

Geology at Western Newsletter

DEPARTMENT OF GEOSCIENCES & NATURAL RESOURCES
331 STILLWELL BUILDING

Welcoming Note from Department Head, Mark Lord

Greetings. It's been five years since the last geology alumni newsletter was distributed, so this is long overdue. A newly renovated building, a new faculty, and a new program highlight the department. Where do we begin?

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Campus Construction

If you have not been to WCU recently – the campus physical plant has changed significantly. The campus is awash with new construction; there are new buildings, renovated buildings, and buildings in process of renovation. The main road through campus has also changed. Similarly, enrollment has grown rapidly and nearly 9000 students are in classes.

Stillwell Building has been renovated and the new digs are spectacular. The main entrance (image be-

low) is now a level walk from the parking area to an entrance foyer without going down that old set of stairs to the ground floor first. The Geosciences and Natural Resources Department is located adjacent to the entrance foyer. Our fourteen faculty plus one administrative assistant occupy much of the third floor of the building. There are offices and teaching and research labs on this floor. The remainder of our space is on the 1st (the old ground) floor where other offices and labs are located. In the renovation our useable space has nearly doubled. As part of the renovation, the University has also contributed funds for new and outdated equipment plus a new geochemistry teaching lab. More importantly, this will be the first time in many years that all faculty are located in the same building and on the same floor.



Front entrance to Stillwell Building and renovated wing.

Geology Faculty

The number of geology faculty is at an all time high – nine of the fourteen persons mentioned above. Five geologists have been here four years or less. Let's introduce or perhaps reacquaint you with the staff (see group photo).

Jerry Miller, Whitmire
Professor in Environmental
Sciences, Fluvial
Geomorphologist
(jmiller@email.wcu.edu)

On the research front, ongoing analysis seem to be growing exponentially - colleagues, students, and I have five separate projects underway ranging from the transport and source identification of heavy metal contaminants in Bolivia, to an analysis of sediment and nutrient loadings to the Great Barrier Reef in Australia, to an evaluation of stream restoration projects in North Carolina. Dr. Lord and I also began a new three-year project this summer with the USDA Forest Service in central Nevada to look at the hydrologic and geomorphic connectivity of process zones (stream reaches of homogenous character) to enhance the management and rehabilitation of aquatic habitats. This makes our 13th year of research in the Great Basin, during which many of you participated. This past fall Dr Kinner, Dr. Lord and I are team teaching Geomorphology – the first time I have been involved in the course since coming to WCU. In other related news, Western formally created an **Institute for Watershed Research and Management** in September which will be housed in the Department. I am very excited about the possible benefits that the



Geology faculty: (back row, from left) Ben Tanner, Jerry Miller, Susan Barbour Wood, Blair Torney, Cheryl Waters-Torney; (front row, from left) Dave Kinner, Mark Lord, Steve Yurkovich (not pictured: Rob Young).

Institute may bring to our program, particularly the creation of internships and other opportunities for our students in all areas of Watershed Science. The new Institute really highlights our continuing growth in the area of water and environmental resource management.

Rob Young, Professor and
Director, Program for the
Study of Developed Shorelines
(PSDS), Coastal Processes
(ryoung@email.wcu.edu)

PSDS moved from Duke University to WCU where I assumed the position of Director in 2006. I continue to teach a course a year for the department. Please visit the PSDS web site at <http://psds.wcu.edu/> to see all that our Program is doing.

Steve Yurkovich, Professor,
Mineralogy/Petrology
(yurkovich@email.wcu.edu)

As the senior member of the department I have seen many changes on-campus. The new building is impressive and I am delighted to be working with a fine cadre of faculty who have truly energized the pro-

gram. I continue to do research on the evolution and emplacement of mafic and ultramafic rocks in the Appalachians and spend a bit of time working with K-12 school teachers. Currently, I'm engaged in a project designed to improve science education in the middle schools in Buncombe and Yancey Counties. Drop by and visit when you're in the area.

Mark Lord, Associate
Professor and Department
Head, Hydrogeologist
(mlord@email.wcu.edu)

This has definitely been an exciting time in the geology program as we have seen growth in our majors, faculty, and building facilities. While things have changed, we remain committed to trying to provide valuable opportunities for students to actually DO geology—through special seminars, field trips, internships, and research projects. As for me, my main teaching responsibilities are related to hydrology, geomorphology, and soils. My active research areas, all collaborative with other faculty and students, include monitoring water quality in the Waynesville watershed, studying

(...Mark Lord, *continued*)

the hydrologic and geomorphic settings of alpine riparian meadows in central Nevada (both projects with Jerry Miller), and topics in geoscience education and glacial melt-water processes. My family is doing well and continues to reap the benefits of living in the mountains. For those of you who know my kids, they are growing up quickly—both in college and both biology majors. Please keep in touch and stop by to visit!

