

CONFLUENCE

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LETTERS AND SCIENCE

**LEARNING IN THE LAST
BEST PLACE**





Paula Lutz.

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Dear friends and colleagues,

With the aspens turning to gold and a dusting of snow on nearby mountains, I've been thinking about how lucky I am to live and work in such a breathtaking place. Fittingly, this issue of *Confluence* highlights the spectacular setting that the state of Montana provides for teaching, research and service.

Montana is undoubtedly one of the most spectacularly beautiful places in the world, with soaring snow-capped mountains, the rugged beauty of Eastern Montana, blue-ribbon trout streams (think "A River Runs Through It") and lush agricultural lands. They don't call Montana "Big Sky Country" for nothing! The beauty of Montana's landscape is rivaled only by the friendliness of its people and the high quality of life found in its communities. Montana also provides a spectacular setting for a wide-range of unique academic and educational activities in the College of Letters and Science, and we have tried to highlight some of those in this issue of *Confluence*.

Our college is able to attract faculty who are among the best and brightest in their fields. These are faculty who could do their work anywhere in the world, but these talented educators and researchers come to MSU—and stay at MSU—because Montana is a wonderful place to live, work and raise their families.

Of course we also attract top-notch faculty because Montana is THE PLACE—a state uniquely suited for research and teaching in their respective fields. Our paleontologists, wildlife and fisheries biologists, geologists, snow scientists and archaeologists are here in large part because their research environments are in our backyard. As David Roberts, our department head in the Department of Ecology, once famously said, "The Greater Yellowstone Ecosystem is our laboratory."

As you read this issue of *Confluence*, focused on learning in the "Last, Best Place," enjoy these highlights of faculty, staff, student and alumni accomplishments. We hope you'll be inspired to learn more about what is happening across the college. We cordially invite you to join us for any of our public events, discussion groups and learning opportunities. You can visit our website at www.montana.edu/lettersandscience for frequently updated news.

And if the beautiful images found in this magazine inspire you to visit Bozeman, please stop by and say "hello." We'd love to see you and have you meet our faculty and students.

Best regards,

Paula M. Lutz, Dean



TABLE OF CONTENTS

LEARNING IN THE LAST BEST PLACE 2

- YELLOWSTONE NATIONAL PARK: A hot spot for research and learning4
- REVEALING HISTORY: MSU student joins archaeological team to help unearth relics from Crow Tribe's past6
- TROUT U: MSU has the resources and know how to help the state solve real world problems and preserve its fisheries and waterways.....8
- TEACHING NATIVE AMERICAN HISTORY from a Native viewpoint10
- MONTANA'S LANDSCAPE provides a home for dino hunters and snow scientists alike.....12

STUDENT HIGHLIGHTS 14

FACULTY HIGHLIGHTS 16

RESEARCH 18

OUTREACH 20

ALUMNI 22

DEPARTMENT HIGHLIGHTS 24

- AGRICULTURAL ECONOMICS AND ECONOMICS 25
- CELL BIOLOGY AND NEUROSCIENCE 25
- CHEMISTRY AND BIOCHEMISTRY 26
- EARTH SCIENCES 26
- ECOLOGY 27
- ENGLISH 27
- HISTORY AND PHILOSOPHY 28
- MATHEMATICAL SCIENCES 28
- MICROBIOLOGY 29
- MODERN LANGUAGES AND LITERATURES 29
- NATIVE AMERICAN STUDIES 30
- PHYSICS 30
- POLITICAL SCIENCE 31
- PSYCHOLOGY 31
- SOCIOLOGY AND ANTHROPOLOGY 32

COLLEGE NEWS 33

PHILANTHROPY 36

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COVER PHOTOGRAPHY

Snow science students conduct an experiment at at Bridger Bowl ski area. *Photo by Stephen Hunts.*

BACK COVER PHOTOGRAPHY

Clockwise from left: Students working at the Egg Mountain paleontology dig site, near Choteau, Mont.; thermal biologists at Heart Lake, Yellowstone National Park; crew members screening material excavated from the main compound's dump area for artifacts at the Crow Agency archaeological dig site. *Photo courtesy of Victoria Bochniak.*

Unless otherwise noted, all photos by Kelly Gorham, MSU News.

Student housing at the Egg Mountain paleontology dig.



➤ LEARNING IN THE LAST BEST PLACE ⇐

LOCATION PUTS MSU ON THE MAP FOR TEACHING, RESEARCH AND SERVICE



Bozeman has been on a lot of “Top 10” or “Best Places” lists in recent years. It seems that the town is now “on the map” and is being recognized for the many great things it has to offer—a high quality of life, excellent recreational opportunities, and a great place to retire or raise a family. For example, in 2009 *National Geographic Adventure* magazine identified Bozeman as the best town to raise a family. In 2010, *U.S. News & World Report* included Bozeman on its list of 10 best affordable mountain towns for retirement. Also in 2010, Bozeman was featured on *Outside* magazine’s “Best Towns” list in the category of “Best Skiing in the West.”

Montana State University is also increasingly on the map because of its wide-range of excellent, and often unique, learning and research opportunities, many of which are found in the College of Letters and Science. Several of these programs are highlighted in this issue of *Confluence*, including thermal biology and astrobiology in Yellowstone National Park (pages 4-5), archaeology field work (see sidebar and pages 6-7), fisheries research (pages 8-9), paleontology in Eastern Montana and snow science in our many snowy mountains (pages 12-13). Our Native American Studies program is also highlighted for the opportunities it provides students to work in native communities in the region (pages 10-11).

One of the most exciting programs at MSU is the Master of Science in Science Education (MSSE), which includes many summer courses with field components uniquely available in Montana. The College of Letters and Science sponsors the MSSE program (along with the College of Agriculture, the College of Education, Health and Human Development and

the Graduate School) and many courses are taught by faculty from our departments, including: ecology, chemistry and biochemistry, microbiology, earth sciences, mathematical sciences and physics. Although MSSE—which is geared towards K-12 science educators—is primarily taught online, students are required to complete one Montana-based two-credit lab or field course. Many, if not most, MSSE students end up taking several field courses either in a single summer or over multiple summers during their time in the program.

In BIOL 523, “Wildlife Ecology of the Northern Rocky Mountains,” students are introduced to the ecology of the Rocky Mountains as showcased within Yellowstone National Park, one of the few intact wild ecosystems in the lower 48 states. This course, which is taught by David Willey, assistant research professor in the Department of Ecology, is largely taught in the field. Four days are spent in Yellowstone applying principles and techniques for studying wildlife populations.

Professor James Schmitt and associate research professor Frankie Jackson, Department of Earth Sciences, teach GEO 521, “Dinosaur Paleontology of Hell Creek Formation,” which provides an introduction to the geology and dinosaur paleontology of eastern Montana. The course features daily hikes in Makoshika State Park where students get hands-on experience in fossil collection and preparation, and interpreting sedimentary environments and taphonomy.

In BIOL 591, “Land Use Issues in the Greater Yellowstone Ecosystem,” students learn about the legal and political basis for scientific management of natural resources on public and



From top: Students study a thermal feature in Yellowstone National Park in CHMY 591, "Examining Life in Extreme Environments;" BIOL 523 students in the field in Yellowstone National Park; GEO 521 students in the field at Makoshika State Park. Photos courtesy of the MSSE program.

private lands in the Greater Yellowstone Ecosystem. Jerry Johnson, professor and department head in the Department of Political Science, teaches the course and leads students on daily outings to visit landscapes around Bozeman and in the nearby communities of Big Sky and Butte. Students examine issues such as the recovery of endangered species, rural sprawl and wildfire suppression policies.

"The unique habitats, landscapes, natural features and cultural resources found in Montana provide a tremendous outdoor classroom and laboratory for many of the disciplines in our college," said Paula Lutz, Dean of the College of Letters and Science. "Faculty and students alike are able to get outside and pursue some really cool projects in the field."



Students enjoy a day out in the Shields River Valley visiting archaeological sites and learning about the history of the area. Pictured left to right: Aaron Whittenburg, Brittni Howard, Michael Grimland, Victoria Bochniak, Emily Altenburger and Paige Goveia. Photo courtesy of Craig Lee.

A SENSE OF PLACE



FIELD TRIP PROVIDES STUDENTS A SENSE OF WHERE AND HOW PREHISTORIC PEOPLE LIVED

In September, visiting professor Craig Lee and a group of students from his "North American Archaeology" class trekked to the Shields Valley to better understand the landscape that encompassed the lives of Pleistocene peoples.

The group, said Lee, wanted to get "a sense of the land" and experience a place where early Native Americans lived.

An MSU graduate, who now works as an archaeologist with the Institute of Arctic and Alpine Research in Colorado, Lee is thrilled to be spending the year at his alma mater where undergraduate students, "get an opportunity to do hands-on-work and to engage in archaeology at the highest level."



Students listen to presentations by Mr. Bill McConnell and Dr. Larry Lahren as they examine casts of lithic artifacts. Photo courtesy of Craig Lee.

Yellowstone National Park:

A HOT SPOT FOR RESEARCH AND LEARNING

By Suzi Taylor

Sara Waller taught in Cleveland, Chicago, suburban Los Angeles and Escondido, Calif. before arriving at Montana State University, but the associate professor of philosophy says MSU's location makes it the ideal place to conduct her research.

Waller teaches the philosophy of mind, language and consciousness. She studies social predators like wolves and coyotes, observing how the animals communicate with each other in wild and urban settings in order to discover how they adapt to—and outsmart—the humans around them.

At MSU, her work took an unusual twist when she joined MSU's Astrobiology Biogeocatalysis Research Center (ABRC), a NASA-funded entity that studies the origin, evolution and distribution of life in the universe.

While many of MSU's astrobiology researchers focus on Yellowstone and the unusual life forms the park harbors in its hot springs, Waller considers weighty questions like how NASA might recognize and interact with "intelligent" life, should we find it somewhere out there.

"There is no better setting (than Montana) for trying to understand how non-human intelligence might develop and progress," Waller said. "We can watch how the re-introduction of wolves in Yellowstone impacted coyote populations, and how coyotes adapted to their new competition. If we know how life adapts on earth, we have a model for how it might adapt elsewhere."

Aside from the benefit of being physically close to the animal populations she studies, Waller said MSU attracts a special type of student.

"Montana students love the outdoors, so my coyote-project students are always skilled hikers, backpackers and campers," she said. "When I send students out in the field to look for social predators, I know that they know how to handle themselves in

the woods, and that they will be careful as well as innovative in finding elusive wolves and coyotes."

John Peters, chemistry professor and director of ABRC, agreed that MSU's location is ideal for his research on bio-energy and the origin and evolution of life.

The thermal environments in Yellowstone National Park likely mimic those of the early Earth, Peters said, and by studying the microbial life that thrives in those environments, researchers may better understand how life on Earth came to be and what other forms of life might exist in the universe.

Peters said he relishes the chance to work alongside Waller and other philosophers, combining his background in chemistry with their focus on societal impacts and ethics. That interdisciplinary work, combined with MSU's "stronghold on Yellowstone," puts MSU on a world stage, he said.

"We recruit a lot of good Yellowstone researchers because we're close, then we recruit other good scientists because we have those good scientists. It becomes a critical mass catalyzed by the Park," Peters said.

That well-known circle of experts was a draw for Matthew Fields, associate professor in microbiology and the Center for Biofilm Engineering (CBE), when he left Miami University to join the MSU faculty five years ago.

Along with colleagues in CBE and MSU's Thermal Biology Institute, Fields studies microbial communities that thrive at extremely alkaline sites, like those at Heart Lake, deep in Yellowstone's backcountry.

"I had always wanted to live out West," said Fields. "But I came here because I knew of the faculty; I knew I would have those folks as colleagues. There are people that study Yellowstone—people with a wealth of knowledge—that I can go give a phone call or a knock on their door."

**Anyone curious about life,
the evolution of life, and the
development of intelligent life could
not choose a better place to be.**

— SARA WALLER

Fields, who also works at contaminated field sites, said he appreciates his work in Yellowstone because the Park's brilliantly colored thermal features are so unusual in his line of work. By nature, he said, microbiology research is not visible to the naked eye. Contaminated groundwater or soil may look no different than the uncontaminated.

"We're working with things at the microscopic level," he said. "Scale and boundary are hard to visualize."

But in Yellowstone, Fields said, "The colors tell you where are the boundaries. Unique and novel living systems have evolved and established on these gradients."

Fields added that he sees Bozeman as an ideal location for raising a family, and that he and his wife enjoy camping, hiking and fishing with their three young boys.

"MSU has a way of attracting and nurturing balance," said Peters. "We have people who work hard and work productively, but they also have interests outside of work."

"The students are also really balanced. They could have been good students anywhere, but we get students who are also world-class skiers, or really into backpacking," he said. "We recruit a lot of students who are into the outdoors, and they tend to make really good field researchers."

"The balance really fosters what I think is the most important component of my success as a scientist: my creativity," added Peters.

"The research opportunities are incredibly vast here," said Waller. "We truly have it all—cityscapes and country-sides, mountains and wetlands. Anyone curious about life, the evolution of life, and the development of intelligent life could not choose a better place to be."

Suzi Taylor is Assistant Director of Outreach and Communications, MSU Extended University.

Counter clockwise from upper left: Thermal features in Yellowstone; thermal biologists at Heart lake, Yellowstone National Park; MSU's Rocky Mountain location makes it a perfect site not just for on-campus faculty and students, but for science teachers from around the world who visited MSU and Yellowstone this past summer for the "Examining Life in Extreme Environments" course taught by John Peters.



REVEALING HISTORY:

MSU STUDENT JOINS ARCHAEOLOGICAL TEAM TO HELP
UNEARTH RELICS FROM CROW TRIBE'S PAST

By Amy Stix



The opportunity to work on a professional dig and share the importance of preserving humans' archaeological legacy with others is special to MSU.

— CRYSTAL ALEGRIA

One might not automatically associate archaeology with the Montana Department of Transportation. But because of a MDOT road widening project commencing in 2012 on Highway 78 just south of Absarokee, clues about the Crow Tribe's wrenching transition from its traditional way of life to a sedentary one on a reservation are slowly being unearthed.

