

# *Plant Science Says*



*Happy  
Thanksgiving!*

*November, 2006*

## **An Expedition to the Upper Amazon Basin in Ecuador**

**By Gary Strobel**

The trip was organized to do a collection near the Pastaza River close to the Peruvian border in Ecuador. I had never collected there before and it seemed like a reasonable thing to do given the extremely high biodiversity of plant life existing in this area of the world. Of course, the rationale goes that with high plant diversity may also be found enormous microbial diversity. Another reason for going there was the recent announcement that son Scott, at Yale, has been the recipient of a Hughes Professorship. His project is to identify areas of the world containing large biodiversity and then take 10-15 students there to do collecting for endophytic and bioactive microbes. Our goal was to examine the area for diversity and check out how the natives may react to our presence.

Some of the paths that we took seemed to follow those of earlier explorers such as Humboldt, Spruce and Markham, who were early botanists finding themselves in South America for various scientific and commercial reasons none of which was equivalent to ours. A search for new endophytes is frustrating since no positive feedback is obtained until months later when plates containing plant tissues can be examined for these tiny beasts.

The plane landed late at night in Quito, the capitol city of Ecuador (12,000'), and some began to feel the stress of lack of oxygen. The next day we found ourselves in a wonderful well preserved cloud forest near to Quito. A baby ocelot greeted us at the beginning of the trail.

The first tree found of interest was *Podocarpus glomeratus*, a species thought to represent an ancient plant family Podocarpaceae. Usually, such plants prove quite interesting relative to the microbes that inhabit them.



*This little guy took the cake for the cutest animal seen on the trip.*



*Strobel with a Podocarp*



Then, we went on to the jungle via a twin otter. Our flight took us over the Andes down into the steamy Amazonian basin. We literally followed the Pastaza river to Shell where we landed to take on fuel and then to a dirt landing strip along the Pastaza near the border to Peru. Unfortunately, the pilot did not do a



*Our friend--- a tarantula*

fly over on the dirt air strip and a small plane was part way down the runway as the twin otter was about to land. We were within a few seconds of crashing. Had the pilot of the small plane not veered off the runway we would have collided with him on our descent. Of course, this was

the closest that we came to being extinguished on this trip. Poisonous snakes, spiders, and other venomous creatures abound in the Amazon and they become a part of existing there.

One of Bob Sharrock's former students, Jeff Cameron, went with us on this trip. Having him along was a pure delight since he expresses interest in almost everything. Of course, no trip to this part of the world is complete without Percy Nunez Vargas. He is probably the best botanist in all of South America. Percy says, with a glint in his eyes, "The plants talk to me." He knows virtually every plant in the rainforest, cloud forest, or alpine forest-



*Sunset on the Pastaza River*

name, common name, family, uses, number of species and history. Percy is unbelievable!! The trip was a success.

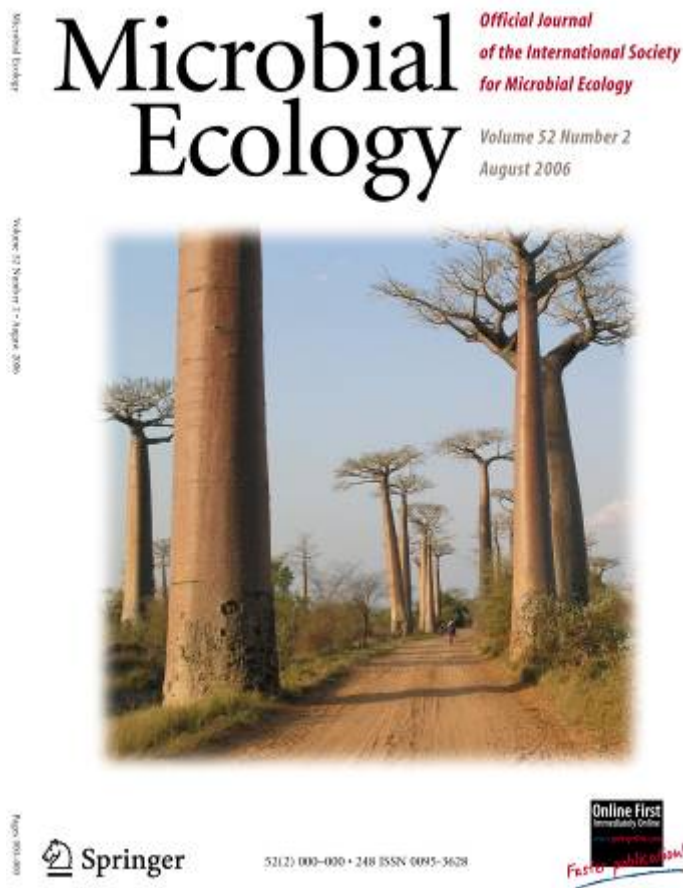
Then on to the high Andes followed by collections in a wet alpine forest at 13,000 ' and a dry forest near to the south coast of Ecuador. Probably the most impressive scene was the exposure of the 19,600 foot volcanic Mount of Cotopaxi as we were on our way to Quenca. This is an impressive scene with its glacier-capped top.



