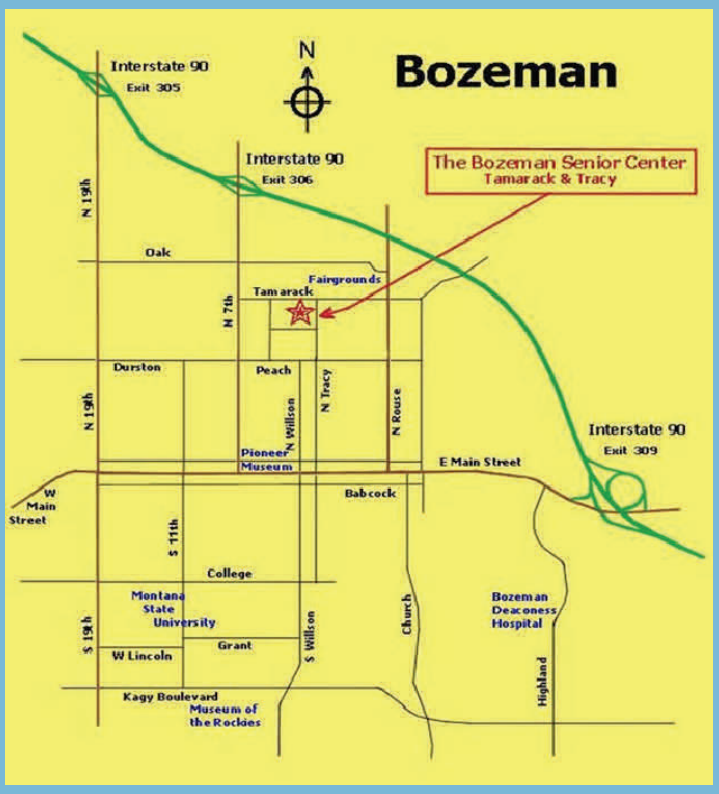
Plant Science Says

Volume 14, No. 11 December, 2011

PSPP Departmental Christmas Party

The Departmental Christmas party will be on Friday, December 9, at 5:30 p.m. at the Bozeman Senior Center. Dinner will be at ~5:45 p.m.; Santa will be showing up around 7:00 p.m., and after that you will have the opportunity to play Bingo.

Please bring one of the following to share: Hors d'oeuvres, a vegetable or potato dish, salad or dessert. The meat, rolls, and drinks will be provided. Please join us! Note: They do not allow alcoholic beverages as it is a city owned facility.



Burrows Wins Outreach Award

Mary Burrows has received the MSU Excellence in Outreach Award. Individuals nominated for this award have made significant contributions to improving the quality of life for citizens of Montana. Following is a quote from one of her nomination materials: "Dr. Burrows is the model Extension specialist. She is able to bridge the divide between the scientific field of plant pathology and the growers managing crop diseases in adverse conditions."

Congratulations Mary!

MSU Diagnosticians Win National Awards

Linnea Skoglund, disease diagnostician, and Ruth O'Neill, former arthropod diagnostician, of the Schutter Diagnostic Lab received awards at the recent 3rd National Meeting of the National Plant Diagnostics Network in Berkeley, CA (see following article for additional information on this meeting). Linnea was awarded an Outstanding Team Service award for her work on the database committee . *"The goal of the National Database Committee members is to create guidelines and review documents to instruct NPDN users how to properly use the National Repository system. Also to review existing data fields to determine if they meet current needs."*

Ruth won the coveted Rotten Tuber Award. The Rotten Tuber Award is given to the most interesting, unusual or outrageous sample received in a plant clinic. While hers was a phone call, not a sample, Ruth exhibited such superior writing skills with her submission that the committee was totally overwhelmed.

Ruth writes, "I got a phone call on March 9th

this year from a very nice middle-aged man with a peculiar request. He did warn me at the start of our long conversation that his question involved ants and that it 'might sound kind of weird'.

