

Kentucky Cross Section

Earth Resources—Our Common Wealth

Summer 2011

KGS employee Jonathan McIntyre dies in campus accident

The KGS family lost one of its members on the morning of Thursday, June 23, when Jonathan McIntyre died in an accidental fall in the parking garage next to the Survey's building on the University of Kentucky campus. Jonathan had worked for KGS since November 2005 in the Geologic Hazards Section, and earned a reputation for quiet professionalism, dedication to his work and family, and friendliness. He managed the instruments of the statewide Kentucky Seismic and Strong-Motion Network. He had been heavily involved in the addition of the Central U.S. Seismic Observatory in western Kentucky to the network. The array of instruments placed in the deep borehole became fully operational earlier this year.

Jonathan, who was 36, was a native of Hazard, Ky. He is survived by his parents, Jerry and Karen McIntyre, as well as his wife, Sherri Profit McIntyre, and their twin 4-year-old sons, Andrew and Austin.

"As his supervisor, I am the one who worked with Jonathan the most closely at KGS," says Zhenming Wang, head of the Geologic Hazards Section. "This tragedy hits us hard, particularly me. All I could say about him is that he was a good and hardworking person, and he loved his family."

"He was instrumental in helping me collect seismic-reflection data in the New Madrid Seismic Zone for my dissertation," says Ed Woolery of KGS and the UK Department of Earth and Environmental Sciences. The two collaborated on a couple of research projects, including CUSSO. "Both projects, but the CUSSO in particular, will serve as lasting contributions to central United States seismology," Woolery says. "He took on these technically challenging projects with his trademark megawatt smile and easy manner. Jonathan was a diligent student, trusted colleague, respected professional, but most important, very good friend. He is and will be missed."

Jonathan also set up earthquake displays and demonstrations for the annual KGS open house during Earth Science Week, explaining to students how the seismic network operates and how earthquake motions can affect structures.

He earned both bachelor's and master's degrees in geological sciences at the University of Kentucky before going to work for Fuller, Mossbarger, Scott, and May Engineers in June 1999, where he did geotechnical and geophysical investigations and related



Jonathan McIntyre checked the operation of older seismic recording instruments in the Geologic Hazards Section.

—Continued on p. 3

Replicas created of ancient shark jawbone discovered in western Kentucky

With the help of experts in fossil replication from Wright State University, casts of a large jawbone of an ancient shark found in a western Kentucky coal mine were made in early June. Dr. Chuck Ciampaglio and Mike Taylor of Wright State's Earth and Environmental Sciences Department spent a couple of days in a basement workroom at KGS creating the molds for replicas of both the western Kentucky fossil and several

others owned by the University of Kentucky Department of Earth and Environmental Sciences.

"We created a box to have the mold sit in, then laid a bed of molding rubber down on the bottom of the box," says Ciampaglio. One side of each fossil was painted with the molding rubber, known as Dragon Skin, and placed on top of the hardened bed. "We then filled the box up with the remaining molding rubber and allowed

that to cure." After a couple of hours, a slit was cut in the top of the white rubbery mold so the fossil could be pulled out.

To create the replicas, a two-part casting material was mixed and poured into the mold, and plywood sheets were clamped to each side while the cast cured and hardened. The result was a nearly perfect replica of the original fossil, which could be pulled from the mold. Ciampaglio

—Continued on p. 4

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It's not always about the geology

Readers of this newsletter and other publications of the Kentucky Geological Survey are accustomed to learning about “the mineral, energy, and water resources, geologic hazards, and geology of Kentucky,” as our mission statement says. Most of the time, when you open a copy of one of our publications, you are looking for something that interests you about our staff’s research efforts, or you want to find data or publications that may help you in your professional work or personal interests. That, after all, is why this geological survey exists and what our staff’s work is about.

But when something else happens with a staff member—something unexpected and tragic—our consciousness shifts into a different mode completely. Once again, we sadly bring our readers the news of the death of one of our active staff in this edition of *Kentucky Cross Section*. Many in the Lexington region have already heard the news of the loss of Jonathan McIntyre in June and may have read a tribute to him in a sports column of the *Lexington Herald-Leader*.

For readers of newspapers and newsletters, such stories are, of course, sad news. For the KGS staff, it was also a shocking occurrence, not only because it affected someone we knew and worked with, but also because it happened so

close to our workplace and Jonathan’s. The place that we come to every weekday morning, a place typically busy with people doing their jobs, suddenly sinks into near silence when the word spreads and the staff is called together to confirm the awful news. Eyes usually focused on papers, computer screens, or rock samples stare blankly or fill with tears, and faces turn somber.