And MSU students, including senior Victoria Bochniak, have played a key role in the process.

For Bochniak, the opportunity to join the professional archaeological dig, which took place last summer under the direction of Billings-based Aaberg Cultural Resources Consulting, "was a once in a lifetime opportunity."

The Chicago area native, who is completing a major in anthropology and minor in museum studies, has a particular interest in "historical archaeology," the time after which Native Americans had contact with Europeans. For this reason, the recent dig was of particular import to her, because, "We can look at these historic records and really connect those with the culture itself and the people...this is a site where we see transition happening."

The transition was poignant and often tragic, Bochniak noted. Between 1875 and 1884, after witnessing the loss of millions of acres of their reservation lands to encroaching settlers and miners, the Crow Tribe consented with the U.S. government to settle on a second Crow Agency in the Stillwater Valley that today consists of grass and rangeland divided on both sides by Highway 78. It was on this land said Bochniak, that, "Crow leaders acknowledged their traditional way of life was over. They agreed to learn to farm if given land."

At the same time, the tribe grappled with the loss of the buffalo as their main food source and was hit hard by measles and scarlet fever epidemics.

In 1884, impacted again by miners moving onto their land, the tribe moved once more to its present location at Crow Agency southeast of Billings. The Absarokee Agency Fort, the tribe's home for nearly a decade, was abandoned and then burned to the ground.

Until last summer, most remnants of life at the fort remained entombed beneath the earth. But an 1878 map enabled excavation crews to locate the original buildings of the main compound, including the agent's office, clerk's office, school, and a doctor's office. The crews were also able to uncover the foundation of one adobe Crow residence.

Particularly exciting for an up and coming archaeologist, said Bochniak, was "being able to connect the archaeological record with the historical record."

That connection between archaeological discovery and history revealed itself in items such as scrapers, which were household blades used to scrape animal hides and meat. The traditional Crow scraper was made of stone, but the ones found at the dig were all crafted from glass bottles. Bochniak said this discovery of traditional tools made with new materials supports the historical record of the tribe's shift from its traditional nomadic lifestyle to a sedentary one.

Bochniak shared the crews' discoveries with the public by providing regular educational tours of the dig. She also helped welcome Crow elders, who visited the site and shared stories about life at the fort passed down through generations. Now she's assisting Project Archaeology, a national nonprofit organization based out of MSU, with the development of an oral history and curriculum project.

According to Project Coordinator Crystal Alegria, Project Archaeology focuses on "making archaeology relevant to the public." She is working with Bochniak and Project Archaeology curriculum writer, Shane Doyle, himself a Crow tribal member, to create curricula geared for third to eighth graders about life at the old fort.

Alegria said that for MSU students, the opportunity to work on a professional dig and share the importance of preserving humans' archaeological legacy with others is special to MSU. "It is really unique in that they (students) get a lot of experience doing outreach and education in archaeology early on in their undergrad careers."

Main image: This traditional scraper was made of bottle glass indicating a transition in technology away from stone. *Photo courtesy of Project Archaeology.*
From left to right: MSU student and crewmember excavating, pauses to pick out a bead from the dirt and place it in the bag next to her; crew members working in pairs to screen material for artifacts such as nails, beads, glass, metal fragments, ceramic fragments, and even fragments of spoons and knives; MSU senior and crew member Victoria Bochniak excavating near the icehouse, coal house and shop at the Absaroka Agency. *Photos courtesy of Victoria Bochniak.*

TROUT U

MSU HAS THE RESOURCES AND KNOW HOW TO HELP THE STATE SOLVE REAL WORLD PROBLEMS AND PRESERVE ITS FISHERIES AND WATERWAYS

By Michael Becker

Back in 2003, Montana State University trademarked a new nickname for itself, one that captured the essence of a whole slate of courses, programs and resources that have drawn students to the university for decades.

There was something fishy about the new nickname, but few seemed to mind.

“Trout U,” as the university dubbed itself, is stuffed to the gills with a massive library collection of trout and salmon materials, the Montana Cooperative Fisheries Research Unit, the Wild Trout Lab and more, including research partnerships with the Big Sky Institute and Bozeman Fish Technology Center.

At the heart of it, though, is the ecology department’s Fisheries and Wildlife Management Program. Founded in 1936, it’s one of the oldest and most successful natural resource programs in the country.

Professor Tom McMahon has been with the department for 21 of those 70-plus years, performing research in applied fisheries.

The “applied” part of that research focus means McMahon helps fish and wildlife agencies at all levels of government solve real world problems, such as whirling disease, interactions between native and non-native trout and the effects of climate change on fish.

They’re important problems to tackle, considering the tens of millions of dollars that fishing tourism brings into Montana each year, McMahon said.

“People come from all over the world to fish Montana,” he said. “There’s a long legacy in Montana to protect the quality of those streams and rivers.”

According to McMahon, MSU’s partnerships with the state and federal agencies dedicated to managing Montana’s fisheries and waterways are just one of the things about the fisheries program that attracts students.

Another draw is, of course, the waterways themselves. Montana is a headwaters state. It’s water flows into both the

Pacific and Atlantic oceans, as well as into the Saskatchewan drainage, McMahon explained. And, of course, the state is home to a large number of blue-ribbon rivers and streams.


That means students can study a lot of fish, McMahon said, from trout in the western part of the state to paddlefish and other species native to eastern Montana’s waters.

“We have developed a good reputation for producing good-quality students and helping agencies answer questions they need answered to manage their fisheries resources.”

There was something fishy about the new nickname, but few seemed to mind.

Clockwise from left: Rainbow trout; waters and the Bridger Range north of Bozeman; tagging trout in the upper Clark Fork River are volunteer Collin Christianson (left, in grey), MSU ecology grad student Clint Smith (top, in green) and Mariah Mayfield. Photo courtesy of Mariah Mayfield; Researchers used this and other sentinel fish cages to study whirling disease in the Missouri River system. Photo courtesy of the Montana Department of Fish, Wildlife and Parks.





The more perspectives
you know about,
the better your
understanding is
going to be.

— FRANCINE
SPANG-WILLIS

TEACHING

NATIVE AMERICAN HISTORY

FROM A NATIVE VIEWPOINT

INTERPRETIVE POSITION PROVIDES OPPORTUNITY FOR STUDENT TO SHARE HER PERSPECTIVE WITH OTHERS

By Amy Stix

Before last summer, Francine Spang-Willis had never considered working on a remote national forest as an interpretive ranger. But when Wyoming's Bighorn National Forest contacted MSU's Native American Studies Department regarding an opportunity to educate the public about the Bighorn Medicine Wheel, Willis jumped at the chance.

The former director of the American Indian Tribal Histories project at the Western Heritage Center in Billings and a current NAS Master of Arts candidate, Spang-Willis says her professional goal "is to be able to educate others about Native American history and culture from a Native American perspective."

For Spang-Willis, the interpretive ranger position was a great fit. A descendant of Northern Cheyenne, Pawnee and German ancestors who grew up on the Northern Cheyenne Reservation, Spang-Willis said, "I applied and took the position because it fit with my goal to help educate others about the Medicine Wheel from a Native American perspective."

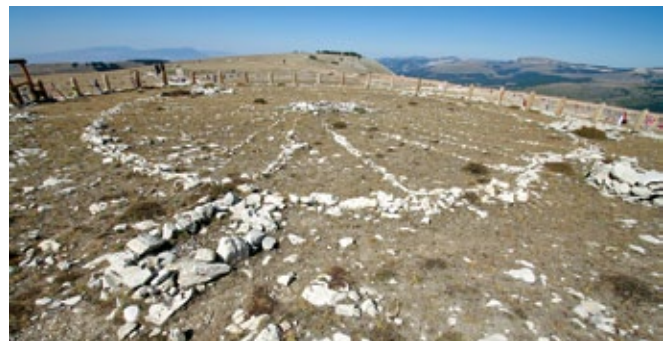
According to archaeological evidence, the Bighorn Medicine Wheel was constructed in two phases from 1,200 to 1,700 AD. The structure measures nearly 80 feet in diameter and consists of 28 alignments of limestone boulders radiating from a central cairn. Designated a historical landmark in 1970, the wheel was used by prehistoric Native Americans as an astrological calendar and for ceremonial, healing and teaching purposes. For more than 7,000 years, prehistoric people also used the land surrounding the wheel; just this year, the historic landmark expanded its boundaries to protect 4,000 acres of important archaeological sites. Today, twelve thousand visitors from across the U.S., Europe and other countries make the mile and a half walk each summer to experience and learn about the Bighorn Medicine Wheel.

Members of different Native American tribes also regularly visit the site, sharing it with each other, as well as other visitors.

"No one particular tribe claims the wheel, but different tribes use it for spiritual and ceremonial practice," said Spang-Willis, adding that medicine wheels can be found throughout the western U.S. and in Canada.

For Spang-Willis, whose work included interpreting the Bighorn Medicine Wheel for non-natives as well as assisting tribal members with some ceremonies conducted at the site, her summer job was a unique opportunity to connect with people from around the world and share her perspectives about the wheel as a Native American.

"The more perspectives you know about, the better your understanding is going to be. We as educators have that responsibility to value that Native American knowledge," said Spang-Willis. Towards that goal, she now plans to help the U.S. Forest Service produce a DVD about the significance of the Bighorn Medicine Wheel and "hopes tribes will add their voice to the wheel."



Facing page: Francine Spang-Willis. Photo by Terri R. Spray.
This page: Offerings left at the Bighorn Medicine Wheel. Photo courtesy of Ross Walker.
The Bighorn Medicine Wheel. Photo courtesy of Ross Walker.

MONTANA'S LANDSCAPE

provides a home for dino hunters and snow scientists alike

By Michael Becker



Montana is about 630 miles across and 250 miles north to south. That's more than 147,000 square miles of diverse landscape, from arid plains in the east to snow-capped mountains in the west.

It's a vast and varied place that gives two of Montana State University's signature earth science programs, paleontology and snow science, plenty of room to run.

The mountains—or rather the snow on them—were a particular draw for Jordy Hendrikx, an assistant professor in the Department of Earth Sciences who joined the faculty this year.

Hendrikx is part of the snow science program, a unique course of study that uses geography, math, statistics, chemistry and physics to give students the broad foundation they need to work in a variety of snow-related jobs, from avalanche forecasting to snow-melt hydrology.

Hendrikx, who came to MSU from New Zealand, studies snow as both a hazard and a resource.

It's a hazard for the recreationists who face avalanche conditions in the mountains. It's a resource for the millions of people across the West who depend on the water that comes from seasonal snowmelt. And Montana, he said, is just the place to study snow.

"From a research perspective, you've got a perfect natural laboratory on your doorstep."

That natural laboratory is a big attraction for the students enrolled in the snow science option, which culminates in a senior capstone course on snow dynamics and accumulation. The class takes students out to the mountains each week during the semester to put what they have learned about snow science into action.

The program prepares students for careers in the cold, and according to Hendrikx, MSU has had good luck putting graduates into snow science and engineering jobs across Montana and the rest of the West.

"Snow jobs are hard to get," he said. "They're in high demand, but I think we've done very well in the wider community."

Whereas the snow science program uses the state's cold, wet resources to teach, the paleontology program prefers the arid, dusty regions of the state.

Well, arid and dusty now. Between 75 million and 100 million years ago, Montana was a warm, wet coastal plain on the shore of a great inland sea, explained paleontology associate professor David Varricchio.

That sea deposited great layers of sediment across much of the state, burying dinosaur remains under conditions that turned out to be very good for the formation of fossils.

From a research perspective, you've got a perfect natural laboratory on your doorstep.

— JORDY HENDRIKX



“Montana is very rich in dinosaurs and dinosaur-bearing rocks,” said Varricchio, who is in his ninth year as a member of the faculty at MSU. His research focuses on dinosaur reproduction and the origin of reproduction in the birds we see today.

Paleontology, for him, was a way to combine his interest in animals and their biology with a sense of traveling back in time.

“With paleontology, you almost travel to another world since it’s 75 or 100 millions years ago,” he said. “There’s that kind of excitement of discovery that awaits in the badlands of Montana.”

That thrill of exploration and discovery appeals to everyone in the paleontology program, Varricchio believes. The students, many of whom come from out of state, bring that excitement with them into the program, and it becomes contagious, he said.

Nothing stokes that excitement quite so much as getting to go and actually dig up dinosaurs. Opportunities for such field research abound, said senior Daniel Barta.

“Performing undergraduate research in paleontology at MSU is not only a very accessible goal, it is encouraged,” the Helena native explained, stressing the program’s foundations in geology make MSU’s paleontology program unique.

For senior Eric Metz of Hanford, Calif., MSU was always the clear choice for paleontology.

“I came to MSU because when I watched documentaries on dinosaurs, I noticed most took place somewhere in Montana, and Jack Horner and Dave Varricchio were being interviewed for them. I thought MSU would be a prime place to study paleontology if I wanted to pursue it as a career.”

It doesn’t hurt that MSU has a world-class paleontology facility in the Museum of the Rockies, Varricchio said. The museum provides students and faculty with the infrastructure they need to conduct serious lab work and research. When taken together with the state’s rich dino geology, it produces a combination Varricchio called “really exceptional.”

Of course, all the facilities in the state wouldn’t be worth anything without the people of Montana, Metz said. They seem to understand the importance of the fossils buried under their land and are willing to let bunches of dinosaur hunters camp out for the summer.

“The Museum of the Rockies and MSU make going out and getting the fossils feasible, but the farmers and ranchers allowing us to camp on their land make it possible.”

Background photo: Looking toward the Front Range from the Egg Mountain paleontology dig site.

Small photos, from left to right: Students working at the Egg Mountain site; heading up to the ridge at Bridger Bowl to do avalanche control; dinosaur bones are common finds at the Egg Mountain site; Andrew Slaughter at the Yellowstone Club field station; sweeping vistas of the Rocky Mountain front as seen from the Egg Mountain dig site; a snow science class is conducted at Lone Mountain. *Photo by Stephen Hunts.*



Jena Burke, recipient of a 2011 James Madison Fellowship. Photo by Tyler Busby.