Cheryl Waters-Tormey,
**Assistant Professor, Structure/
Tectonics**
(cherylwt@email.wcu.edu)

My research interests fall into three categories, all of which start with geologic mapping and include: how lithological differences affect the way "hot" parts of deep fault zones work, Appalachian and Australian tectonic history, and the contribution of bedrock structures to slope instability in western North Carolina. Over the past three years, seven WCU undergraduates have worked with me on projects both in Australia and in the WCU region. I'm enjoying the broad range of structural geology, and look forward to continuing collaborations with WCU faculty and our majors.

**Ben Tanner, Assistant
Professor, Stable Isotope
Geochemist**
(btanner@email.wcu.edu)

I have three active research projects. Evan Allen (senior) worked with me in Maine this summer on finding a fingerprint for salt panne deposits (pools in marshes) in relict salt marsh sediments. Some have hypothesized that these salt marshes may be drowning from the "inside out" due to sea level rise and we are trying to look at the past abundance

of these pannes in the marshes. Evan is doing a senior thesis on this Maine Sea Grant-funded project. Heather Gregory (senior) participated in fieldwork with me this summer at the Baruch Marine Field Laboratory in Georgetown, SC. I have a Visiting Scientist Award from the lab (sponsored by the University of South Carolina) to study rates of carbon sequestration in different inter-tidal wetlands in the area. We continue to have many students working on the Rivercane Restoration Project that is being funded by the Cherokee Preservation Foundation.

**David Kinner, Assistant
Professor, Hillslope
Hydrologist**
(dkinner@email.wcu.edu)

I joined the WCU geology faculty in 2006 after a post-doctoral stint with the USGS Geologic Hazards Team in Golden, Colorado. I teach a series of hydrology and geomorphology related classes. I am excited about integrating undergraduate students into my research projects which include looking at flood and debris flow hazards of burned basins, the impact of rivercane on nutrient cycling and infiltration in riparian zones, and examining runoff generating processes in our changing Southern Appalachian landscape. My family and I are enjoying the pace of life in the mountains and all of its recreational opportunities.

Susan Barbour Wood,
**Assistant Professor,
Stratigraphy/Paleobiology**
(susanwood@email.wcu.edu)

I am very excited to be joining the Department of Geosciences and Natural Resources this year. My research expertise is in sedimentary environmental interpretation, invertebrate paleobiology and paleoecology. I am particularly interested in how changes in depositional environment and climate over time drive diversity and affect population ecology on the sea floor. My previous and ongoing research has spanned geologic time from the effects of storm processes and sedimentation on faunal distribution within a shallow Ordovician carbonate shelf to an analysis of sea level and substrate controls on molluscan diversity within a sandy-bottomed marine embayment from the Miocene to the Pliocene.

**Blair Tormey, Lecturer,
Stratigraphy**
(btormey@email.wcu.edu)

While I have interests in petroleum, coal, and clastics, my primary focus is on carbonate stratigraphy and paleoclimate. My current projects investigate the climate of the last interglacial as recorded in Pleistocene limestones of the Bahamas. Two of our recent graduates completed their senior theses on San Salvador last spring: Laura Duncan focused on dune deposition and storm deposits while Ryan LeBlanc focused on facies stacking patterns and sea-level history. Both presented their results at SEGSA in April. Additionally, several faculty ran a successful summer travel course to San Salvador in May 2006, and we hope to return this year. My primary duty at WCU is teaching Environmental Geology for the Liberal Studies Program.

**The Cherokee Rivercane
Project has become an
important collaborative
research venture supporting
many of our students.**



Students investigate an outcrop of the Corbin Sandstone at Natural Bridge State Park, KY to study ancient sandstones on a recent class field trip.

Anna Mathis, Administrative Assistant (amathis@email.wcu.edu)

I was born in Eastern North Carolina and moved to Sylva the summer before high school. I graduated from Smoky Mountain High School in 1998 and enrolled that fall at Western Carolina University. Four years later I graduated with a major in Communications and a concentration in Public Relations. I wanted to stay in the area and was fortunate enough to find a wonderful job at the Jackson County Family Resource Center where I organized parent education classes and did most of the advertising for the center. I stayed at the Resource Center for about 3 years. My first few months in the Department of Geosciences and Natural Resources have been a wonderful experience and I am glad to give back to the college that did so much for me.