This guy called regarding a dying pet ant and her "coworker." He had kept an ant farm all winter, and become close personal friends with these two particular ants that always guarded the nest entrance. He named them, and evidently spent hours a day with them. He talked at some length about their divergent personalities, one a spunky go-getter and the other tending toward false bravado and cowardly retreats. The reason for his call was that "Gigi" (his favorite) had been attacked in the eyes by snails (!?!). To his anguish she was dying before his eyes as we spoke, "suffering hideously". She was blind, and her legs were broken. He wondered if I knew how Gigi might be saved from her injuries. He also wanted a recommendation for an ant-safe pesticide to kill the snails and save "Coverdiver", Gigi's friend. The caller was a quirky person, but he was very pleasant to talk to, and he knew quite a lot about ants (and has read all of E.O. Wilson's books, and had even had one autographed by the author when Wilson last visited town).

I WANTED to recommend that he take Gigi to a vet, but I didn't want to sound sarcastic because the guy was so genuinely nice. So I gathered my thoughts, and I gave him some IPM-friendly recommendations. First I told him to pick the snails out of the container. Of course he had tried that already but "snail eggs permeated the soil" (which I guess could be true). So I recommended giving the ants a new home in soil that he first sterilized in the oven. He was only lukewarm about that idea, but of course nothing could really cheer him up on that dark day."

Congratulations, Ruth and Linnea!

Plant Diagnosticians Meet in Berkeley
By Linnea Skoglund

The 3rd National Meeting of the National Plant Diagnostics Network was held November 6-9 at the Doubletree Berkeley Marina Hotel and attended by about 170 people. These meetings are a great time to catch up with the other diagnosticians, attend workshops and go on field trips. Mary and I presented a poster on the webinar series we coordinate for the Great Plains Diagnostic Network and we took along a poster for Ruth O'Neill on a new invasive insect species in Montana, the spotted-wing Drosophila. Mary was an invited speaker in the symposium, New Ways of Looking at Our Data.

This was the view outside Linnea's room. The fog bank is San Francisco.

This was an especially important meeting for the network as we are dealing with a 40% cut in funding for FY 2011 and the threat of zero funding for FY2012. Funding has been restored to the Agriculture budget, but again with the 40% reduction. Until the bill is signed, we are not safe. Meanwhile the network members struggle to continue important programs and services that help protect this nation's food security.

We were addressed by the Secretary of the California Department of Food and Agriculture, Karen Ross. California has nine plant commodities that exceed $1 billion in value. Five of those (grapes, almonds, berries, lettuce and nursery) exceed the value of the Montana winter wheat crop, our highest value crop commodity. It was an eye opener to experience agriculture at that level. In another interesting talk, we were asked the question "Why are we here?" Ever notice how few fungal diseases humans have? Optimal temperatures

for fungi are lower than mammalian body temperatures and more closely match reptiles. Fungi could have contributed to the mass extinction of dinosaurs that left room for the evolution of mammals.

MSU cleaned up at the awards banquet when we bagged a team service award (Linnea) and the coveted Rotten Tuber Award (Ruth O'Neill). See the previous article, which includes the text of Ruth's submission.

It was quite a hardship to attend this meeting as you can see from the photos. Mary had her entourage along (husband, two children, nanny and mother-in-law). I travelled much lighter, which means I got to carry the posters. And I lost them only once!

Field attire for all well-dressed plant pathologists (hint: Mary Burrows).

There were various field trips on the third day: *Phytophthora ramorum*/Redwoods; Port of Oakland; Thousand Cankers Disease; and Insects, Weeds and Diseases of the CA Wine Country. It probably doesn't take much guessing to figure out where Mary and I went. The morning stop on the tour was at a vineyard where we were met by several local crop consultants. After coffee and donuts, we climbed a hill to observe the surrounding vineyards and learn about grape pests and cultivation.

Vine with grapevine leaf roll virus.

We saw plantings being removed after about ten years of production due to viruses. *Grapevine leaf roll virus* and X-disease, both insect vectored and difficult to manage, eventually reduce yields to the point where blocks of plants must be removed. It takes the new planting 3-4 years to come into production.

The second stop was at the Domaine Chandon winery, which specializes in sparkling wines. They treated us to a nice lunch and tour. Post-tour activities included wine tasting, three sparkling wines and a still wine, and a stop at the gift shop so we could take some product with us.

Fall color in the Napa Valley vineyards. We expected to see bare vines, but the season was late all year.

It was a good vintage.