Suddenly, it’s not about the geology. The loss of a co-worker reminds us of the connections between us that human beings so often take for granted. Regrettably, the KGS family (a term that has again taken on a different meaning) has experienced these losses five times in the past six years.

KGS promotes the strength of its service to the people of Kentucky through its research, publications, and outreach. But any organization relies on another kind of strength—the talents and work of its staff—a facet of the organization that its customers and clients don’t routinely come in contact with. And the interdependence of those who make up an organization—not simply as co-workers, but as people—becomes clearer to us when we share our grief at a time of such loss.

Difficult and confusing as these losses have been, they portray the positive story of who we at KGS and people



Mike Lynch

in every professional organization truly are. Not simply geologists, hydrologists, section heads, or other position titles, but human beings connected by frail threads. We easily forget those threads until they break.

Incidentally, a college fund has been set up for Jonathan McIntyre’s two young sons. Donations can be made at any time to this address:

Investment & Financial Strategies Inc.
Attn: David Short
1795 Alysheba Way, Suite 7104
Lexington, KY 40509

Make the check payable to Collegeamerica, with this reference in the memo line: 529 Plan McIntyre. ❖

Jonathan McIntyre—continued from p. 1

work. While at FMSM, he worked for a couple of years with Brook Brosi, who is now with the U.S. Army Corps of Engineers.

“What stood out for me was Jonathan’s quiet professionalism. He never complained, and he always did his best,” Brosi says, “A couple months before Jonathan’s death, I caught a ride with him up from Lexington to the spring Association of Environmental and Engineering Geologists section meeting at Northern Kentucky University. Jonathan was friendly as always and we told old stories of working together and caught up on new events in our lives. I will miss him.”

Jonathan served as secretary-treasurer for the AEG Ohio River Valley section, a job Brosi calls “an unglamorous position that requires keeping up with the section bank account and section meeting minutes.” Jonathan was also a member of the Governance Committee for the national AEG organization.

Jonathan was a fan of University of Kentucky Wildcat sports, and within a week of his death, *Lexington Herald-Leader* sports columnist John Clay wrote a column on the front page of the newspaper’s sports section about the reaction of people who knew Jonathan from online sports message boards and other Internet services. Typical of the comments about Jonathan was this anecdote in Clay’s column: “Mark Ennis and Jonathan McIntyre were on opposite ends of the fan spectrum—Ennis a Louisville backer, McIntyre a Kentucky fan—but @Mengus22 and @mac4uk developed an online friendship that extended outside of sports. ‘He was always cordial and kind enough to ask if I was OK during some of the extreme weather we’ve had over the past few months,’ said Ennis. In fact, the final tweet on McIntyre’s Twitter account is from last Wednesday—the night tornadoes touched down in Louisville—and

directed to Ennis, saying, ‘good to see you are ok.’”

Meg Smath, publications editor for KGS and a Vanderbilt University sports fan, recalled, “I can still see him leaning in the doorway to my office not long before the start of the 2009-2010 basketball season, telling me that he’d read in one of the UK online forums that Vanderbilt had thumped North Carolina in a preseason scrimmage game. ‘They’re going to be really good this year,’ he told me. And he was right! I am really going to miss talking sports with him. It was always informative, educational, and entertaining. In fact, I think that’s how I would sum up his personality: informative, educational, and entertaining. And he was just one of the nicest guys I ever met in my life.”

Jonathan’s family, friends, and co-workers filled Kerr Brothers Funeral Home in Lexington June 27 for his funeral. ❖

Ann Watson retires from KGS after 20 years

In August 1991, Ann Watson heard about a clerical position available at KGS in the Petroleum and Stratigraphy Section, headed by Jim Drahovzal. Though she had a bachelor’s degree in geology and was already working on her master’s, she says she jumped at the chance to get a foot in the door at the Survey. The following year, she was promoted to a geologist position in the section and continued work with a number of others on *The Atlas of Major Appalachian Gas Plays*.



Ann Watson speaks to KGS staff at her retirement reception July 15.

She was originally in the pre-med program at the University of Kentucky, but changed course when she became interested in geology, eventually completing her master’s degree, with a thesis on the geology of the Cumberland Gap Tunnel area. Her change from medical to geological science led to a 20-year career with the Survey, which was completed with her recent retirement.