Yes, We Need Your Help!

As the numbers of faculty and students have increased, we realize a need to seek assistance from those of you who have graduated from Western. We value your input and know that you can help us make sure our students get a great education. We have three ways for you to help. Please Email any information asked for below to Anna Mathis (amathis@email.wcu.edu) or Steve Yurkovich (yurkovich@wcu.edu). If you would prefer, you can paper mail the information to Steve Yurkovich, Geology Alumni Coord., Dept. of Geosciences and Natural Resources, Western Carolina University, Cullowhee, NC 28723.

1. Your Contact and Status Information:

Please send your name, current mailing address, email address, phone number, and employment status so that we can update our alumni database.

2. Your time:

In the future, we hope to better use our alumni (you) to help our current students and help guide our program. Let us know in which of these areas you may be interested in serving.

- Do you work for a company or agency that takes on geology interns or co-op students during the summer? If you do, let us know how we may tap into that.
- Are you interested in participating in an alumni network to serve as mentors to students seeking employment? Or come to campus to give a seminar?
- Are you interested in contacting prospective students to help recruit them to the Geology Program at Western?
- Would you be interested in serving on an alumni board that would meet once or twice a year to help guide our program?

Do you come back for Homecom-

ing? If so are you interested in participating in a geology alumni social during that weekend?

3. Your Money (you knew this was coming!):

Our day to day operations are covered by the University and by the external grants the Geology faculty obtain, but we could greatly use funds to support **scholarships** and **special student opportunities**. We would appreciate any contribution—small or big—to either the new Steve and Valerie Yurkovich Scholarship, or by earmarking funds to the Geology Program through Western Carolina University's Capital Campaign (see pg. 6).



Student Activities and Curriculum

We currently have over 30 majors in the BS and BSED-Secondary Science, Earth Science programs and graduate an average of seven persons per year.

Nearly a decade ago the curriculum for the BS program was redesigned to include three concentrations: Solid Earth, Environmental Hydrology, and Interdisciplinary Studies. At that time we implemented the

teacher-scholar model (engaging students in a wide variety of research opportunities both in- and out- of classes) that we view fundamental in our approach to educate and serve students. Beginning with freshmen level courses students join in a series of independent projects, simple at first then more complex as their experiences in geology increase. In addition, majors are required to complete a Capstone Course (research project) their senior year and present their findings at a departmental seminar. In the past five years, nearly 80% of our majors have also participated in extracur-

ricular research with faculty and 27 of 34 geology graduates have coauthored at least one paper/poster at a professional meeting. And, as you might guess, this research experience helps majors obtain employment and entrance to graduate schools more readily.

The titles of a selected subset of GSA abstracts our students have presented in the recent past are listed below—student names are underlined and bold. Check them out—they have been all over the globe!

Allison, J. Bryan II, Beshers, Kurtis, Bochiccio, Chris, Dilbeck, Ronald, Hutson, Tom, and Lord, Mark, 2002, Analysis of lake sediments resulting from a partial dam failure located in western North Carolina, Geological Society of America Abstracts with Programs, v. 34.

Doughty, D., Loehn, C., Allison, B., Newby, J., REU Program, 2001, Ryan, J., Peterson, V., Yurkovich, S., Burr, J., and Kruse, S., 2002, Field and geochemical comparison of the Webster-Addie and Balsam Gap ultramafic bodies, Eastern North Carolina Blue Ridge, Geol. Soc. Amer. Abstr. with Programs, SE-NC Section Meeting.

Duncan, L., LeBlanc, R, and Tormey, B., (2007) Evidence of Climate Change During the Last Interglacial from Eolian and Nearshore Carbonates: San Salvador Island, Bahamas; GSA Abstracts with Programs, Vol. 39. No. 2.

Griffith, A., Kinner, D., **McDowell, K.,** Tanner, B., and Young, R., 2007, Soil characterization for rivercane (*Arundinaria Gigantea* (Walter Muhl.)) restoration in Western North Carolina [abs]:

GSA Abstracts with Programs, v. 39, no. 6, p. 243.