ASPIRING TEACHER RECEIVES NATIONAL FELLOWSHIP

Jena Burke, an aspiring teacher and spring 2011 graduate with a degree in history, was Montana’s only recipient of a James Madison Fellowship this year. She will receive up to \$24,000 over two years to support her while she earns a master’s degree in education at The University of Montana, attends a summer institute next year in Washington, D.C. and meets 56 other recipients of the same fellowship.

The fellowship, named for the fourth president of the United States and known as the Father of the Constitution and Bill of Rights, goes to one person a year in each state, as well as the District of Columbia, the Commonwealth of Puerto Rico and the nation’s island and trust territories. Senior fellowships go to current teachers of American government, American history and social studies. Junior fellowships go to future teachers like Burke.

“Jena earned this fellowship through the force of her ability to think through the importance of ‘civics’ for the future of the American republic,” said history professor Robert Rydell. “I am so pleased for Jena, and I am grateful to the Madison Foundation for its ongoing efforts to educate Americans about our history and government.”

Burke said she will be thrilled if her fellowship helps her make the Constitution come alive for her future students. The Madison Fellowship requires her to teach two years and she said that won’t be a problem. “I wanted to teach even before I ever knew what I wanted to teach,” Burke said.

Excerpted from Evelyn Boswell, MSU News Service

THROUGH SCIENCE, VILLEGAS FINDS HER SHOT AT A BRIGHT FUTURE

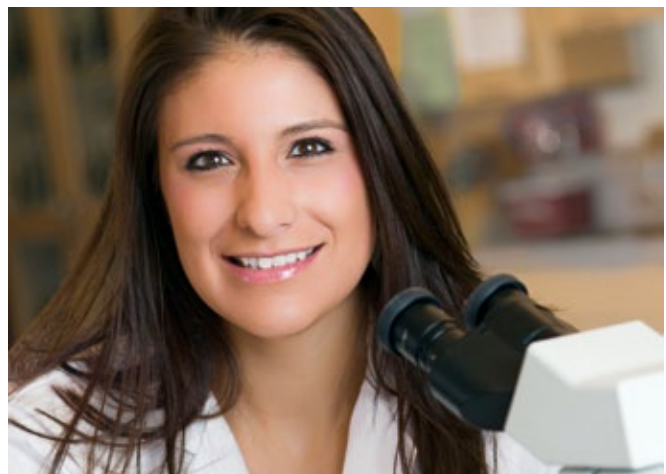
Last December, Corrie Villegas became the first Native American student accepted into the Montana Medical Laboratory Science Training Program, a competitive program that produces certified medical laboratory scientists. The program is offered through the Department of Microbiology. Medical lab scientists are in short supply in Montana and elsewhere in the country, so admission virtually guarantees a good job to those who complete the year-long internship.

Villegas said she worked tremendously hard to qualify for the rigorous program that only accepts 15 applicants from MSU, UM and MSU-Billings. Villegas was a college basketball standout as an undergraduate student, and continues to play on a traveling Native American women’s basketball team composed of players from throughout Montana. She has also worked at MSU’s American Indian Research Opportunities office as a student researcher.

Villegas’ class spent the summer on the MSU campus and she is currently interning for two semesters at Benefis Hospital in Great Falls. If she passes a national test (the Montana program’s pass rate has been 100 percent), she will be certified to go anywhere and work in a clinical laboratory. A member of the Confederated Salish-Kootenai Tribe, Villegas said one day she hopes to return to her reservation.

“When we go to hospitals, we don’t see Native American people there,” Villegas said. “I’d like to help change that. If anything, when I leave this world, I want to know that I helped better the opportunities for younger generations of Native Americans.”

Excerpted from Carol Schmidt, MSU News Service



Once primarily known for her ability to play basketball, Corrie Villegas has now earned distinction as the first Native American accepted to the Montana Medical Laboratory Science Training Program. The competitive program based at MSU produces certified medical laboratory scientists.

MPA STUDENT LOBBIES ON BEHALF OF ALL MUS STUDENTS

Janelle Booth, who graduated in May with a Master's of Public Administration through the Department of Political Science, was selected as Montana Associated Students' lobbyist during the 2011 legislative session. She represented all students on each campus in the Montana university system by tracking student-related legislation, providing testimony in hearings, disseminating information to students, legislators and the press, and coordinating student activity at the capitol.

During her graduate studies at MSU, Booth received a graduate fellowship to work at the Western Transportation Institute. She was awarded the University Transportation Center Outstanding Student of the Year award and traveled to Washington, D.C. for the award ceremony. She also presented the results of her transportation research at four national conferences, and received a student paper award at the National TRB Conference on Rural Public and Intercity Bus Transportation in Burlington, Vt. last fall.

While at MSU, Booth was awarded a scholarship to serve as one of two representatives from the U.S. to attend the International Black Sea Symposium in Aegina, Greece during the summer



Janelle Booth. Photo by Parker Hilton.

of 2010. Thirty-nine young professionals from countries in the wider Black Sea region, Western Europe, the U.S. and Central Asia were selected to participate in the symposium, where topics discussed included energy security, the role of NATO and Russia, EU relations, good governance in the Black Sea region, and conflict resolution methodology.

Booth is currently working as a Community Resource Associate Specialist at MSU's Local Government Center. She grew up on a ranch in South Dakota and wants to continue to be an advocate for agriculture and rural communities. "Janelle is the kind of person who will make the world a better place but not require (or desire) the spotlight of recognition," said Liz Shanahan, associate professor in the Department of Political Science.

STUDENTS RECEIVE PRESTIGIOUS GOLDWATER SCHOLARSHIPS

Casey Donovan, mathematical sciences, and Daniel Barta, earth sciences, received Goldwater Scholarships in 2011. The scholarship is the nation's premier scholarship for undergraduates studying math, natural sciences and engineering. It will give each recipient up to \$7,500 a year for tuition, fees, books, and room and board.

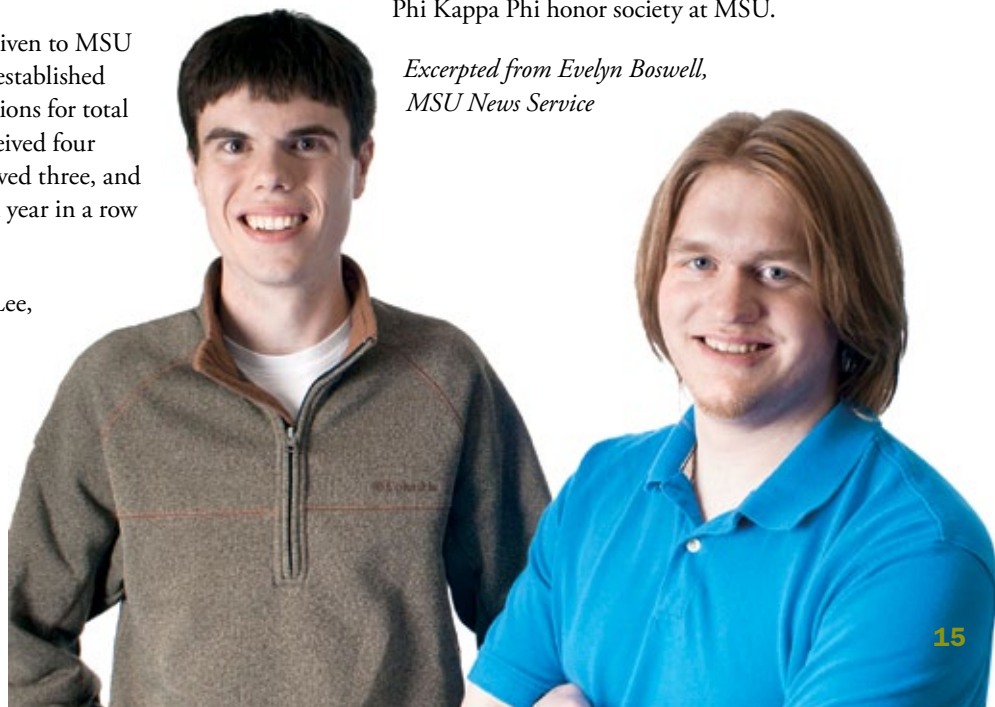
The awards are the 52nd and 53rd Goldwaters given to MSU students since the Goldwater Foundation was established in 1986. MSU is one of the nation's top institutions for total Goldwater recipients. Princeton University received four Goldwaters this year, Harvard University received three, and Duke University received one. This is the third year in a row that MSU has had two winners.

"We are in the big leagues," said Dr. Ilse-Mari Lee, director of the MSU Honors Program and administrator of the Goldwater Scholarship program at MSU. Lee said MSU students continue to win Goldwaters because of the university's emphasis on providing

undergraduates with hands-on opportunities to conduct research early in their careers.

Both students are from Montana, came to MSU with Presidential Scholarships, are members of MSU's Honors Program and served as vice presidents of the Phi Kappa Phi honor society at MSU.

*Excerpted from Evelyn Boswell,
MSU News Service*



Daniel Barta from Helena (left) and Casey Donovan from Kremlin, both students at MSU, won the prestigious Goldwater Scholarship in 2011.

DAVIS INSPIRES PASSION FOR BOTH WRITING AND PUBLIC SERVICE

Jill Davis, an adjunct instructor in the Department of English, won the President’s Excellence in Teaching Award in 2011. Davis is an innovative teacher with unbounded energy, and her classes are recognized as a spark for positive change in the MSU and Bozeman communities.

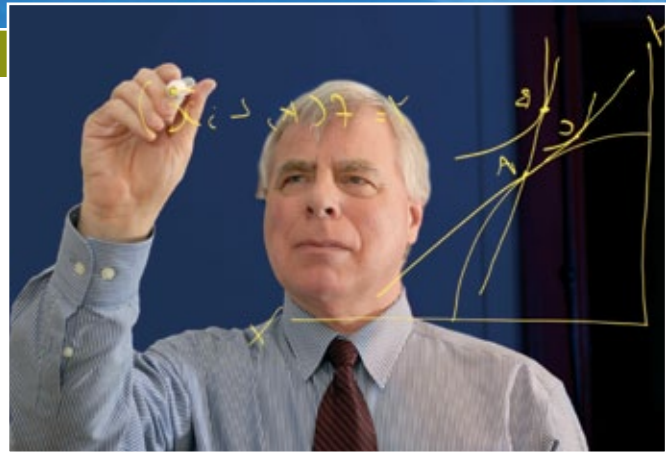
For the past six years, Davis has encouraged her students to find meaning in their writing practice by applying writing to real world issues. Class projects include “Project Iris Garden,” which resulted in raising \$35,000 for the restoration of Danforth Park, one of MSU’s oldest gardens. She coordinated a t-shirts for Haiti clothing drive that resulted in thousands of items of clothing being sent to the earthquake-decimated country. Her students’ interviews of Bozeman’s homeless resulted in “The Homeless Connect Yearbook Interviews Project,” chronicling the experiences of those living without a roof over their heads. During “The Faces Project,” her students collected interviews of those who have survived sexual assault with the goal of preventing further abuses. Finally, her students undertook “The Resiliency Project,” interviewing remarkable MSU students who have been resilient in overcoming major obstacles and want to inspire others to do the same.

“You pushed us to our limit and beyond, which made all of us better writers and people,” said a recent student about Davis.

Excerpted from MSU News Service



Jill Davis, and students James Freeborn and Alexey Kalinin, work on Danforth Park. Photo courtesy of Alexey Kalinin.



Vincent Smith.

ECONOMICS PROFESSOR WINS PRESTIGIOUS USDA AWARD

Vincent Smith, professor of economics in the Department of Agricultural Economics and Economics, received the U.S. Department of Agriculture’s 2011 Bruce Gardner Memorial Prize for Applied Policy Analysis Award for his original research on the agricultural crop insurance industry and his other contributions to policy analysis. Only one award is given annually in recognition of a scholar’s outstanding contributions to the USDA’s mission.

Smith received the award for a research project initiated during his six-month sabbatical from MSU, during which he served as a visiting scholar in the USDA Office of the Chief Economist in Washington, D.C. He investigated the causes of the rapid 300 percent increase in federal government payments to the agricultural insurance industry for delivering federally subsidized crop and livestock insurance programs between 2001 and 2010, exceeding \$3 billion in 2010. The work also investigated the consequences for the program’s integrity of substantially reducing payments to the private sector.

“The Bruce Gardner Memorial Prize is given to encourage and recognize economic analysis that facilitates better public policy. That Vince was awarded the prize is a reflection of his outstanding use of economic theory to have an impact on the development and implementation of improved agricultural and related policy. It is well deserved,” said Wendy Stock, department head of the Department of Agricultural Economics and Economics.

Smith’s longstanding research program focuses on international trade and domestic agricultural policy. He has published numerous scholarly articles and outreach papers on domestic and international trade issues. He has authored, co-authored and edited ten books, including a widely cited, definitive study of the economics of agricultural insurance and disaster aid programs published in 1995.

Excerpted from the Department of Agricultural Economics and Economics’ Spring 2011 newsletter

2011 FACULTY AWARDS

L&S Dean's Award for Meritorious Research

Piet Martens, *Physics*
Jessi Smith, *Psychology*

L&S Outstanding Teaching Awards

Susan Gibson, *Cell Biology and Neuroscience (Adjunct)*
Sara Rushing, *Political Science (Tenure Track)*
Corinne Casolara, *Mathematical Sciences (Graduate Teaching Assistant)*
Taylor Moorman, *English (Graduate Teaching Assistant)*

L&S Kathy E. Griffith Employee Excellence Award

Tracy Knudson, *Modern Languages and Literatures*
Jennifer Stormont, *Microbiology*

Cox Faculty Fund for Excellence Award

Christiana Stoddard, *Agricultural Economics and Economics*

James and Mary Ross Provost's Award for Excellence

Greg Keeler, *English*

Charles and Nora Wiley Award for Meritorious Research

Matthew Fields, *Microbiology*
Bern Kohler, *Chemistry and Biochemistry*
Robert Walker, *Chemistry and Biochemistry*

President's Excellence in Teaching Award

Chris Bahn, *Chemistry and Biochemistry*
Jill Davis, *English*

Excellence in Outreach Award

Duane Griffith, *Agricultural Economics and Economics*

Provost's Award for Undergraduate Research/Creativity Mentoring

Michael Babcock, *Psychology*
Lynda Sexson, *History and Philosophy*

Vice President for Research's Award for Meritorious Technology/Science

Trevor Douglas, *Chemistry and Biochemistry*
Mark Jutila, *Microbiology*
David Singel, *Chemistry and Biochemistry*

Betty Coffey Award

Leah Schmalzbauer, *Sociology and Anthropology*

Retiring Faculty (and the year they joined MSU faculty)

James Allard, *History and Philosophy (1973)**
Michelle Maskiel, *History and Philosophy (1984)**
Adele Pittendrigh, *College of Letters and Science (1977)*
Curt Vogel, *Mathematical Sciences (1985)**
Doug Young, *Agricultural Economics and Economics (1977)**

*Conferred with the rank of Professor Emeritus by the Montana Board of Regents.