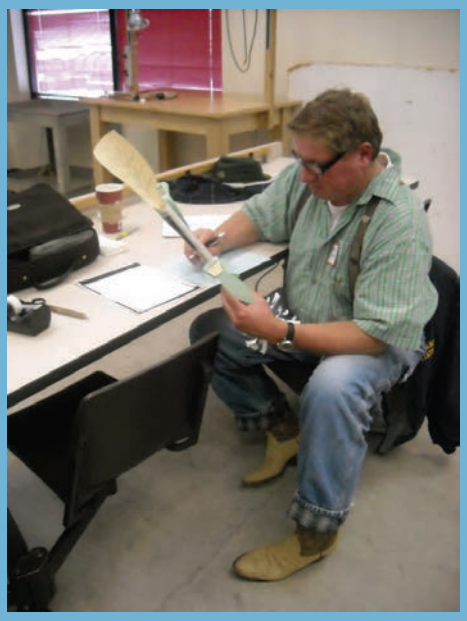
On the return trip we travelled the long way back through Sonoma and were introduced to the famous Bay Area traffic.

Stop by the plant clinic and see our poster.

TURFGRASS IPM WORKSHOP
By Linnea Skoglund

The MSU Urban IPM program recently sponsored a one day turfgrass IPM workshop. The workshop was held on November 11th at the PGC. We had 28 participants from around the state. Those with commercial pesticide applicator licenses earned CEUs and everyone earned credits toward Urban IPM certification. Preparations for the workshop began in September with the help of Hilary Parkinson, plant ID diagnostician. Together we collected about 30 weeds that occur in turf. Most of these were found outside the Plant and Animal Biosciences Buildings. In addition, we grew weedy grass species in pots and flats of turfgrass species.

The workshop wouldn't have been possible without our invited speaker, Sarah Jane Wilhelm. Sarah Jane has been with the turfgrass research program at Colorado State University since 1990 where she teaches, supervises students, and coordinates the daily operation of the field program. The fact that she is my BFF has nothing to do with the invitation. Other speakers included Anuar Morales Rodriguez, who spoke on insects and mites, and Tracy Dougher, who conducted one of the labs. Thanks to both of them for kindly giving up part of their holiday. We had talks in the morning on insects, diseases, weeds, fungicides and herbicides all relating to turf. In the afternoon we had two labs: 1) Identification of turfgrass species and 2) Weed ID. Tracy Dougher taught her excellent turfgrass identification lab, including making models of grass plants. The flats of grass were available for observation of important characteristics. In the Weed ID lab, participants were introduced to paper and online keys for identifying plants. Extension laptops were available for experiencing the keys first hand while there was an expert in the room. Participants also had 30+ plants they could try to identify, including a new invasive pest in Colorado. For information on Troll Control and Smurf Suppression go to http://www.youtube.com/watch?v=6o4WnJTII64.



"This is harder than it looks." Creating a grass model in Tracy's lab.

Sarah Jane Wilhelm working with participants in the Weed ID lab portion of the Turfgrass IPM Workshop.

Weedy plants at the Weed ID lab. Notice the new invasive species – trolls and happy face men. (see box)

Group activities have been well received in workshops in the past and were again. It has to be better than "Death by Power Point". We gave out silly prizes throughout the day to people whose names were drawn out of a beaker. The "bubble pens" containing bubble solution and a wand, were a big hit.

Hilary Parkinson created crossword puzzles: one for weeds and herbicides and one for fungicides and diseases. We threatened to take away smart phones when the people in the back of the room tried to Google the answers.

The Urban IPM program was created in 2009 at the urging of the landscape and nursery industry in Montana. One of the main areas of focus is the Certified Urban IPM Practitioner program. To become certified, 12 hours of approved education is required. Three people received their certification as Urban IPM Practitioners at the close of this workshop, bringing the total to 28 statewide.

New Certified Urban IPM Practitioners with the program coordinator, Linnea Skoglund, receiving certificates and books.

Special thanks to Laurie Neuman and Rachel Johnston for all their work preparing for the workshop, running registration, making sure lunches arrived, and cleaning up.