*The Ecuadorian cloud forest*



In this issue, Gary Strobel's work on endophytes that are streptomycetes was featured.



Manilkara, an economically important genus of the Sapotaceae family known for its production of edible fruits and rubbery latex. If Luke and Alex permit, Toby will be working on various phylogeographic studies of tree species from the neotropics. Last year, the Pennington-Plana family spent six months in Peru (see photo) collecting plant materials for their current projects. Toby is originally from England, and Vanessa, Spain, so Alex and Luke speak both English and Spanish in about 3 dialects each. After having lived in perpetual summer for the last two years between Scotland and Peru, Toby and Vanessa are looking forward to a Montana winter, including experiencing some real sub-zero temperatures. It looks like they are going to get their wish!

### New Employees

#### Dragana Budakov (Barry Jacobsen)



I come from Serbia, where I am a postgraduate student of phytopathology at the Faculty of Agriculture, in Novi Sad, a picturesque town situated on the banks of the Danube River. Thanks to the cooperation of Dr. Barry Jacobsen and my mentor, Dr Vera Stojšin, I have come to the

PSPP department to work on molecular biology techniques in order to compare Serbian and American *R hizoctonia solani* isolates. The results I gather here will greatly increase the significance of my Master's thesis.

Further, I would like to thank Dr. Barry Jacobsen for making this incredible opportunity possible, the members of his laboratory for being supportive and patient and, of course, everyone else from the department, who were all more than welcoming, helpful and friendly.

Finally, I have to say that I am very happy and satisfied to be here and I am also strongly convinced that this experience and my 2.5-month stay in Bozeman will certainly improve my career as well as future prospects.

### Visitors from the Royal Botanical Gardens By Matt Lavin



Toby Pennington and Vanessa Plana are honorary members of the Plant Sciences and Plant Pathology Department for this winter, October 2006, through April 2007. Along with their two boys, Alex (3.5 years) and Luke (almost 2), they are visiting us from Edinburgh, Scotland, where both Toby and Vanessa work at the Royal Botanic Gardens. During the 6 months they are here, they will be working in the MSU Herbarium and in the lab of Matt Lavin. When Luke and Alex permit, Vanessa will be working on a taxonomic monograph of



## Magdalena Chundy



Hello everyone! I am very happy to have the opportunity to spend three months at MSU, being invited by Professor Norm Weeden to join in the research at his laboratory.

I arrived in mid September and was nicely surprised with the summer

weather here, which I could not say about San Francisco where I spent my first two days. From the very beginning I was delighted with the countryside and the beautiful view from my window still makes me smile. I met very nice and helpful people and knew I was going to like it. And I was right! I am having a wonderful time at work as well as enjoying Montana in my free time.

I graduated from the University of Szczecin, a city located in the northern part of Poland close to the Baltic Sea and German border. I majored in Laboratory Diagnostics. In 2004, I moved to Poznan - a beautiful, old city in central-west Poland where I started my PhD studies at the Institute of Plant Genetics Polish Academy of Sciences. I am working on genetic mapping in narrow-leaf lupin (*L. angustifolius*). My research contributes to the enormous EU project "Grain Legumes". I was very happy to hear that Norm's area of interests includes lupin and I hope our collaboration will bring interesting results.

### Grants

Alice Pilgeram, David Sands, and Duane Johnson, for economic development in Eastern Montana by development of a biolubricant industry," U.S. Dept of Labor.

### Publications

Brian Thompson, Alice Pilgeram, Matt Kirkpatrick and Dave Sands presented in a series of five lectures, a paper to be published in Proceedings of a NATO Workshop on "Virulence Enhancement of Biocontrol Agents" in September in Umbria, Italy, attended by 70 students. Brian was one of six awarded an outstanding participant award.

Dave Sands, Alice Pilgeram, Brian, Matt, and Mary Stein, "The work on New Grains for Celiac Disease

Diets," was presented in a dog and pony show fashion with a Celiac chef doing the cooking at the CSA annual convention in October, Green Bay.