IN MEMORIAM: *Ed Anacker*

Edward W. Anacker, the MSU scientist, octogenarian and legendary athlete, passed away on April 3, 2011.

Anacker attended Montana State College and graduated in 1943 with a bachelor's degree in chemistry. He attended graduate school at Cornell University where he studied under Peter Debye, 1936 Nobel Prize winner in chemistry. He also worked with Hans Bethe and Richard Feynman who won the Nobel Prize in physics. He earned his doctoral degree in physical chemistry in 1949.

Anacker returned to MSU to teach chemistry and research the joining of surfactant ions, a topic related to soap and detergents. He served as head of the Department of Chemistry and Biochemistry from 1972 to 1977, retiring in 1992. He enjoyed and excelled at teaching both undergraduate and graduate students. He also wrote and published numerous research papers.

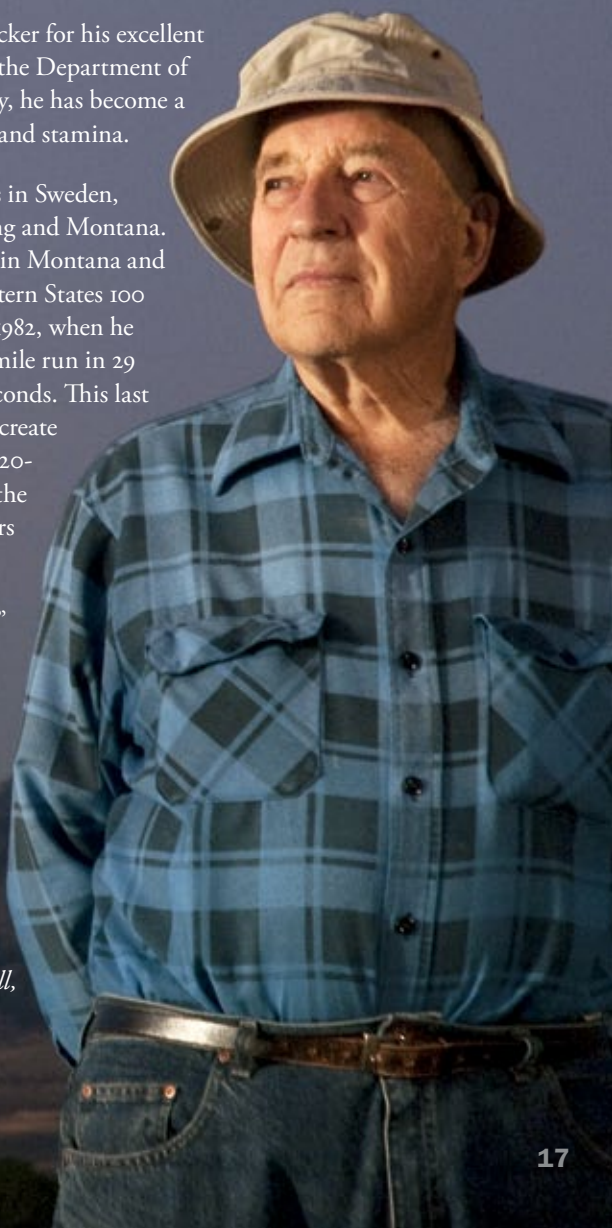
While many still praise Anacker for his excellent career and his leadership in the Department of Chemistry and Biochemistry, he has become a legend for his physical feats and stamina.

Anacker climbed mountains in Sweden, Colorado, Oregon, Wyoming and Montana. He ran several 50-mile runs in Montana and three times entered the Western States 100 Mile Run in California. In 1982, when he was 61, he finished the 100-mile run in 29 hours, 31 minutes and 26 seconds. This last achievement inspired Ed to create the Bridger Ridge Run, the 20-plus mile trail run through the Bridger Mountains that bears his name.

"Ed is a powerful individual," said Pat Callis, 71, an MSU chemistry professor who also has a mighty reputation as a scientist, climber and long-distance runner. "One person has quipped that he doesn't really climb mountains. He pulls them down to him."

Excerpted from Evelyn Boswell, MSU News Service

Edward W. Anacker (1921 - 2011).



SPOILED MILK: WOMEN WHO BREASTFEED FACE PREJUDICES

Jessi L. Smith, associate professor of psychology, conducted a study that concludes that even though breastfeeding is healthy, cheap and benefits both mother and child, there exists a strong bias against nursing mothers by both men and women. Participants in three double-blind studies thought nursing mothers were not as competent mentally as other groups of women and said they would be less likely to hire breastfeeding mothers for a job.

Study participants were asked a series of questions about how they perceived breastfeeding moms in terms of overall competence, math competence, and the likelihood that they would hire a nursing mother as opposed to other groups, such as women or non-nursing mothers. The questions provided the basis for three double-blind studies, Smith said. A double-blind study means that neither the administrators of the study nor the participants know the critical aspects of the research. This procedure guards against unintended bias.

“It’s the 21st century,” Smith said. “We have come a long way today in educating ourselves about the health and economic benefits of nursing to both mother and child, but we have done nothing to talk about the fact that breast milk actually comes from the breast and not bottles.”

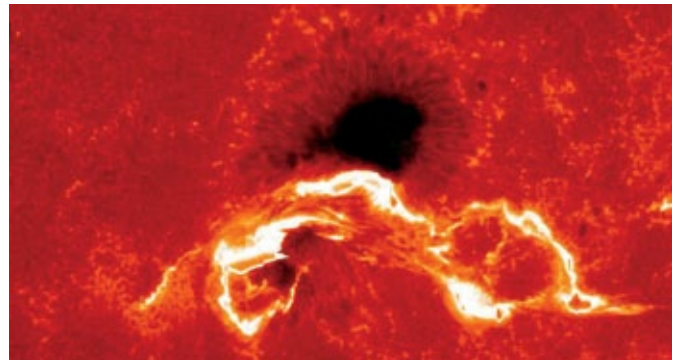
The results of the study were published this summer in the article “Spoiled Milk: An Experimental Examination of Bias Against Mothers Who Breastfeed” in Sage Publishing’s *Personality and Social Psychology Bulletin*. The study received widespread attention from media outlets around the country, including the *New York Times*.

Former MSU students Kristin Hawkinson and Kelli Paull, who helped with the research conducted from 2006 to 2008 at MSU, were co-authors.

Excerpted from Carol Schmidt, MSU News Service



Jessi L. Smith stands by the entrance to MSU’s new family care room.



Sunspots, such as this one, disappeared from 2008 to 2010, leaving the sun quiet for an unusually long time. Photo courtesy of Hinode Mission.

MSU TEAM SOLVES MYSTERY OF MISSING SUNSPOTS

Solar physicist Piet Martens, former MSU graduate student Andres Munoz-Jaramillo, and Dibyendu Nandi, an assistant professor at the Indian Institute of Science Education and Research in Kolkata, published a paper in the journal *Nature* that explained for the first time why sunspots were missing from 2008 to 2010. Sunspots normally go through 11-year cycles. Sometimes sunspots are so abundant that they cover one percent of the sun’s surface. Sometimes they disappear. But the recent lull lasted twice as long as usual, an unusual occurrence that last happened around 1913, Martens said. It happened at least once in the 19th century as well, in 1810.

When Munoz-Jaramillo was earning his doctorate at MSU, he wrote a new computer program that made it possible to model the emergence of sunspots in ways that hadn’t been done before, Martens said. Nandi, a former assistant research professor at MSU who spent eight years in Bozeman, suggested an idea that was explored using Munoz-Jaramillo’s program to study the lack of sunspots. With it, the scientists simulated 210 sunspot cycles and discovered the relationship between extended spotless periods and weak magnetic fields at the solar poles. They identified that variations in a hot plasma flow in the sun’s interior, known as the meridional circulation, is the likely reason behind the lack of sunspots and a weak magnetic field at the sun’s poles.

Understanding sunspots is important because solar activities influence space weather, which affects technology in space and on the Earth. The discovery drew widespread attention, with NASA scheduling a teleconference to discuss it and journalists around the world contacting team members. Reporters from the British Broadcasting Corp. (BBC), msnbc, Wired, Discovery News, Science Illustrated and other media outlets in the United States, India, Brazil and Britain were among them.

Excerpted from Evelyn Boswell, MSU News Service

GRADUATE STUDENT STUDIES BIZARRE ANCIENT MARINE MAMMALS

Bobby Boessenecker, an earth sciences master's degree student who graduated in May, studies weird marine mammals that lived between two million and 10 million years ago. Among them are walrus-faced whales, sloths adapted to the ocean and walruses with an extra set of tusks. During his time at MSU, he published five scientific papers, an accomplishment his adviser said is unprecedented, in his experience, for a master's student.

Boessenecker prepared a paper about a bird bone fragment he found that was published in the *Journal of Vertebrate Paleontology* in May. The bone was from a pelagornithids, large sea birds with tooth-like points on the edge of their beaks. Some pelagornithids had feathered wingspans between 21 and 26 feet, making them among the largest flying birds ever. Boessenecker's paper says the fragment demonstrates that pelagornithids survived in both the Atlantic and Pacific Oceans until the late Pliocene Epoch, which occurred between 2.6 million and 5.3 million years ago.

Another paper Boessenecker published in the *Journal of Vertebrate Paleontology* focused on new records of an extinct fur seal from the Plio-Pleistocene Rio Dell Formation of northern California. A paper in the journal *Palaïos* said the unusual bite marks Boessenecker found on a fur seal fossil didn't come from a shark, but possibly a pilot whale, walrus or other mammal that lived in the Mio-Pliocene Purisima Formation of central California. Boessenecker discovered the bite marks—like many of his other finds—in the laboratory after removing plaster jackets and sediments. Boessenecker, who plans to pursue a doctoral degree in paleontology, published other papers this

spring in *Paleobios* and the PalArch's *Journal of Vertebrate Paleontology*.

"I do research because it's extremely exciting and it basically lets me be a little kid forever. I have always wanted to be a paleontologist. This is my dream job," said Boessenecker, 25.

Bobby Boessenecker prepares the partial skull of a dwarf baleen whale in MSU's new paleontology laboratory in Gaines Hall.



Eric Boyd of MSU led a team of researchers who discovered the approximate time that bacteria and archaea started producing nitrogen in a useable form.

TEAM DISCOVERS MAJOR EVENT IN HISTORY OF COMPLEX LIFE

A team of scientists led by researchers based in MSU's Department of Chemistry and Biochemistry and the Astrobiology Biogeocatalysis Research Center has discovered the "when" of a major event that led to the evolution of complex life on Earth.

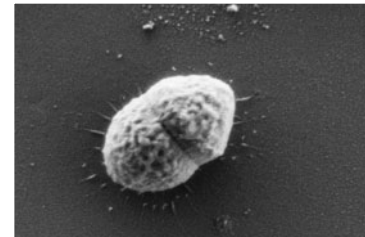
Assistant research associate Eric Boyd and John Peters, associate professor and director of the Astrobiology Biogeocatalysis Research Center, have hypothesized that between 1.5 billion and 2.2 billion years ago, bacteria and single-celled organisms called archaea started producing nitrogen in a useable form. It was the first time that biological processes were involved, and it allowed higher forms of life to flourish. Nitrogen is essential to life, important in everything from DNA, to proteins, to neurotransmitters.

The researchers were able to make their discoveries because of their unique approach that superimposed questions about the origin and evolution of life on the geologic record. DNA from billions of years ago isn't available, so the scientists used statistics and computer modeling to understand processes in molecular biology. The scientists used evolutionary theory and built on decades of previous research. They studied biological processes and metabolism in modern microbes to draw conclusions about the ancient microorganisms. The researchers compared the process of producing fixed nitrogen to another key event in life—the emergence of oxygenation for photosynthesis.

"The big finding is that we showed what kind of environment facilitated the evolution of this process. We put it in relative time," said Boyd, lead author.

The results of the study were published in two scientific journals last spring. *Geobiology* ran a full-length paper on their discoveries. The international journal *Science* summarized the study in its "Editor's highlight" section.

Excerpted from Evelyn Boswell, MSU News Service



This image, taken through a Field Emission Scanning Electron Microscope, shows a microbial cell dividing. Photo by Trinity Hamilton.

MSU RESEARCHERS BRING ANTARCTICA TO BOZEMAN

Jay Rotella and Bob Garrott, professors in the Department of Ecology, are co-principal investigators of a 43-year study monitoring Weddell seals in Antarctica, the most pristine ocean left in the world. For the first time in the study, the MSU researchers shared their experiences throughout the fall of 2010 with more than 100 local third graders.

The MSU research team consists of MSU faculty, graduate students and technicians. This year, for the first time, the team also included Mary Lynn Price, a video journalist who helped them share the Antarctic experience with the public by producing a YouTube channel, video blog, podcasts and more. During the field season, students e-mailed questions to the researchers and received responses almost immediately from Antarctica. They made seals out of sand bags and helped them grow by adding sand.