During those two decades, she also worked with permit applications from the State Division of Oil and Gas, helping to approve the locations for oil and gas wells and preparing the well-completion reports that go into the KGS online databases. She also spent about four years working in the KGS Publication Sales Office.

“I really am proud that our database is available and as correct as we can get it for the oil and gas industry and for anyone in the public who needs to have a record of the stratigraphy in any part of Kentucky,” she says. “The

—Continued on p. 4

KY-AIPG awards go to KGS board chair and employee

The Kentucky Section of the American Institute of Professional Geologists (KY-AIPG) sponsored a spring field trip to the Carter Caves, Ky., area on April 30, followed by a banquet and awards ceremony. A member of the KGS Advisory Board and a staff member of KGS received recognition from the group.

Karen Thompson, who chairs the Advisory Board, received the Geologist of the Year award from State Geologist Jim Cobb (bottom left). Thompson is a project manager and senior geologist with Smith Management Group in Lexington, Ky. She has been a board member since 2005 and was elected chair in 2007.

A Presidential Merit Award was given to Richard Smath of the KGS Geoscience Information Management Section by KY-AIPG president Frank Ettensohn (below right). Smath has been with the Survey since 1984. The award recognized him for the work he does for KY-AIPG, including editing publications, coordinating conferences, and maintaining the group’s Web page.

Andy Mead, who recently retired as a news reporter for the *Lexington Herald-Leader* newspaper, also received a Presidential Merit Award for his reporting on geoscience issues during his 34 years with the newspaper.

Recipients of each award were nominated by KY-AIPG members. ❖



Jawbone replica—continued from p. 1

says the mold is durable enough that dozens of additional replicas can be made in the future. He calls Dragon Skin, made by Smooth-on Inc. of Easton, Pa., the least destructive of the molding materials he has used for making casts of fossils.

But to make the cast look virtually the same as the original fossil, Taylor carefully painted it using both an airbrush and tiny hand brushes. “I’ve coined a new word for what I do,” Taylor says with a smile. “I’m a paleoreconstructionist!” He has many years of experience making and painting replicas, and quickly painted the details of the fossil, glancing back and forth regularly from the fossil to the replica. The finished replica was hard to distinguish from the original fossil.

The two also made several replicas of smaller *Edestus* fossil jawbones provided by Frank Ettensohn of the Department of Earth and Environmental Sciences. Ciampaglio and Taylor left the Dragon Skin molds at UK so future casts can be made of the fossils.

In February, coal miner Jay Wright, of Dixon, Ky., found the fossil while bolting the roof at the Dotiki Mine operated by Webster County Coal. This species of ancient shark lived in a shallow sea covering the region over 300 million years ago. Most of the animal’s body quickly deteriorated after death, but the tooth and bone material of the jaw resisted deterioration; many specimens of *Edestus* teeth and smaller jaw structures have been found. This was among the largest ones discovered in the region.

The fossil, which made news around the country when KGS and the University of Kentucky published news releases about it, was on display in the Survey’s Public Information Center until its return to Wright. ❖



Mike Taylor and Chuck Ciampaglio pour casting compound into the mold of the Edestus specimen.



Taylor carefully paints a replica of the shark fossil to make it closely resemble the original.

Ann Watson retires—continued from p. 2

Survey gives an invaluable service to industry and the general public for energy production, environment work, for builders of highways, and for the service of teaching young people and the general public about the earth and about Kentucky geology.”

Watson’s interest in geologic education motivated her to also work on plan-

ning the annual KGS open house during Earth Science Week and the KGS display at the yearly meeting of the Kentucky Science Teachers Association.

At a retirement reception July 15, KGS staff presented her with a unique gift: a garden sundial mounted appropriately on top of a drillbit to place in her garden. “An ordinary sundial I would

have really liked,” she laughs. “But I really appreciate this one. That is imaginative to have it set up on that drilling bit.” ❖

Annual seminar participants discuss the future of geosciences

The 51st annual KGS seminar focused on the future of both the geosciences and the Survey’s research. About 120 people crowded the seminar room of the Well Sample and Core Library on May 13 to hear speakers from several organizations.