Jackson, B., Means, C., Morgan, V., Perkinson, P., Sheehan, T., Tennant, C., and Lord, M.L., 2006, Analysis and development of a monitoring proposal for the potential removal of a low-head dam: a case study of the Dillsboro Dam, western North Carolina: Geological Society of America Abstracts with Programs Vol. 38.

McDowell, K. L., Griffith, A. D., Kinner, D. A., Tanner, B. R., and Young, R. S., 2006 *Arundinaria Gigantea* in Western, NC: A step towards the identification of ideal environmental conditions, GSA Abstracts with Programs, 39(2), p. 29.

Primm, S., Shannon, R, Akers, S., **Brunisma, C.,** REU Program, 2001, Kruse, S., Yurkovich, S., Ryan, J., Peterson, V., and Burr, J., 2002, Geophysical Imaging of Ultramafic and mafic rock bodies within gneissic metasedimentary country rock, Western North Carolina, Geol. Soc. Amer. Abstr. with Programs, SE-NC Section Meeting.

Tennant, C., Morgan, V., Means, C., Lord, M.L., Jewett, D.G., and GBEMP Research Group, 2006, Hydrogeologic setting and characteristics of riparian meadow complexes in the mountains of central Nevada: a case study: Geological Society of America Abstracts with Programs Vol. 38.

Young, R.S., **Means, C., Turchy, M. A.,** and Fradkin, S. (2005) Systematic, inexpensive coastal monitoring in Olympic National Park: Meeting resource management goals. GSA Abstracts with Programs, 37:7:489.

Waters-Tormey, C., **Wepasnick, K.,** 2007, Strain marker shape preferred orientation across a strain gradient in a granulite facies normal shear zone, Mt. Hay block, central Australia, Geological Society of America Abstracts with Programs 39, p. 232.

Watrous, K., and Waters-Tormey, C., 2006, Meadow Fork and Rector Branch mylonite zones, southwest of the Hot Springs window, western NC, Geological Society of America Abstracts with Programs 38, p. 75.

New Earth Sciences Scholarship is announced

The Steve and Valerie Yurkovich Scholarship Fund has just been set-up within the Western Carolina University Foundation by Steve Yurkovich.

The earnings from this endowment will provide annual support for deserving WCU earth sciences students. This scholarship is the first-ever dedicated solely to earth sciences majors. Steve has been at Western since 1971. His wife, Valerie, received her MAED in Science Education from WCU and was a science teacher in the Jackson County school system. Together, they shared a passion for the study of the earth sciences and through

this scholarship fund wish to share their enthusiasm with deserving and promising students. This endowment is given, in part, in Valerie's memory. The purpose of this Fund will be to provide financial support for deserving earth sciences students. Preference shall be given to junior or senior students with declared majors in either Geology or Science Education with a concentration in Earth Sciences. The first scholarships will be awarded for the 2008-2009 academic year. The first recipient of the Steve and Valerie Yurkovich Scholarship is Amy Kunst. Amy is shown here (see image, right) in the mountains of central Nevada where she was a field research assistant to ongoing studies to understand the geologic and hydrologic setting of riparian meadows in the mountains of the central Great Basin.



Special Programs Fund

You are likely aware of Western's ongoing capital campaign. If you identify contributions to this campaign to the Geology Program, we will use them to support special student opportunities (e.g., research, attending conferences, special field trips, speakers). [Earmark funds to the Geology Program through Western Carolina University's Capital Campaign](#)

Alumni Notes

Bryan Allison ('02) completed his MS in Soil Sciences at Texas A&M University and moved to the state of Washington where he is employed by Ecological Land Services, Inc. He and Lynne live in Silverlake, WA.

Chris Bochicchio ('04) is finishing his MS degree at the University of Hawaii.

Nick Bozdog ('04) works as a GIS Specialist for the NC Geological Survey, NCDENR in the Oteen, NC office.

Ellen Frazer Cornette ('88) continues her business Applied Resource Management Waterworks with her husband Jim (also a geologist) in Hampstead, NC.

Laura Duncan ('07) is enrolled in the Master of Arts in Teaching program at WCU.

Luke Garland ('04) dropped by for a visit a few weeks ago. He lives in Macon, GA and works for Southern Company, one of America's largest generators of electricity.

Erin Greene ('03) moved to Jacksonville, Florida, and took a position with Environmental Services, Inc. She works in the Site Assessment and Remediation Department, under a P.G., and is involved with Phase I Environmental Site Assessments.