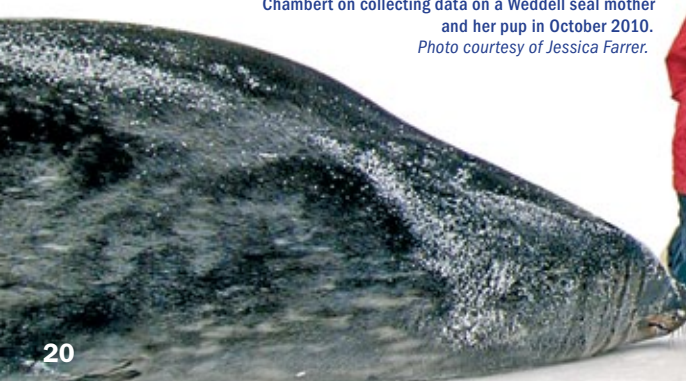
Rotella and Garrott are working with several Bozeman schools to pilot the development of curricular activities that use Weddell seal science to meet national biological teaching standards. By working with students and teachers at Morning Star, Hawthorne and Longfellow elementary schools, Rotella said the researchers could see what works and doesn't work when trying to get students to learn larger biological lessons from their research.

"It's really awesome to be able to work with Montana students while developing outreach materials," Rotella said. "We know they'll help us develop materials that will get used throughout the country. We love bringing our international research home to Montana, and showing the connections between what we learn in distant places and what we learn in our Montana studies."

Sharing the Antarctic experience and adding a Bozeman component makes science come alive for the students, according to Tom Siegel, principal at Morning Star Elementary School.

Excerpted from Evelyn Boswell, MSU News Service

MSU ecology professor Jay Rotella (left) works with MSU doctoral students Glenn Stauffer (center) and Thierry Chambert on collecting data on a Weddell seal mother and her pup in October 2010. Photo courtesy of Jessica Farrer.



Research data that MSU scientists gathered about fish in the Yellowstone River, such as this pallid sturgeon fry, will help state and federal environmental officials assess the impact of a July oil spill in the environmentally sensitive Yellowstone River. Photo courtesy of Al Zale.

MSU FISHERIES SCIENTISTS EVALUATING ECOLOGICAL IMPACT OF YELLOWSTONE RIVER OIL SPILL

MSU fisheries scientists assisted state and federal environmental officials in assessing the impact of a July oil spill in the environmentally sensitive Yellowstone River. About 42,000 gallons of crude oil spilled into the Yellowstone River when a pipeline beneath the river broke creating a plume of oil that traveled hundreds of miles downriver into North Dakota.

MSU scientists provided biologists with the U.S. Fish and Wildlife Service and Montana Department of Fish, Wildlife and Parks (FWP) with data on fish diversity and abundances collected earlier this summer and in previous years. Ongoing sampling will document any changes to the river that may have occurred as a result of the oil spill. MSU biologists will provide FWP with GPS locations of sick turtles and fish, as well as document obvious fish kills if any are found.

"We have been conducting research for many years examining species of fish inhabiting the Yellowstone River," said Al Zale, an affiliate professor in the Department of Ecology and unit leader of the Montana Cooperative Fisheries Research Unit, a cooperative effort between MSU, USGS and FWP. "In the weeks and months ahead, we will be looking for any unusual changes in the river's natural environment and any impacts on the species of fish we would expect to find at this time of year."

Excerpted from MSU News



Corinne Casolaro and Jamie Thornton work with a math camp student. *Photo courtesy of the Department of Mathematical Sciences.*

GIRLS AND THE GOLDEN RATIO

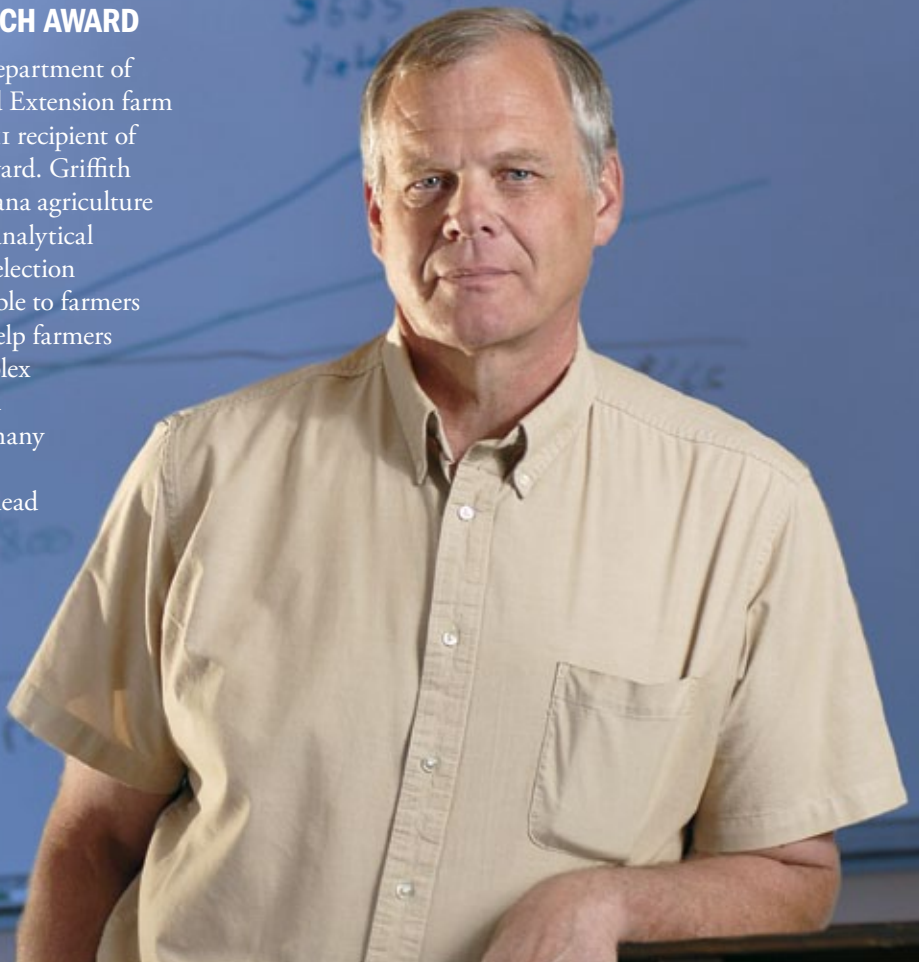
In June, the Department of Mathematical Sciences hosted a free, five-day summer math camp for 7th and 8th grade girls. “Math to Excite: Creating Interest, Confidence and Awareness about Mathematics Among Young Women” consisted of daily lessons taught by K-12 teachers and faculty from MSU. Undergraduate math majors and faculty members served as mentors. Participants worked on individual projects throughout the camp, culminating in a poster presentation on the final day. Topics at the camp included the use of symmetry and the Golden Ratio in painting and photography, cartography, planetary movements, and exploration between mathematics and music. The camp also featured visits from women who have made mathematics a central part of their careers.

Excerpted from MSU News

PROVOST’S EXCELLENCE IN OUTREACH AWARD

Duane Griffith, assistant professor in the Department of Agricultural Economics and Economics and Extension farm management specialist, was selected as a 2011 recipient of MSU’s Provost’s Excellence in Outreach Award. Griffith made significant contributions to the Montana agriculture community by developing easily accessible analytical software for assessing average crop revenue election (ACRE)—part of the 2008 Farm Bill available to farmers in 2009. He also conducted workshops to help farmers understand the software and this very complex farm program. The ACRE decision tool and accompanying programs have been worth many millions of dollars to farmers and ranchers throughout Montana. He has also played a lead role in developing the nationally acclaimed “Ag in Uncertain Times” webinar-based Extension program.

Excerpted from MSU News



Duane Griffith.

MSU GRADUATE AND SOLAR PHYSICIST CONTINUES TO SHINE

Andres Munoz-Jaramillo, who received his Ph.D. in physics from MSU in 2010, won the 2011 Fred L. Scarf Award from the Space Physics and Aeronomy Section of the American Geophysical Union. The Scarf Award goes to a recent doctoral student for outstanding dissertation research that contributes directly to solar planetary science. Munoz-Jaramillo is the first MSU student to receive this honor, and the first solar physicist to receive this award in over a decade.

Earlier this year, Munoz-Jaramillo also received a Jack Eddy Postdoctoral Fellowship from NASA's Living with a Star program. The fellowship will allow him to learn more about solar dynamics by using magnetic data from the past 60 years to develop the most accurate database so far on active regions of the sun. One of three awarded this year, the fellowship is designed to help train the next generation of researchers needed for the emerging field of heliophysics by pairing an experienced scientist with a postdoctoral scientist who is early in his or her career. Munoz-Jaramillo is working with Dr. Ed DeLuca, an

astrophysicist and leader on two solar missions, at the Smithsonian Astrophysical Observatory.

“Andres wrote an excellent proposal that describes a two-year program to continue his already very successful thesis research into the basic physics of the solar magnetic cycle. This research program is an essential step toward the ultimate goal of producing forecasts for the solar cycle,” said MSU solar physicist Piet Martens, Munoz-Jaramillo's thesis adviser.

Munoz-Jaramillo, along with Martens and his other doctoral advisor, Dibyendu Nandi, received international attention last spring after publishing a paper in *Nature* that explained for the first time why sunspots disappeared from 2008 to 2010.

Excerpted from Evelyn Boswell, MSU News Service



Andres Munoz-Jaramillo is the first MSU student and the first solar physicist in more than a decade to receive a Fred L. Scarf Award.

Photo courtesy of Andres Munoz-Jaramillo.

FOUR L&S GRADUATES RECEIVE FULBRIGHT FELLOWSHIPS



From left, Dan Cornish, Jayme Kreitinger and Sasha Dingle.

Four recent graduates of the College of Letters and Science have received Fulbright Fellowships for one year of international research or teaching.

Dan Cornish of Butte, Mont., a graduate in math and photography who is taking pre-med requirement courses at MSU, received a fellowship to teach English in Turkey. Sasha Dingle of Jericho, Vt., who graduated magna cum laude from MSU with a degree in psychology and is a competitive freeskiier, received a Fulbright to teach English in Vietnam. Jayme Kreitinger of Manhattan, Mont., who graduated with a Master of Public Administration degree and coordinates MSU's study abroad programs, received a Fulbright research grant to Jordan where she'll research grass roots democracy initiatives in the Middle East. Ivie English, a 2009 MSU graduate from Great Falls, Mont., who received degrees in Spanish and psychology, received a Fulbright at-large to teach in Mexico.

Sally O'Neill, Fulbright Program adviser in the MSU Office of International Programs, said the awards provide each recipient with a round-trip airplane ticket and a monthly living stipend, which varies depending on country of service.

“A Fulbright is a very prestigious award, extremely well-known all around the world,” O'Neill said. “Being a Fulbright grantee opens doors for your professional career.”

Excerpted from MSU News Service



Ivie English.

RED CROSS COMMUNICATION HEAD AND MSU ALUM FINDS INSPIRATION IN GLOBAL VOLUNTEER NETWORK

It took MSU graduate Jason Smith just 11 years to rise through the ranks of the world's largest humanitarian network and land the position of head of corporate communications for the International Federation of the Red Cross (IFRC).

Since Smith started with the American Red Cross in Bozeman in 1998, the work has taken him from various locations in the U.S. to Malaysia to Switzerland, where he is now based. Smith is responsible for ensuring the IFRC—composed of 186 Red Cross and Red Crescent national societies—communicates well, particularly with internal audiences, about its mission and humanitarian impact, as well as ensuring that all societies are represented globally. His day-to-day responsibilities include brand management, advocacy, capacity and strategy development, enabling member organizations to share best practices and supporting internal communication.

Chris Pinet, professor emeritus in the Department of Modern Languages and Literatures, recalls Smith was a bright, charismatic and positive student. “He was always engaged intellectually, and he was a kid I knew would succeed because



Since Jason Smith started with the American Red Cross in Bozeman in 1998, the work has taken him from various locations in the U.S. to Malaysia to Switzerland, where he is now based. Smith said the lessons he learned as an undergraduate student at MSU translate remarkably well to the position. Photo courtesy of Jason Smith.

he had a lot of drive. He wasn't afraid to try different things,” Pinet said.

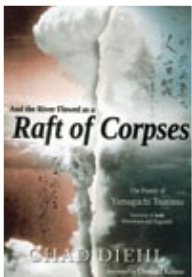
Smith said he feels fortunate to have found fulfilling work. “For me, being connected even in a remote way to the lives being saved through our global volunteer network provides constant inspiration,” he said.

Excerpted from Anne Cantrell, MSU News Service

MSU GRAD FROM GARDINER NOW RISING STAR IN JAPANESE STUDIES

Chad Diehl, an MSU history major who graduated in 2003, recently published a book containing 65 poems written by a double survivor of the atomic bombs dropped on Hiroshima and Nagasaki. As an MSU student, he attended Kumamoto Gakuen University as an exchange student and also won a Fulbright Fellowship that sent him to Nagasaki University to study atomic bomb history and literature.

About four years ago, Diehl met Tsutomu Yamaguchi, one of more than 100 survivors who experienced both atomic bombings. Yamaguchi dealt with the trauma, in part, by writing poetry and Diehl got permission to translate and publish some of those poems. Yamaguchi died in January 2010, just a few months before Diehl published *Raft of Corpses*.



Diehl, who is from Gardiner, Mont., received full funding for graduate studies at Columbia University in New York City. He is finishing up his doctoral work now, and plans to become a professor in Japanese or East Asian history and also work in international relations.

“He is a splendid example of the long touch of the land-grant university. He is doing well in the field because he is smart, but also because he is modest and has no sense of entitlement. He has a strong Montana work ethic,” said Brett Walker, Regents' Professor in the Department of History and Philosophy.

Excerpted from Evelyn Boswell, MSU News Service

Gardiner, Mont. native Chad Diehl recently published a book of poetry written by a double survivor of the atomic bombs dropped on Hiroshima and Nagasaki, Japan.



An aerial photograph of a university campus. The foreground and middle ground are filled with various brick buildings, mostly in shades of orange and red, interspersed with lush green trees and manicured lawns. A central courtyard area features a prominent building with a steeple. The campus is surrounded by a dense forest of green trees. In the background, rolling green hills and mountains are visible under a clear blue sky. The text 'DEPARTMENT HIGHLIGHTS' is overlaid in a white, serif font, flanked by decorative arrow-like symbols.

➤ DEPARTMENT HIGHLIGHTS ◀



Christiana Stoddard.



