician in the Fayetteville Regional Office.

**Allison Gresham** is the new Environmental Technician in the Washington Regional Office.

**Shawna Riddle** is the new Environmental Technician in the Asheville Regional Office.

**Maria Rogerson** is the new Assistant Regional Engineer in the Washington Regional Office.

**Cindy Safrit** has been promoted to the Assistant Regional Engineer in the Winston-Salem Regional Office.

**Eric Shook** is the new Environmental Technician in the Washington Regional Office.

## Muddy Water *continued*

This year there was a record high submission of 442 papers from students across the state. One hundred one papers were submitted to the Land Quality Section Regional Judges: Mr. Gerald Lee of the Fayetteville Regional Office, Mr. Jason Watkins of the Winston-Salem Regional Office, Ms. Janet Russell of the Wilmington Regional Office, Mr. Mike Goodson of the Asheville Regional Office, Mr. John Holley of the Raleigh Regional Office, Mr. Ricky Peed of the Washington Regional Office, and Mr. Doug Miller of the Mooresville Regional Office. Thanks to all who assisted in this task. Mr. Ryan Lewis, Ms. Stephanie Lane, and Ms. Sonya Avant offered great support from the Raleigh Central Office. Again, thank you for making this event a success and congratulations to all the winners!

## Sediments Subscription Update and Email Listserve Information

Please review your address as it appears on the back page of this newsletter. If you wish to have your name removed from our mailing list, or if your address needs to be corrected, please email us at [water\\_resources@ncsu.edu](mailto:water_resources@ncsu.edu), mail us, or call us at 919-515-2815 with ALL the information on the address label including the name, address, and label number and let us know of the needed changes.

Please return changes promptly so they can be made prior to our next mailing. If we do not hear from you, we will assume your address is correct as shown on the label.

### Mailing Address:

Water Resources Research Institute  
of The University of North Carolina  
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Raleigh, NC 27695-7912

### SEDIMENTS Listserve:

Beginning with the July-September issue we will offer *Sediments* electronically via a listserv. If you would like to discontinue your hardcopy subscription and would prefer to receive it electronically, please send an email request to [kelly\\_porter@ncsu.edu](mailto:kelly_porter@ncsu.edu) or [water\\_resources@ncsu.edu](mailto:water_resources@ncsu.edu) with your name, all the information on your *Sediments* mailing label, and email address.

## Erosion and Sedimentation Control Basic Planning and Design Workshop

October 5-6, 2004  
Holiday Inn-Select  
Hickory, NC

November 9-10, 2004  
Sheraton Inn  
New Bern, NC

These workshops are structured to acquaint design professionals with the N.C. Sedimentation Pollution Control act, the rules implementing the act, and design standards for erosion and sedimentation control BMPs. The tentative agenda includes presentations on calculating flow, selecting erosion control matting, innovative sedimentation basins, energy dissipator design, utility lines installation, establishing vegetation, and construction of BMPs.

Professional engineers and land surveyors can earn 12 PDHs, and landscape architects can earn 10 continuing education units for completion of both days. An agenda will be posted in late June with registration information coming in late July at: <http://www.ncsu.edu/wrri/erosionseminars.html>

Sponsored by the N.C. Sedimentation Control Commission, the N.C. Land Quality Section, and the Water Resources Research Institute.

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