Entomological Society of America/ Entomology Collections Network and Coleopterists Society Meeting
By Mike Ivie

Montana State University was well represented at the Annual Meetings of the Entomological Society of America, Entomology Collections Network and Coleopterists Society jointly held 12-16 November 2011 in Reno. MSU Faculty, Affiliates, Staff, Graduate Students and Undergraduates from a variety of departments attended, with 18 papers presented by our group. Our participants were involved in invited symposium papers, submitted presentations and posters, as well as an MSU reception for current and past employees, alumni and prospective students jointly sponsored by PSPP, LRES and ANRS.

MSU faculty also participated in several governance and committee duties at the meetings. Bob Peterson (LRES) was elected to the Executive Committee of the ESA Governing Board, Florence Dunkel serves on the ESA Publication Council and Mike Ivie serves on the CB Board of Councilors.

Papers and posters presented at the meeting included:

DNA barcoding economically important wireworm species (Coleoptera: Elateridae) of Montana. Frank E. Etzler, Michael A. Ivie, Anuar Morales Rodriguez and Kevin Wanner.

Wireworm survey of small grain fields in Montana. Anuar Morales-Rodriguez, Emily Rohwer, and Kevin Wanner.

Wireworm population in a till and no-till small grain systems in central Montana. Anuar Morales-Rodriguez and Kevin W. Wanner.

The joint toxicity of three pyrethroid insecticide types to *Drosophila melanogaster*. Jerome J. Schleier and Robert K.D. Peterson.

Greenhouse-based rearing and initial field releases of *Jaapiella ivannikovi* (Diptera:

Cecidomyiidae), a classical biocontrol agent of the exotic Russian knapweed, *Acroptilon repens* (Asteraceae), in the western US. Jeffrey L. Littlefield and Richard Hansen.

Evolution of sex pheromone detection in *Ostrinia* moths. Kevin W. Wanner, Jean E. Allen, Peggy Bunger and Greg Leary.

Phenology of spring emergence by first generation stable flies, *Stomoxys calcitrans* (L.) in North America. Roger D. Moon, Dennis Berkebile, Holly Ferguson,; Patrick Tobin, Ludek Zurek, Greg Johnson, Sarah M. Butler and Nancy C. Hinkle.

Left Behind: The problem of not dying first and other nightmares from other people's loans. Michael Ivie.

A revison of *Cnodalon* Latreille. Michael A. Ivie.

Model development for predicting the movement and concentrations of ultra-low-volume insecticides used for adult mosquito management. Jerome J. Schleier.

Competing risk in insect mortality analysis: rethinking efficacy in biological control. Robert KD. Peterson.

Mapping the distribution of *Culicoides sonorensis* (Diptera: Ceratopogonidae) in southern Alberta (Canada) and Montana (U.S.A.). Anna Zuliani, Timothy J. Lysyk, Gregory Johnson, Alessandro Massolo, Regula Waeckerlin, Allison Cully and Susan Cork,

Acetate esters as pheromone components in congeneric sympatric parasitoids of the wheat stem sawfly. Rex A. Davis and David K. Weaver.

Comparative effects of cattle, horse, and chicken blood on stable fly (*Stomoxys calcitrans* (L.)) fecundity. Kristina Hale.

Packaging and delivering IPM through collaboration across state and regional boundaries: the Bugwood Center experience. G Keith Douce , J. LaForest , Howard Schwartz and Mary E. Burrows.

Snow Movie Wins Award

The movie "Tiny Snow Makers" recently won the Judges Choice Award from The Scientist magazine. It is a five minute clip giving an overview of research by David Sands and collaborators over the last twenty years. It looks at how the core of a raindrop or a snowflake can actually be a bacterium. Water does not actually freeze at 0 degrees unless there are particles in the atmosphere to set off crystallization such as bacteria. Who knew that a common bacterium could be the catalyst for the formation of a snowflake?

The Robert. E. "Dr. Bob" Gough Memorial Scholarship

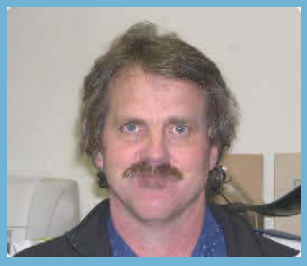
In September, 2011, Dr. Bob Gough passed away after battling cancer. The College of Agriculture and all of his many friends across the state lost a good friend. Dr. Bob, as he was affectionately known, dedicated 15 years to MSU, serving in multiple roles within the College. In honor of Dr. Bob, the College has initiated an effort to endow a scholarship that will benefit future horticulture students: the Robert. E. "Dr. Bob" Gough Memorial scholarship.