KGS Director Jim Cobb’s opening remarks summarized a recent report from the American Institute of Professional Geologists entitled “Importance and Future Roles of State Geological Surveys.” The report, done by an AIPG committee, looked at the services provided by state surveys. The committee advised against “neglect or termination of any of the primary state survey functions” and recommended “continued and even greater support for the long term and broad-reaching benefits afforded by the services of the surveys.”

Linda Rowan of the American Geological Institute talked about trends in employment in the geological sciences. The president of the Association of State Boards of Geology, Richard Spruill, made a presentation on trends in the testing of professional geologists.

A panel of academic and private-practice geologists discussed ways to strengthen the geologic profession. The panelists answered a series of questions about the promotion of professionalism, involvement in professional organizations, education of geologists, and professional leadership. The seminar audience was invited to add input to the moderated discussion as well.

During the lunch hour, the Kentucky Board of Registration for Professional Geologists held an official meeting to take comments on the issue of “direct professional knowledge.” The term is found in the code of professional conduct for Kentucky geologists in State administrative regulations. It says “a registered geologist shall sign and seal only professional work, including, but not limited to, maps and reports for which the registrant has direct professional knowledge, and for which the registrant intends to be responsible for its accuracy and adequacy.”

KGS section heads rounded out the day discussing future trends in each of their research areas. ❖



Linda Rowan of the American Geological Institute speaks at the KGS annual seminar on May 13.

New project grants will examine resource potential of shales and coal

A couple of new grants to the KGS Energy and Minerals Section will fund research into shale beds as energy resources and the metallurgical potential of Kentucky coal. Cortland Eble serves as the principal investigator on each of the projects.

A U.S. Geological Survey–funded project focuses on the gas and oil potential of Pennsylvanian marine shale beds in both the Appalachian and Illinois Basins. These extensive shale beds are over 3 meters thick in some locations, but their hydrocarbon potential is not well known. The study will examine and document the organic composition of these beds to better evaluate their potential as a hydrocarbon resource.

“Samples of the more widespread marine shale beds in both the Eastern and Western Kentucky Coal Fields will be collected from outcrop locations as

well as core samples,” says Eble. Several analyses will be done to determine properties such as total organic content and the type and origin of the organic constituents in the shales. Steve Greb, also of the Energy and Minerals Section, will work with Eble on the \$26,730 one-year investigation.

A second project, funded by Kentucky’s Energy and Environment Cabinet, focuses on metallurgical coal resources in eastern Kentucky. Most of the coal produced from that region is used by electric utilities because of its low sulfur content. In 2009, for instance, over 89 percent of the 74.7 million tons of coal mined there was used by electricity plants in 26 states. “But demand for low-sulfur coal is expected to decline as more electric utilities add scrubbers, which can use cheaper, higher-sulfur coal,” says Eble. “So the

market for eastern Kentucky coal could decline significantly.”

By comparison, only 724,000 tons of eastern Kentucky coal was used domestically for metallurgical coke, and 1.2 million tons was exported to other countries, mostly for steel-industry use.

The new project is designed to help gauge how much eastern Kentucky coal may meet the stricter requirements of metallurgical coal, including acceptable levels of ash, sulfur, and other components. Project tasks include updating resource information on five economically important coal beds (the Fire Clay, Upper Elkhorn No. 3, Lower Elkhorn, Clintwood, and Glamorgan), which may have metallurgical value. “In order to develop a better understanding of the potential uses for the remaining resource-

—Continued on p. 6

Shale and coal grants—continued from p. 5

es, new samples from active mining areas will be analyzed to characterize parameters important for metallurgical applications,” Eble adds.

The samples will be analyzed by the KGS laboratory and private laboratories. Associate Director Jerry Weisenfluh will work with Eble on the \$83,825 project, which will last a year. ❖



Seventy-one people from 10 states attended a day-long course at the KGS Well Sample and Core Library on April 19. The course involved investigation and remediation of sites contaminated by chemical spills and leaks. KGS was a co-sponsor of the event with the Kentucky Section of the American Institute of Professional Geologists. CEMCOR Environmental Services provided instructors. Another course will be sponsored by KY-AIPG and the Survey on October 19–20. Dr. Ralph Ewers of Eastern Kentucky University and Pete Idstein of the University of Kentucky will teach a course on karst hydrology and methods of characterizing and monitoring carbonate bedrock systems. That course will also be offered at the Well Sample and Core Library with an optional field trip to the Sinking Valley karst site in Pulaski County. More information on the course is available at ky.aipg.org/Announcements.htm. ❖

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