Joel Schumacher.

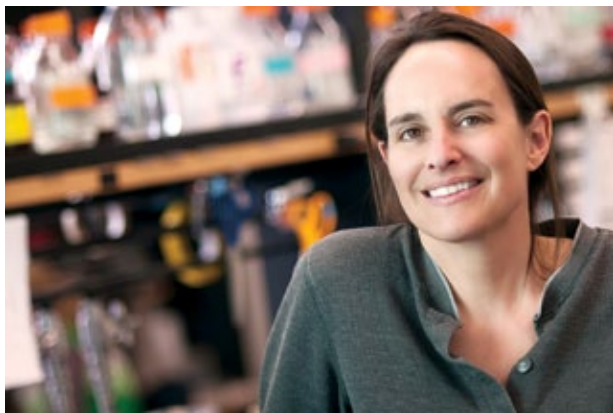


Marsha Goetting.

AGRICULTURAL ECONOMICS AND ECONOMICS

Associate professor Christiana Stoddard was a 2011 recipient of MSU's Cox Family Award for Creative Scholarship and Teaching. She received a \$2,000 honorarium from the Winston and Helen Cox Family Endowment, as well as an \$800 stipend to buy books dedicated in their honor at MSU's Renne Library. Stoddard's research blends economic theory and empirical analysis to answer questions of practical relevance related to education policy. She has published seven refereed journal articles in high-quality economics journals, has made more than a dozen conference presentations and has grown her grant activity markedly since joining the DAEE faculty in 2002. In 2005, Stoddard was called upon to conduct a teacher compensation market analysis for the Montana Legislature. Stoddard's teaching earns high praises from her students and colleagues, and won her the Betty Coffey Award in 2007.

Marsha Goetting, professor, and Joel Schumacher, Extension economics associate specialist, are teaching a free financial education webinar series during the 2011-2012 academic year. The "Solid Finances" series consists of 16 sessions, organized into four topics (money management, investments, retirement and estate planning) with four one-hour sessions per topic. MSU Extension is offering the webinar series, which was created to address the financial education needs of working adults. The program is made possible by a grant that MSU Extension received from the FINRA Investor Education Foundation and United Way Worldwide to expand the Solid Finances education series to reach off-campus audiences. There are two ways to participate in the series: several host locations are being established with classroom space (Havre, MSU-Billings, White Sulphur Springs, Livingston, Broadus and Missoula); or participate as an individual online in the webinar series. Participants can attend a single session or all 16 sessions.



Frances Lefcort.

CELL BIOLOGY AND NEUROSCIENCE

Professor Frances Lefcort spent the Fall 2010 semester on sabbatical in Milan, Italy where she received specialized training, conducted experiments and gave a seminar about her research at the San Raffaele Scientific Institute. While in Milan, she worked with Ivan de Curtis who is an internationally renowned expert in neuronal cell biology. Lefcort's research investigates the developmental mechanisms that go awry resulting in the neurological disease, Familial Dysautonomia. People with the disease typically die within the first few years of life because of a failure in their autonomic nervous system. They also have no pain or temperature sensation. Her research is funded by

the National Institutes of Health, and her sabbatical in Milan resulted in the generation of preliminary data she needs to successfully compete for the renewal of her NIH grant. Further, the expertise Lefcort gained at the San Raffaele Scientific Institute allows her to provide the latest state-of-the art information in cell biology in the undergraduate and WWAMI medical program classes she teaches.

Professor Charles Gray is working on several studies leading to new advances in our understanding of the fundamental neural processes that mediate perception and cognition. With collaborators at MSU and other institutions, Gray investigates the relationships between neural activity patterns and visually guided behavior by using electrophysiological methods for measuring neuronal activity in the cerebral cortex of awake, behaving non-human primates. In one project, funded by a \$1,775,000 grant from the National Institute of Mental Health, Gray is studying patterns of correlated neuronal activity that underlie short-term visual memory. In a second project, funded by a \$1,750,000 grant from the National Eye Institute, he is investigating how the primary visual cortex represents objects embedded in complex visual scenes. In a third project, funded by a \$1,400,000 grant from the National Institute of Neurological Diseases and Stroke, Gray is working to develop new technologies for simultaneously measuring neuronal activity from large numbers of microelectrodes.

CHEMISTRY AND BIOCHEMISTRY

Former department head David Singel was selected as one of two new associate provosts for MSU. In his role, Singel will work closely with the provost, Martha Potvin, to manage the day-to-day responsibilities of the Office of Academic Affairs in accomplishing its strategic goals. He will also represent



David Singel.

Potvin in her absence from campus. Singel's duties will include supporting diversity; providing leadership for undergraduate education, especially in the area of student retention; providing oversight of University College, the Core 2.0 program and faculty

development; evaluating and aligning existing programs, staffing and funding with institutional priorities; and working on the integration of the four MSU campuses. Singel began his new position on August 15. Bern Kohler, a professor of chemistry, was selected as the Interim Department Head.

Eric Shepard (post doc in Joan Broderick's laboratory), Craig Jolley (post doc in Trevor Douglas' laboratory) and Shawn E. McGlynn (a former graduate student in John Peters' laboratory) were



MSU representatives at the observing facilities atop Mauna Kea. Photo courtesy of the Department of Chemistry and Biochemistry.

chosen to attend a winter conference held by the University of Hawaii branch of the NASA Astrobiology Institute. The theme of the January conference was "water and the evolution of life in the cosmos." The 39 invited post-graduate participants were provided with a broad but high-level introduction to astrobiology, emphasizing the origin and role of water in the emergence of life on our planet and in the search for life elsewhere. Lecture topics included the origin of Earth's oceans, observations of ices and water in space, star formation, ice records and climate on early Earth, water on Mars and Mars mission results, hot spot volcanism, water-rock interactions in extreme environments, and deep sub seafloor biospheres. Participants took field trips to the observing facilities atop Mauna Kea (the highest point in Hawaii), Hawaii Volcanoes National Park, and to the astrobiology facilities at the University of Hawaii.

EARTH SCIENCES

Master's degree student Anita Moore-Nall received a 2010-2011 Minority



Anita Moore-Nall.

Participation Program Geoscience Student Scholarship from the American Geological Institute. An enrolled member of the Crow tribe, Moore-Nall was one of 17 graduate students and six undergraduates in the U.S. who received the scholarship and stipend. Moore-Nall is researching thermal karst in the Big Horn Mountains of Wyoming and the possible relationship between that karst, uranium and other ions in water on the Crow Indian Reservation. In 2010, Moore-Nall also received a 2010 Dennis and Phyllis Washington Native American Graduate Fellowship to examine old uranium and vanadium mines in southern Montana and northern Wyoming to see if they affect water quality on the Crow Indian Reservation. The \$10,000 fellowship allowed her to collect rock samples from abandoned mines, hire undergraduate and graduate student assistants, and pay for sample analysis.

Dave McWethy, assistant research professor in earth sciences, and Cathy Whitlock, professor of earth sciences, received a grant from the National Science Foundation to study the impact of early humans on forests in New Zealand. The \$320,000 NSF Geography and Spatial Sciences grant is for the project titled, "Ecosystem Resilience to Human Impacts: Ecological Consequences of Early Human-Set Fires in New Zealand." The first peoples in New Zealand, who arrived just 700 years ago, initiated a sequence of events that caused the loss of more than 40 percent of the forests, and this deforestation occurred within decades of human arrival. It was accomplished by the introduction of a new disturbance—fire. The research team will study the pollen, diatoms, chironomids (non-biting midges), charcoal and chemistry of the sediments from small lakes to reconstruct the events associated with human arrival. Results from the first phase of research by McWethy and Whitlock are reported in an article in press with the journal *Proceedings of the National Academy of Sciences*, and show that the activities of even small prehistoric populations can permanently alter large landscapes.



Dave McWethy studies humans, forests and fires at Lake Johnson in New Zealand.

ECOLOGY

Master's degree student Mariah Mayfield received a 2010 EPA Science To Achieve Results (STAR) Graduate Fellowship that will allow her to expand her work. Mayfield is studying trout numbers, habits and habitat in 120 miles of the upper Clark Fork River and its tributaries, one of the largest Superfund sites in the U.S. Her award gives her \$37,000 a year for up to two years, allowing her to collect more water quality data, specifically about heavy metal concentrations. One purpose of her study is to see if fish avoid or select habitat according to those concentrations. The fellowship will also allow her to explore some of the survival aspects of trout. She went to Washington, D.C. in the fall of 2011 to present her work to officials from the EPA and other federal agencies. Mayfield's was one of 10 such awards given to master's degree students across the nation and one of 138 given to all graduate students in 2010. It was the sixth STAR award given to an MSU graduate student in the past five years.



Mariah Mayfield radio tracks trout in the upper Clark Fork River. Photo courtesy of Mariah Mayfield.



Andy Hansen overlooks the Gallatin Valley. Photo courtesy of Andy Hansen.

A team of researchers led by ecology professor Andrew Hansen is launching a four-year project to provide land managers in the country's federally managed lands with better information for addressing climate

and land use changes. The \$1.8 million NASA-funded project uses NASA remote-sensing data to help design management plans for public lands. According to Hansen, his team will use NASA satellite data to simulate how the ecosystems of two Landscape Conservation Cooperatives (LCCs) will change under forecasted climate and land use changes. Created by the Department of Interior, LCCs are a network of partnerships working in unison to ensure the sustainability of America's land, water, wildlife and cultural resources. Hansen and his colleagues will look at past ecological trends and predicted future trends, and assess the vulnerability of ecosystems and certain species to climate and land use change. The team will evaluate management options and design management approaches for the more vulnerable ecosystems and species within the two study LCCs.

ENGLISH

English major Tristan Abbott was among 43 Montana college students and faculty who were selected to assist officials attending the Asia-Pacific Economic Cooperation (APEC) Trade Ministerial and Small and Medium Enterprise Meetings in Big Sky last May. Approximately 90 trade ministers, senior trade officials, and Small and Medium Enterprise Ministers representing 21 economies congregated in closed sessions to hammer out policies. To make the delegates' lives easier, college students and other Montanans were chosen to become "liaison officers." Abbott, an English major who specializes in contemporary English literature, assisted Paul Tighe from Australia. Lessons in protocol were part of his formal training as a liaison officer, Abbott said. For example, the liaison officers were told not to show the soles of their shoes to others. It can happen inadvertently while crossing a leg, but it's an insult in many countries. The liaison officers were unpaid volunteers, but their lodging, food and BlackBerry communication devices were provided during the conference. "It's a once-in-a-lifetime opportunity," Abbott said.



Tristan Abbott.

Adjunct Instructor Glen Chamberlain had her first book, *Conjugation of the Verb To Be*, published in September by Delphinium Books. The book is a collection of 11 of Chamberlain's short stories. Writer Mark Spragg says of her book, "Here are stories composed with spare and lovely and graceful prose, patterned by insight, revelation and passion, and finally wisdom." Chamberlain has also had her stories published in *Montana Quarterly*, *Big Sky Journal* and literary journals such as *High Desert Journal*. She has won several prestigious prizes for her short stories, including a Pushcart Prize for the best writing in small presses, the Gilcrease Prize for fiction, and the Rona Jaffe Award for both fiction and creative nonfiction. The Rona Jaffe Foundation, from whom she received her award in 2001, named her "one of the six most promising women writers in the nation." At MSU, Chamberlain teaches 100 and 200-level composition classes in the Department of English, where she has taught for 21 years.



Glen Chamberlain.

HISTORY AND PHILOSOPHY

A MSU team that debates ethical questions won second place at the National Ethics Bowl Championship in Cincinnati, Ohio in March. Thirty-two teams from eight regions across the country competed in the national contest, with Central Florida University winning first place. Other teams came from Dartmouth College, the U.S. Naval Academy and the University of North Carolina at Chapel Hill. The MSU team began the National Ethics Bowl by debating the ethics of tying K-12 teacher tenure and pay to student achievement. The team went on to debate the ethics of surgically altering dog’s vocal chords to keep them from barking; employers screening employees for tobacco use; a British policy on stem cell research; the production and sale of a drink that combines alcohol, caffeine and sugar; and economic development in Haiti. MSU ended the competition by debating the ethics of an Arizona immigration law that requires officers to ask for proof of citizenship if they have “reasonable suspicion” that someone is in the country illegally. Kristen Intemann, associate professor of philosophy, is the faculty advisor for the team.



Coach Kristen Intemann and Ethicats Shelby Rogala, Griffin Stevens, Madeleine Pike and Joseph Thiel (from left) at the 2011 National Ethics Bowl. Photo courtesy of Ethicats.



Timothy LeCain. Photo by Allison LeCain.

In September, Timothy LeCain, associate professor of history, began a nine-month tenure as a senior research fellow at the Rachel Carson Center in Munich, Germany. LeCain will be working on several publications based on the research results of a three-year National Science Foundation grant comparing the environmental histories of two copper mining and smelting sites: the Anaconda-Butte complex in Montana and the Ashio complex in Japan. The title of his project is, “Hybridity, Techno-Symmetry and Bio-Indicators: A Comparative History of Landscape, Culture and Technology in Japanese and American High Modernist Copper Mining.” He is writing in collaboration with Brett Walker, a prominent historian of the Japanese environment and professor of history in the MSU Department of History and Philosophy. Named in honor of the respected American environmental writer, the Rachel Carson Center is an international center for the environmental humanities.



Mathematics graduate student Shane Nowack (left) and Isaac Klapper (right) collect samples from an Octopus Spring effluent channel in Yellowstone National Park. Photo courtesy of Isaac Klapper.

MATHEMATICAL SCIENCES

Professor Isaac Klapper is collaborating with several multidisciplinary teams to develop modeling and theoretical tools for understanding the form and function of microbial communities, while at the same time training students to be capable of working across disciplines. Klapper is working with MSU colleagues Tianyu Zhang in Mathematical Sciences, and Robin Gerlach, Al Cunningham and Andy Mitchell in the College of Engineering, to study the biology, chemistry and physics of microbially-induced carbonate mineralization and its applications to carbon sequestration and bioremediation. This project is funded by a \$750,000 National Science Foundation (NSF) grant. In a second project, funded by a \$250,000 NSF grant, Klapper is working with MSU colleagues Dave Ward (College of Agriculture) and Ross Carlson (College of Engineering) to construct a computer model representation of a microbial ecosystem living in an effluent channel of a Yellowstone National Park hot spring. Multidisciplinary cohorts like these are likely to be central to the future of research in microbiology.