Thanks to generous personal donations from Cheryl Moore-Gough and Dean Jeff Jacobsen, we have a great start to this effort. However, we need your help. Donations are needed to fully endow the scholarship at $25,000. Once the donations total $25,000, the scholarship will be endowed in perpetuity and Dr. Bob will continue to positively impact College of Ag students.

Please consider making a donation in honor of Dr. Bob by calling the College of Agriculture's Development Director, Darin Paine, at 406-994-7671. For any questions, please call or email Darin darin.paine@montana.edu.
Sincerely,
Friends of Dr. Bob

Class Focus
AGSC 341 – Field Crop Production
By Phil Bruckner

AGSC341 is a diverse class offered spring



semester of alternate years focused on production of field crops using practical and applied crop management principles. Course objectives are to: 1) to develop an understanding of crop management principles (when, where, why, and what of cropping operations) and 2) to develop problem solving capabilities by application of appropriate management principles to problems encountered in production of field crops. The course is based on key concepts and principles rather than on the basis of individual crops. Important crops of Montana and United States are emphasized in examples, supporting materials, and lectures. The subject matter is very broad with lectures organized into two broad areas: Crop growth and development and Key crop management operations (e.g. crop rotation, planting, water management, soil nutrient management, weed control, etc.). Where possible and appropriate, subject matter "experts" are used as guest lecturers in their areas of expertise.

AGSC341 has a diverse enrollment with sophomores to seniors, approximately 10-12 majors, usually an international student or two, and sometimes a graduate student. Enrollment over the last five class offerings has averaged about 27 students per class, with enrollment trending upward due to the development of the Sustainable Food & Bioenergy program. Based on preregistration, enrollment will be about 45 for spring semester, 2012. Predominant majors of students taking AGSC341 are Sustainable Food & Bioenergy, Animal Science, Crop Science, and Agricultural Business.

Schroeder Wins Student Award
By Jennifer Britton

Undergraduate Tyler Schroeder in Environmental Horticulture Landscape Design recently won The Young People's Beautification Award from the City of Bozeman's Beautification Advisory Board. Schroeder was presented the award in October 2011 for his exemplary work with the Greater Gallatin Watershed Council in design and

implementation of a rain garden at Sacajawea Middle School. As a part of the project, he also managed the volunteer help of about 16 "at risk "middle and high school kids during a summer program funded by a federal grant. Congratulations Tyler!

New Employees

Hilary Parkinson - Schutter Diagnostic Lab

Hilary Parkinson officially began work as the plant ID diagnostician with the Schutter Lab on Nov 1, 2011. Prior to that she worked as a research associate for Dr. Jane Mangold by assisting with research, writing extension publications, and doing field work related to invasive rangeland weeds. Her plant identification skills come from a persistent love of plants as well as graduate level courses, internships, completing rare plant surveys for the BLM in the Owhyee Canyonlands, and working for the Rocky Mountain Research Station identifying forb seed collection sites in Idaho, Nevada and Oregon for the Great Basin Restoration Initiative. She received a BA in humanities from Mount Holyoke College, a BS in horticulture at Boise State University, and completed her MS in Land Resources and Envi-

Hilary at Haleakala National Park on Maui planting an endangered Silversword plant (Argyroxiphium sandwicense).

ronmental Sciences at Montana State University in 2008 investigating the impacts of cheatgrass on Great Basin forbs.

In her spare time, Hilary enjoys being outside whether on foot, a bike, in a canoe, on snowshoes or skis. She's happiest when accompanied by her husband, John Syslo, a graduate student in the ecology department, and their two dogs, Luther and Hayduke (border collie mixes). One of her favorite things about living in Bozeman is her proximity to Peet's Hill where she enjoys meeting up with friends after work to get the dogs some exercise and appreciate the great views, especially at sunset. Other hobbies include knitting (especially hats-she may ask you to take off your knitted hat so she can inspect it); cooking-especially pie baking; and playing backgammon (or scrabble).