Chris Hanley ('03) obtained a job in Cary, NC as an Environmental Geologist for a consulting company,

Agra Environmental, Inc. He works with leaking USTs and contaminated soil and groundwater.

Thomas Hedrick ('00) has changed jobs and is now employed by JBR Environmental Consultants in Salt Lake City, UT.

Stephanie Hennessee ('02) completed her MAT at Western and is now teaching in the Henderson County School system. She is living in Arden, NC.

Dave Doughty ('02) finished his MS at UNC-Wilmington and accepted a position with Coastal Engineering Consultants. He and his wife **Melissa Gardner Doughty** ('02) were moving to Baton Rouge, LA.

...Alumni Notes, continued

Rufus C. McLean, Jr ('77) writes "I am pastor of a small Presbyterian church here in Greenville. I am also working on my Doctorate program."

Ben Jackson ('06) is in the MS program at the University of California, Berkeley.

Reed Johnson ('03) sent a note saying that he had finished his MS degree at West Virginia University in December of '06 and is now working in Denver with EnCana Oil and Gas as a geologist. His thesis dealt with thrust faults and fractures exposed at two outcrops in West Virginia and then modeling those features in the subsurface Mississippian Price Formation.

Ryan Leblanc ('07) is employed by Alpha Environmental in Asheville, NC.

Katie McDowell ('07) has matriculated to East Carolina University

where she is working on her master's degree.

Chris Means ('05) is our most recent graduate hired by Environmental Resources Management in Charlotte. He joins other WCU alumni at ERM.

Vince Morgan ('06) is in the geology graduate program at the West Virginia University in Morgantown, WV.

Marc Pruett ('74) continues as the Sedimentation Control Officer in Haywood County. In his free time Marc is a Grammy Award winning banjo picker and is part of the Bluegrass Band, Balsam Range. You can hear and see the band at the Fiddlin Pig Restaurant in Asheville, NC.

Randy Sipe, ('81) recently accepted a position as Hydrogeologist, Division of Water Quality, Groundwater Section, NCDENR, in Washington, NC

Thomas Slusser ('97) works as an

Environmental Specialist, Division of Water Quality, Aquifer Protection Section, NCDENR, in Raleigh, NC.

Chris Tennant ('07) has been hired as a Research Assistant for Jerry Miller at WCU. Chris is in process of looking to enroll in a MS program for next fall.

Michael Turchy, ('01) is an Environmental Supervisor, North Carolina Department of Transportation, Natural Environment Unit and lives and works in Raleigh.

Is your name missing from this list? Please send us an update!



Katie McDowell ('07), Smoky Mountains Field Trip

Where has my professor gone?

We often get asked about faculty who are no longer at WCU and the following is a short list regarding those individuals.

Retired Faculty

Mark Smith lives in Sylva.

Arden Horstman resides in Cullowhee.

Tom Wilcox lives in Tuckasegee.

Former Faculty

Erik Caldwell returned to graduate school and completed a Masters Degree in Teaching at Edinboro University and is currently teaching earth sciences in high school in NW Pennsylvania. His wife Karen is on the faculty at Edinboro University.

Bruce Idleman is Senior Research Scientist in the Department of Earth and Environmental Sciences, Lehigh University, in Bethlehem, PA.

Jim Reynolds is an Associate Professor at Brevard College in Brevard, NC.

Ginny Peterson, is an Associate Professor in the Geology Department at Grand Valley State University in Allendale, MI, her Alma Mater. Her husband Jon Burr is teaching part-time at GVSU and at a community college.

In Memory

John J. Chapman, the founding Head of the Earth Sciences Department, is deceased.



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Larry Kolenbrander to Retire

Larry Kolenbrander has announced that he will be retiring from Western this summer. In 1985, Larry was hired as the founding Director of the Natural Resources Management Program. Larry assumed the role as Head of the both the Departments of Geosciences and Natural Resources Management in 1996 and has been pivotal in developing and expanding the missions of both programs. He has helped increase the faculty from nine to fourteen, led the team that redesigned the renovations to Stillwell, and been an advocate for initiatives coming from the faculty and students. His evenhandedness in handling all administrative matters from daily operations of the department to personnel decisions will be missed.

Larry and his wife Nancy (who is also retiring from Hunter Library) will remain in Cullowhee where they will enjoy the streams, mountains, lakes, and their own back yard. They also plan to travel. A farewell reception for Larry Kolenbrander was held April 25th in the Stillwell atrium.