A team from the Department of Mathematical Sciences received an “Honorable Mention” for their work on a problem at the annual Consortium for Mathematics and Its Applications’ (COMAP) Mathematical Contest in Modeling (MCM) competition. The MCM presents teams consisting of three undergraduate students with a choice of two highly open-ended “real-world” problems, and the teams have four days to research, model mathematically and create a formal write-up for the problem. The Department of Mathematical Sciences had three teams participate in the 2011 competition in February. A team consisting of math majors Eric Fink, David Halat and Kelly Spendlove received an “Honorable Mention” for their work on the following problem: For a circular flat area with a 40-mile radius, what is the minimum number of VHF radio repeaters necessary to accommodate 1,000 simultaneous users, assuming that the available spectrum is from 145-148 MHz, each repeater has an offset of plus or minus 600 kHz, and can utilize one of 54 different tones. In the nearly 30 hours they spent wrestling with the questions, they wrote over 1,000 lines of code, covered untold whiteboards, and eventually produced a 3,000-word paper. There were 2,775 teams worldwide in the competition and only 30 percent earned the “honorable mention” distinction. In this same category were teams from schools such as Cornell, Johns Hopkins, MIT and Stanford.



MSU researchers Keith Cooksey, Brent Peyton and Rob Gardner (from left) discovered that baking soda, added at a specific time in the growth cycle of algae, dramatically increases the production of oil.

MICROBIOLOGY

Keith Cooksey, research professor emeritus in microbiology, is part of a MSU team of researchers that discovered that baking soda can dramatically increase algae's production of the key oil precursors for biodiesel. Other team members include Rob Gardner, an MSU graduate student in chemical and biological engineering, and Brent Peyton, professor in chemical and biological engineering and associate director of MSU's Thermal Biology Institute. All three scientists belong to MSU's Algal Biofuels Group, "one of the best cooperative research groups on campus," according to Cooksey. When added at a particular time in the growing cycle, baking soda more than doubled the amount of oil produced in half the time in three different types of algae. The search for a chemical trigger to boost oil production in algae was a long, sometimes torturous, journey, according to the three MSU scientists. Not only did they have to find a chemical that would work, but also they had to figure out the best time to add it to the algae. This new technology is now available for licensing through MSU's Technology Transfer Office.



Persea indica, an evergreen tree native to the Canary Islands, was studied for endophytes making interesting and useful products such as organic compounds that could be used as fuels or fuel additives

Angie Tomscheck, a spring graduate with a degree in microbiology, discovered a fungus that produces eucalyptol—a rare compound previously only found in eucalyptus bark. Eucalyptol has the potential to be a biodiesel, and with Tomscheck's discovery, would be much easier to produce, making it a stronger contender to become

a gasoline alternative for the mass public. Tomscheck made the discovery while studying a dozen or so plant samples collected by Gary Strobel, professor emeritus in the Department of Plant Sciences and Plant Pathology, in the jungles of the Canary Islands off the northwest coast of Africa. One plant in particular had a strong scent, and Strobel and Tomscheck determined that the scent was the result of the presence of eucalyptol. The eucalyptol is produced by a fungus, which means that the eucalyptol can be produced in the lab. The finding is so important that Strobel received more than \$300,000 from the U.S. Department of Energy to continue work on the discovery. Tomscheck also co-authored an article about the discovery that was published in the journal *Microbial Ecology*. MSU has filed a patent on the fungus and research is ongoing.



MODERN LANGUAGES AND LITERATURES

Since 2009, the tenure-track faculty of the Department of Modern Languages and Literatures have co-taught the course ML 100IH, "Introduction to World Cultures." Faculty members take turns coordinating this innovative course that introduces students to a wide range of international issues around three key concepts: (im)migration, nation/space and race. The interdisciplinary nature of the course is crafted to serve students from many fields. The MLL experts in the relevant region teach each section of the course—U.S. Latino and Latin America, Europe, Africa and Asia. In addition, classroom discussions on Fridays focus on the news of the region being covered at the time. For example, last spring, classes discussed the uprisings in North Africa, the continuing controversy over the Muslim veil, the economic crisis in European countries and the shocking return of Haitian dictator Duvalier to the island in the context of racial/cultural tensions, colonialism, human rights and globalization. The course has been successful in providing students with an introduction to several national and regional cultures, and knowledge of those regions' participation in transnational and global trends.

Ada Giusti, associate professor of French and francophone studies, co-developed and co-taught an innovative interdisciplinary course, SOCI 491, "Engineering in the Global Context," along with Leah Schmalzbauer (associate professor of sociology) and Otto Stein (professor of civil engineering) during spring semester 2012. The seminar attracted MSU students from various disciplines, including engineering, liberal studies, sociology, philosophy, film and English. Many of the students are interested in conducting development projects in Kenya through the Montana chapter of Engineers Without Borders. The course introduced students to: 1) the history of Kenya and the impact of colonialism; 2) Kenyan culture(s), demographics and politics; 3) the infrastructure, theory and critique of global development and aid; and 4) the benefits of community led development and design. As a result of positive student feedback, the participating faculty plan to offer the course again in Spring 2012.



In the past seven years, Engineers Without Borders, a student-run organization at MSU that provides clean water and sanitary latrines to schools in Kenya, has benefited an estimated 3,500 Kenyans. Photo courtesy of Engineers Without Borders at MSU.

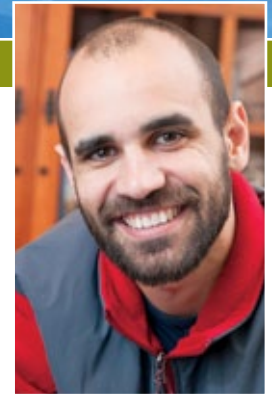
NATIVE AMERICAN STUDIES

During spring 2011, acclaimed First Nations (Abenaki) documentarian Alanis Obomsawin visited the MSU campus to talk about indigenous activism and the art of filmmaking—her life’s work. She screened two of her recent films for the campus and Bozeman communities after spending a full day in close conversation with Native American Studies and School of Film and Photography students engaged in the pilot NAS 580 course, “Advocating Through Film.” The class is co-taught by associate professor, Kristin Ruppel, and film producer, Patrick Markey. Obomsawin is one of Canada’s most distinguished filmmakers. She has made more than 30 documentaries about issues



Alanis Obomsawin.

affecting Aboriginal people in Canada. In September 2010, Obomsawin was inducted to the Canadian Film and Television Hall of Fame. Obomsawin’s lecture was part of the College of Letters and Science Distinguished Speaker Series.



Blaze Kwaymullina.

Blaze Kwaymullina, assistant professor at the School of Indigenous Studies at the University of Western Australia, spent fall semester 2010 as the guest of the Department of Native American Studies. Kwaymullina is a member of the Palyku and Nyamal peoples of the Pilbara, which is located in the northwest part of Western Australia. His visit, co-sponsored by the Provost’s Office and the Office of International Programs, was meant to establish links between Aboriginal communities in Australia and Native communities and indigenous studies programs in North America. While at MSU, Kwaymullina delivered the Phyllis Berger Memorial lecture, which was titled, “Learning to Read the Signs: Australian Aboriginal Ways of Knowing, Being and Doing.” “The underlying principles that inform our worldviews are similar,” said Kwaymullina. “Culturally, there is a lot of crossover in the way we see the world and think about ourselves as human beings. Both cultures also have strong storytelling traditions, and I have enjoyed telling stories from my people and listening to the stories of the Native people here.”

PHYSICS

Seventy-five Montana college students, who conducted research with funding from the Montana Space Grant Consortium, presented their research at the MSGC Student Research Symposium in April. Free and open to the public, the symposium included talks on Montana’s Explorer-1 [Prime] satellite, historic climate change at Ennis, tethered blimp technology at Chief Dull Knife College, improving wildlife corridors and much more. Student researchers come from most of the 19 colleges that are part of the Montana Space Grant Consortium, including tribal and community colleges. In addition to student presentations, the MSGC symposium included two lectures by visiting speakers. Dava Newman, professor of aeronautics and astronautics and engineering systems at the Massachusetts Institute of Technology, discussed “An Invitation to Explore: Astronauts, Athletes and Engineers in Extreme Environments.” Jaime Waydo, a mobility engineer with the Jet Propulsion Laboratory, spoke about “From Montana to Mars: Life at NASA’s Jet Propulsion Laboratory.”

Assistant professor Nicolas Yunes joined the faculty of the Department of Physics in Fall 2011. Yunes, who earned his doctorate at The Pennsylvania State University, completed his postdoctoral training in general relativity and astrophysics at Princeton University, at the MIT Kavli Institute for Astrophysics, and at the Harvard Center for Astrophysics as a NASA Einstein Fellow. During this time, he developed a novel method to test Einstein’s theory of general relativity with future gravitational wave observations, as well as more accurate models for these waves within Einstein’s theory. Yunes’ current research focuses on understanding how Einstein’s theory can be tested in novel ways, and how gravitational waves can be exploited to learn about black holes, neutron stars and astrophysics. Such waves will provide unique information about the sources of these phenomena.



Nicolas Yunes.
Photo by Parker Hilton.



Participants in the 2011 MSGC Student Research Symposium. Photo courtesy of Joseph Shaw.

POLITICAL SCIENCE

Faculty members in the Department of Political Science are providing analysis of state, local and national politics in a blog at <http://bigskypolitics.blogspot.com>. David Parker, who is a scholar of American politics with an emphasis on Congress and congressional elections, is one of seven bloggers on the site and he also manages the blog. Other faculty bloggers and their specialties include: Linda Young, an economist who focuses on international trade issues; Jerry Johnson, whose research centers on the political economy of tourism and the “New West;” Sara Rushing, a political theorist, who thinks and writes about political discourse; and Eric Austin, who studies organizational theory and management. Other faculty experts who will contribute to the blog in the future include Liz Shanahan, who researches political narratives and environmental policy, and Paul Lachappelle, the department’s community development expert. Montanans are invited to visit the blog, share postings with friends, and engage in political discourse with the political science faculty.



Montana state capital building.

Assistant professor Sara Rushing won the *Contemporary Political Theory* journal’s annual prize.

Rushing won the honor for her article, “Preparing for Politics: Judith Butler’s Ethical Dispositions.” The article was published in the August edition of the journal, which is based in the United Kingdom. Rushing received £500 for the article, which the judges describe as “elegantly systematic, insightful and eloquently argued.” The article is part of a book project that Rushing is writing that looks at the quality of humility in American politics. Rushing is a specialist in contemporary political theory and has a background in feminist identity politics. Rushing has taught at MSU since 2008. She is also the outgoing chairwoman of the MSU Women’s Faculty Caucus.



MSU political science assistant professor Sara Rushing won the *Contemporary Political Theory* journal’s annual prize.



Colleen Moore. Photo by Greg Dixon.

PSYCHOLOGY

Colleen F. Moore has joined the Department of Psychology as the new department head. She comes from the University of Wisconsin–Madison where she was a professor and director of graduate studies. Moore studies the impacts of early life adverse events such as fetal alcohol, prenatal stress, and exposures to pollutants such as lead, mercury, noise and pesticides. She is the author of *Children and Pollution: Why Scientists Disagree*, which was published by Oxford University Press in 2009.

Professor Richard Block has been awarded Fellow status with the Association for Psychological Science (APS), a prestigious group dedicated to the advancement of scientific psychology. Fellow status is given to prominent psychologists who have made sustained, outstanding contributions to the science of psychology in such areas as research, teaching, service and application. Block has more than 90 scientific publications and is one of the world’s experts on time perception and temporal information processing. His current research interests include memory and cognition—focusing on human memory, including temporal information processing—face encoding processes, the spacing effect and human judgment processes.



Richard Block. Photo by Parker Hilton.

SOCIOLOGY AND ANTHROPOLOGY



Leah Schmalzbauer.

MSU recently won the prestigious C. Peter Magrath University Community Engagement Award from the Association of Public and Land-grant Universities (APLU), beating out some of the largest universities in the nation. MSU was recognized for the contributions its students have made in bringing clean water to a region in Kenya through the work of the MSU chapter of Engineers Without Borders.

Given just once a year, the award recognizes a four-year public university that embraces outreach and community engagement and comes with a \$20,000 prize. Associate professor Leah Schmalzbauer serves as a faculty co-advisor for EWB at MSU along with Otto Stein in the College of Engineering. Schmalzbauer advises on the social science side of EWB's projects, helping student volunteers think through the social issues that are so critical in international development work. Specifically, she helps them think about how to effectively and ethically work across race, class, gender and cultural differences. To date, EWB at MSU has raised nearly \$500,000 to further its efforts—including more than \$200,000 in grants, awards or donations this year alone. Earlier this year, the group also received a 2011 W.K. Kellogg Outreach Scholarship Award from the APLU that came with a \$5,000 prize.



EWB is recognized as being one of the most ambitious and most successful student-led organizations in the university's history, with more than 60 active students representing every college within the university. Photo courtesy of Engineers Without Borders at MSU.

Project Archaeology, a national organization dedicated to archaeological and heritage education, received a 2011 Partners in Conservation Award from the U.S. Department of the Interior. The nationwide program, as well as the state program for Montana, are housed and administered out of the Department of Sociology and Anthropology. The Partners in Conservation Award recognizes partnerships that use innovation and collaboration to promote conservation, initiate



Crystal Alegria, shown here at an archaeology dig during the summer of 2011, is the coordinator for Project Archaeology, a National archaeology and heritage education program. Alegria attended the 2011 Partners in Conservation Award ceremony in Washington, D.C. in September. Photo courtesy of Victoria Bochniak.

large landscape projects, and protect natural and cultural resources through diverse stakeholder and youth engagement. A national panel assembled by the Department of the Interior selected the award winners from a large pool of nominees. Winners were chosen for their exceptional contributions to conservation and management of the public lands. Since 1990, Project Archaeology, in cooperation with the Bureau of Land Management, has delivered high-quality conservation and heritage stewardship education programming and materials to nearly 10,000 educators through a collaborative network of 29-state and regional programs. Over 210,000 students have received cultural resource stewardship education in classrooms, museums, visitor centers and in the great outdoors.