While she has been at MSU since 2005, the vast majority of her time has been spent in Leon Johnson Hall. She looks forward to getting to know people in Plant Sciences and Plant Pathology, so if you see her, she hopes you'll say hello and introduce yourself.

Domingos Cardoso (Matt Lavin)

Olá (Hello)! My name is Domingos Cardoso. I am from Brazil and I am here for the year of 2011 in the Department of Plant Sciences at Montana State University to work on part of my PhD research under the supervision of Matt Lavin. Matt has been collaborating with my major professor, Dr. Luciano Paganucci de Queiroz, on taxonomic and evolutionary studies of tropical plants. Since my undergraduate days in the department of Biological Sciences at Universidade Estadual de Feira de Santana in Bahia, I was inspired by my major professor to work on the incredible plant diversity that occurs in the various kinds of Brazilian forests. Whereas forests in Montana may be dominated by one or two tree species, the forests and woodlands in Brazil each have many hundreds of species of trees and many more than that in shrub species.

I originally contacted Matt via e-mail in 2004 with questions concerning the delineation of a potential PhD project. After about two years into my PhD studies at the same University, I was awarded a research grant from the Brazilian government agency CNPq to move from the tropics to Montana in order to work closely with Matt in order to develop our shared interests in how seasonally dry tropical vegetation dominated by many hundreds of woody plant species might be distinguished into its component parts.

Domingos on a field trip to the Tendoy Mountains, Beaverhead County, Montana, with Marty Wojciechowski (Arizona State University) and Matt Lavin (MSU)

I was born twenty seven years ago and grew up in a very small town called Tucano in the interior of Bahia, the biggest state in the northeastern region of Brazil. This region is well known as the home of the Caatinga dry woodland vegetation, which is very similar to the Sonoran Desert in having spectacular cactus-rich landscapes. This region covers more than 8,000,000 Km2 and harbors very high levels of native plant diversity.

Domingos practicing capoeira at Logan Pass this past summer

In addition to my interests in science, I am also a performer of Capoeira. The state of Bahia is home to Capoeira, a famous Afro-Brazilian martial art and dance, which

is played following the rhythm dictated by a unique instrument called the berimbau. From its beginning in Bahia, Capoeira is now being played all around the world. This includes Bozeman, Montana, where I have had the opportunity of performing Capoeira and playing the berimbau at many shows and concerts along with a local band, Dub Sultan, at venues such as the Beer Fest as well as at the Filler and the Hauf. I have also performed Capoeira and played the berimbau twice at the Bozeman Public Library in front of young audiences.

Since arriving in Bozeman last March, 2011, I have experienced living with snow and freezing weather for the first time in my life. Fortunately the summer came soon and has been long, but the change of seasons has been a wonderful and an unforgettable experience. I have been cross country skiing, hiking, trail running (including getting "Baldy" legs after a run up the south end of the Bridger Mountains), mountain biking, visiting Glacier and Yellowstone, and collecting plants in the outstanding sagebrush biome. I even helped carry 40 pounds of water up to the top of the Bridger Ridge to supply a water station for the Bridger Ridge Run, as well as volunteered to help at the local Drop and Trot 5 and 10 K run this past fall.

I am really happy to have lived in Bozeman as my first experience in the U.S.A. I do not know how to acknowledge all the support provided by the Department of Plant Sciences at MSU, and especially all the staff at the Plant Bioscience Building, during my stay here. I am very thankful to all of you. I will be going back to Brazil this coming December 20th and leaving behind a lot of friends and my new family, but definitely taking with me many fine memories and the desire to return.