Esteban Ferrero Botero of Manizales, Colombia, a MSU tennis player and honors student who graduated in May, received three select scholarships to continue his studies in cultural anthropology. He received a \$7,500 Postgraduate Scholarship from the NCAA, the only one awarded to a Montana student-athlete during the 2010-2011 school year; a \$5,000 scholarship from the Lambda Alpha national honor society for anthropology majors, the only one awarded in the U.S. in 2011; and a \$5,000 scholarship from the national honor society Phi Kappa Phi, one of 57 awarded in the nation this year. Ferrero Botero plans to use the three scholarships to help pay his way through graduate school at the University of California-San Diego. He plans to earn a master's degree in Latin American studies with an emphasis on anthropology, and eventually pursue a doctoral degree. As an undergraduate student, Ferrero Botero was involved in a number of anthropological studies. He studied diabetes and obesity among the Enewetak-Ujelang people of Hawaii. Ferrero Botero has also studied the indigenous Wayuu people of northern Colombia, male migrant workers in Montana and Buddhists in Bozeman. He has participated in archaeology digs in the Mayan ruins of Belize.



Esteban Ferrero Botero has received three scholarships to continue his studies in anthropology.

⇒ COLLEGE NEWS ⇐



MOUNTAINS AND MINDS

Dave Lageson, professor of geology in the Department of Earth Sciences, and Conrad Anker, world-class climber and research collaborator in the Department of Earth Sciences, will play a major role in a spring 2012 expedition to commemorate the 50th anniversary of the first successful American ascent of Mount Everest. In 1963, Americans Tom Hornbein and Willi Unsoeld became the first to successfully climb Everest's West Ridge and traverse the entire mountain, one of the most difficult high-altitude mountaineering feats in history. Lageson, who will serve as the base camp manager for the expedition, is planning a rigorous education and outreach component to complement the climbing goals of the expedition. The team will develop an interactive "Roof of the World Curriculum" geared towards a variety of audiences with the theme of geology and the effects of global climate change in the High Himalaya. Teachable topics will include glaciers and climate change, the geology of the Everest region, the culture of Nepal, and human and climber physiology.



Top photo: Conrad Anker and his party climb the last few steps to the summit of Mount Everest in 2007. *Photo courtesy of Conrad Anker.* **Bottom photo:** The final 100 meters to the summit of Mount Everest on the southeast ridge. Dave Lageson is studying rock samples taken from the outcrops pictured on the left. The samples are marine limestone with fossils from the Ordovician geologic time period (450 million years old). *Photo courtesy of Michael Brown, Serac Adventure Films, www.seracfilms.com.*

WELCOME HOME!

Sue Monahan, an associate professor in the Department of Sociology and Anthropology, was selected as the new Associate Dean for Program and Curricular Development. Monahan has been a faculty member at MSU since 1995, and served as chair



Sue Monahan, Associate Dean for Program and Curricular Development, College of Letters and Science.

of the Department of Sociology and Anthropology from 2005 through 2009. An organizational sociologist, her current work examines the interrelationships among organizational structure, community characteristics and patient outcomes in hospitals. She has taught a range of courses at MSU in the areas of diversity and social science, including upper division sociology courses and research-based capstone courses. Monahan has been involved in a number of institutional initiatives. She was one of the original co-principal

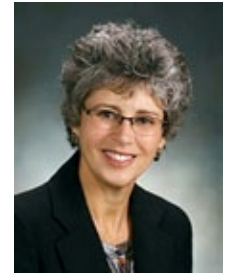
investigators of MSU's National Science Foundation-funded ADVANCE Leadership Award, which built community among MSU's women faculty. She also served as MSU's representative to the Montana University System's Sociology Transferability Council working on common course numbering in the Montana University System. Adele Pittendrigh, who retired in February, most recently held the position of Associate Dean for Program and Curricular Development in the College of Letters and Science.

We welcome MSU's new president and provost not just to campus but also to the College of Letters and Science! Both are tenured in an L&S department. Waded Cruzado, who was inaugurated as MSU's 12th president on January 4, 2010, is tenured in the Department of Modern Languages and Literatures. President Cruzado holds a bachelor's in comparative literature from the University of Puerto Rico, Mayagüez; a master's in Spanish from the University of Texas, Arlington; and a doctorate in humanities from the University of Texas, Arlington. Before coming to MSU, she was executive vice president and provost of New Mexico State University.



MSU President Waded Cruzado. Photo courtesy of Darren Phillips.

Martha Potvin, who became MSU's new provost and vice president for academic affairs in 2011, is tenured in the Department of Ecology. Potvin has a bachelor's degree in biology from the University of Connecticut; a master's degree in botany and plant ecology from Michigan State University; and a doctorate from the University of Nebraska in ecology and evolutionary biology. She previously served as the dean of the College of Arts and Sciences and professor of biology at the University of North Dakota.



MSU Provost Martha Potvin.

Earlier this year, MSU Provost, Martha Potvin, announced a reorganization of academic affairs in an effort to better serve students and faculty and the institution's land-grant mission. As part of this reorganization, Liberal Studies and American Studies, two degree-granting, interdisciplinary programs that were previously in University College, are now part of the College of Letters and Science. This change was made in order to align academic degree programs with an academic dean. The Bachelor of Arts in Liberal Studies offers students a general education degree designed specifically to meet the needs of students wanting to pursue a flexible cross-disciplinary educational program that is not as prescriptive as traditional curricula. The undergraduate and graduate degrees in American Studies allow students to study the history, people, cultures and institutions of the U.S. in an interdisciplinary curriculum that combines the study of history, literature and the arts. The details regarding the location and administration of these programs within the college have yet to be finalized, but we are committed to the continued excellence of these interdisciplinary endeavors. These programs originated in the College of Letters and Science, and we are pleased to welcome them home.



Joe Thiel, a senior double majoring in liberal studies and chemical engineering, was appointed by Governor Brian Schweitzer to be the student regent on the Montana Board of Regents. Photo courtesy of Nick Wolcott, Bozeman Daily Chronicle.



Susan Kollin.

CONGRATULATIONS TO SUSAN KOLLIN, OUR NEW DISTINGUISHED PROFESSOR

Susan Kollin, professor in the Department of English, has been appointed as the newest Letters and Science Distinguished Professor. The appointment was made in recognition of Kollin’s contributions to the college, to MSU and to the scholarly community at large, said Dean Paula Lutz. The appointment is for three years. Kollin will give a public lecture during the 2012 spring semester.

Kollin has taught in the Department of English at MSU since 1995. She is an accomplished scholar who has established herself as a leading national and international theorist and critic in the areas of the literature and film of the American West, environmental criticism and feminist theory. Kollin has an exceptional record of publication, including her first book *Nature’s State*, and an edited collection of essays, *Postwestern Cultures: Literature, Theory and Space*, that has challenged the very definition of the American West. Kollin also excels in the classroom—including instruction to international

students—by developing engaging and challenging curricula and incorporating her extensive research into the classroom experience. She was a co-founder of the Middle East Partnership Initiative program at MSU, a six-week international cultural exchange that brings students from the Middle East and North Africa to the U.S. She also spent ten months teaching at the American University in Cairo, Egypt as a Fulbright Lecturer.

In 2009, Kollin received the Betty Coffey Award in recognition of her work on issues and problems faced by MSU’s female undergraduate students. She is currently on sabbatical for the 2011-2012 academic year working on a new book.

NEW SPEAKERS SERIES

In the spring of 2011, the college initiated the Letters and Science Distinguished Speakers Series to help departments bring distinguished scholars to campus to give a public talk and to meet with faculty and students. The goals of this program are to enrich the intellectual life of our campus, and to enhance the research connections of both faculty and students. The first speaker to visit campus was award-winning Native filmmaker Alanis Obomsawin, whose talk was sponsored by the Department of Native American Studies. To date, there are six speakers scheduled for the fall semester and three speakers scheduled for the spring semester. To learn more about the series, and to see a list of scheduled speakers for the 2011-2012 academic year, please visit www.montana.edu/lettersandscience/speakers.html.

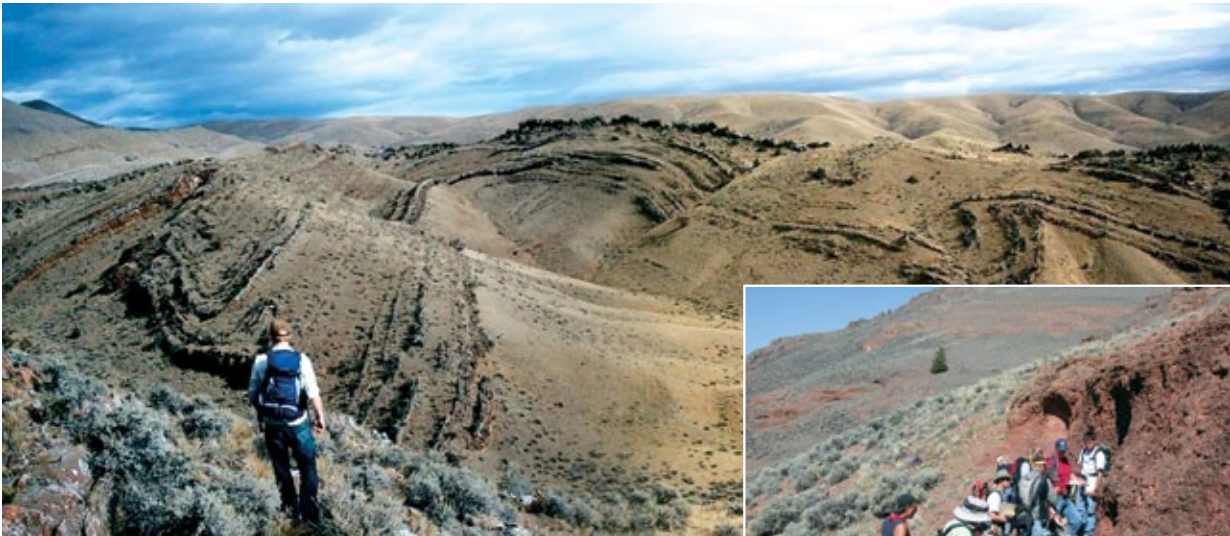
Got Vim?

PROVE IT.

The Montana State University Alumni Association **Membership Match Program** provides a unique opportunity for you to demonstrate your loyalty to MSU AND support the College of Letters and Science. Now through the end of 2011, when you join the MSU Alumni Association as an annual member or life member, or you upgrade your existing annual membership to a life membership, the MSU Alumni Foundation will provide \$50 to \$100 in unrestricted funds to the College of Letters and Science.

“WE’VE GOT THE
VIM
WE’RE HERE TO
WIN”
~ MSU FIGHT SONG

If you’ve been thinking about joining the MSU Alumni Association, upgrading your membership or donating to MSU, this is a great opportunity. Go to advancemsu.org and click on “join,” or fill out and return the envelope inserted in this issue of *Confluence* today.



Earth sciences faculty and students at a geology field camp.
Photos courtesy of Dave Lageson.

MARATHON OIL COMPANY TEAMS WITH MSU'S EARTH SCIENCES DEPARTMENT

When Marathon Oil Corporation, one of the world's leading oil companies, wanted to support research and teaching excellence in earth science and petroleum-focused geology, the company looked to Montana State University.

MSU might not have been such an obvious choice if it weren't for Mike Gardner, Dave Lageson and Jim Schmitt, faculty members in the Department of Earth Sciences, and Dave Bowen, a Research Scientist at MSU's Energy Research Institute, who together present one of the most powerful research teams in sedimentary geology in the United States.

Gardner re-introduced Marathon representatives to MSU, and together with Bowen and Schmitt, approached Marathon with the outright question of "What can MSU do for you?" Seeing the strategic advantage of having a powerful research team and the innovative energy of a university at their service, Marathon took MSU up on its offer.

With a generous gift of \$125,000, Marathon has initiated a long-term partnership between Marathon Oil Corporation and MSU that promotes the research and educational objectives of both organizations in petroleum-focused disciplines in geology. Initial funding created the Marathon Oil Field Trip Fund to provide a resource to support geology student field trips. In addition, the Marathon Oil Company Endowed Scholarship was created to provide graduate scholarships or fellowships to worthy students, as well as Marathon Oil Geological Sciences Support to provide for student activities and professional associations.

Long recognized as a pacesetter in creating sustainable value growth through innovative energy solutions and

unique partnerships, Marathon has partnered with MSU to create a visionary program that encompasses research, education, recruiting and training, taking Marathon beyond a conventional integrated oil business. Many MSU graduates have gone on to careers with Marathon. As Randy McQueen, Marathon's Worldwide Geosciences Manager, puts it, "Our involvement with key schools helps us to build the 'bench strength' needed to build the future of our organization."

McQueen adds, "These partnerships create value for both Montana State University and Marathon. We provide meaningful work experiences for students and MSU provides us with new paradigms for solving our sedimentary geology and petroleum exploration and production problems. We are confident in hiring MSU graduates because we know they bring tremendous technical competencies to our company and integrity that is critical in today's corporate environment."

Headquartered in Houston, Texas, Marathon is among the leading energy industry players, applying innovative technologies to discover valuable energy resources and deliver the highest quality products to the marketplace. Marathon seeks to find and hire talented students who thrive in an environment full of challenges and professional development prospects and to that end, they are actively working with the students and participating in courses at Montana State University.

By the Montana State University Foundation

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The Dean's Circle recognizes alumni and friends whose cumulative lifetime gifts to the College of Letters and Science total \$10,000 or more. We are grateful to this growing group for its loyalty and tremendous support of the college.

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The college, like the university, operates on a fiscal-year calendar. Gifts listed in the Annual Giving section were received between July 1, 2010 and June 30, 2011. If you believe we have made an error, please contact the L&S development office at 406-994-2092 so that we may recognize you appropriately and accurately in future publications.

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