Publications

Kudalkar, P., G. Strobel, S. Riyaz-Ul-Hassan, B. Geary, and J. Sears. "Muscodor sutura, a novel endophytic fungus with volatile antibiotic activities", Mycoscience

Grants

Norm Weeden. Northern Pulse Grower's Association. "Identification of candidate genes for resistance to Fusarium wilt race 1 and the no-shattering phenotype in pea and Lentil". $10,170

Frost Cracks
By Toby Day

As I was walking to campus this morning in the blistering cold, I passed an old green ash tree that had a large crack near the ground all the way up the tree to the first branch. The crack in the tree reminded me of a time when I was an undergraduate in the Landscape Design program here at MSU. It was around 3:00 am in the morning when I was walking home from the design studio when, from out of nowhere, a shot rang out. "Someone is shooting at me," I thought. I ducked for cover, ran under some bushes and kept running all the way to my apartment. Boy, did I have a story to tell my roommates. "From nowhere, they were shooting at me," I explained. I probably embellished a bit just for drama.

The next day, I was taking a walking tour in the Landscape Management class with Dr. Bob Gough when we approached a tree with a large vertical crack in it similar to the one I passed earlier today. He explained that when trees experience temperatures below their minimum threshold, the tree will crack at weak points. I can hear him now "it sounds just like a loud clap, much like a gunshot." Oh, was I embarrassed.
The crack in the tree that Dr. Bob was showing us that day in class was a frost

crack. They appear as longitudinal cracks, mostly on the south and southwest side of the trunk when there are large fluctuations in temperature from day to night. They usually occur on sunny, warm winter days where the nighttime temperatures fall below zero. The trunk expands during the day, but cools rapidly at night, causing the trunk to crack. As the trunk warms up again, gradually the crack will close. You can see new and old frost cracks like this in many trees throughout campus.
Sometimes a frost crack can occur so rapidly that it makes a cracking sound that could, to a "young undergraduate student," sound like a gunshot.

Changing your View
By Chris Leonti
As soon as I think there is not a way to set the default for PDFs I find there is. The only drawback is that you are setting the default for ALL pdf viewing – regardless of whether it is in Acrobat or in the Browser like Internet Explorer.

Change Acrobat Default Zoom
Open Adobe Acrobat (the actual program usually found off the START menu).
Click the EDIT menu.
Click PREFERENCES off the menu.
Make sure the *Page Display* is selected off the CATEGORIES column.
Choose the ZOOM you want from the *Zoom* drop down near the top right.

Click the OK button to accept the change.
Close Acrobat.

Now all the PDF files you open should open in the zoom you selected.

A quick FYI – these notes are specific to Acrobat version X and may only apply to Acrobat Pro and not Reader. The feature is available in other versions of Acrobat but the exact steps will vary.

Farewell to David Parrott
David Parrott is leaving us after serving as a Post Doc in Andreas Fischer's lab for the last several years. He will be moving to Salt Lake City later this month and is hoping to be chosen for one of the faculty positions he has applied for.

Good luck David; we wish you all the best.

Thank you PSPP!


Thank you for all of your years of supporting me in scouting by buying Boy Scout popcorn. You have supported me (and my troop) to ice climb, attend national Jamboree, winter camp, orienteer, canoe, and volunteer for many projects, among many other activities. This winter I am organizing donations so that I can finish my Eagle project in the spring.
--Frankie Dougher

Recipe of the Month
Pineapple Bread Pudding

10 slices white bread
1/3 c brown sugar
1/3 c white sugar
3/4 c butter
5 eggs
1 20 oz can crushed pineapple (don't drain)
1/4 c dried currants, raisins or craisins
3/4 c chopped pecans or walnuts
1 1/2 t vanilla
3/4 t ground cinnamon
Whipped cream

Place bread on a baking sheet. Bake at 375 for 4 minutes; turn over and bake 4 minutes longer or until very light brown. Cut toasted brad into 1-inch cubes. Toss with melted butter; set aside. In a bowl, beat eggs and cinnamon together until thick and lemon colored. Add the pineapple, currants, sugar and vanilla; mix well. Fold in bread cubes.

Pour into a greased 2 1/2 qt baking dish.

Cover and bake at 350 for 30-35 minutes or until bubbly and golden brown. Serve warm with whipped cream if desired.

December Birthdays

Ted Clack	3
Bill Grey	4
Jackie Campbell	11
Cheryl Moore-Gough	23
Sue Brumfield	26
Duke Pauli	27
Lucy Cooke	30

Once again, it has been great working for all of you this year. We wish each of you a very Merry Christmas and a Happy New Year!

Tamara, Courtney,
Jill, and Irene