*Dave and Chef Rebecca Reilly at CSA Convention*

### Presentations

Shams, A., C. George, F.V. Dunkel. (2006). The new '3-M': Minnesota, Montana and Mali: "The synergy of collaborative international service-learning." *Proceedings Sixth International Service-Learning Research Conference, Portland State University Portland, OR*

This was the result of a productive collaboration of a French professor, a mechanical engineering professor and an entomologist! It is also the result of an amazingly productive collaboration since 2001 between two same-size, but very different universities, MSU and the University of St. Thomas.

### Bob's Byte

#### By Bob Johnston

A couple of major software changes are on the horizon. Both Office 2007 and Microsoft's new operating system are due for release in the very near future. Office 2007 will have a completely new user interface which Microsoft claims will make the program much easier to use – I'll reserve judgment on this one. The new OS will be released in 5 different flavors – depending on user needs.

- **Windows Vista Business**
- **Windows Vista Enterprise**
- **Windows Vista Home Premium**
- **Windows Vista Home Basic**
- **Windows Vista Ultimate**

The business and enterprise versions are due out any day now. The home versions will follow after the first of the year. If you are planning on buying a new home computer for Christmas, be advised that your machine will ship with Windows XP. There are some rumors that machines may ship with a coupon from Microsoft which will allow new purchases to qualify for a free upgrade. Be sure to ask about this when you purchase. For more information go to

<http://www.pcmag.com/article2/0,1895,2040864,00.asp>

If you do decide to purchase a new computer make sure that it comes with the following logo and meets the following minimum specifications: \

- 1 GHz 32-bit (x86) or 64-bit (x64) processor.
- 1 GB of system memory.
- Support for DirectX 9 graphics with a WDDM driver, 128 MB of graphics memory (minimum), Pixel Shader 2.0 and 32 bits per pixel. (Windows Display Driver Model (WDDM) driver handles the increase in 3D graphics processing requests from the operating system, and requires a more powerful type of video card with more memory. While PCI and AGP video cards are supported, Windows Vista will be able to achieve peak graphics performance when it is working with a PCI Express video card sporting 256MB or more of video memory.
- 40 GB of hard drive capacity with 15 GB free space.
- DVD-ROM Drive.
- Audio output capability.
- Internet access capability.



### How long will pumpkins keep?

By Cheryl Moore Gough



There are many factors involved in the shelf-life of pumpkins, so answering this simple question is actually very difficult. Pumpkins that have been cured properly, have no bruises or other damaged areas,

and have their handles intact, should keep for 60 to 90 days when stored at temperatures between 50° and 60° F and a relative humidity of 60%. For prolonged storage the fruit are best placed on slotted shelves to provide for free air circulation and minimum contact between adjacent fruit.

Proper curing is so important, not only for pumpkins but for winter squash as well. Of course, it's too late this year, but here's how to do it next year. Both pumpkins and squash are sensitive to chilling. Harvest the fruit after the rind has hardened but before a heavy frost. Fruit that feel heavy for their size are better than lightweights, which tend to be stringy. Hold your best fruit between 60° and 70°F for one week after harvest, then drop the temperature below 60° F for storage. The warm post-harvest temperatures allow wounds to cork over and heal to prolong the storage life. Halloween pumpkins left on the doorstep until now are usually frost damaged. They won't keep and will probably have developed some off-flavors by now. It would be best to discard them. Also, while the storage suggestions above work for winter squash, they will not work for summer squash. You can't cure and store zucchini and patty pan and crookneck as you do butternut and butternut--they rot.

If you're looking for something to do with all those pumpkins you grew, why not try a Colonial pumpkin pie? Cut a pumpkin in half and hollow it out. Prick the skin all over. Fill it with chopped apples, raisins, and nuts and pumpkin pie spices. Add some milk and brown sugar. Dot with butter. Bake until the pumpkin is soft and apples are done.

### Recipe of the Month

#### Pumpkin Stew

- 2 pounds beef stew meat, cut into 1 inch cubes
- 3 tablespoons vegetable oil, divided
- 1 cup water
- 3 large potatoes, peeled and cubed
- 4 carrots, sliced
- 1 large green bell pepper, chopped
- 4 cloves garlic, minced
- 1 onion, chopped
- 2 teaspoons salt
- 1/2 teaspoon ground black pepper





1 (14.5 ounce) can whole peeled tomatoes, chopped  
2 tablespoons beef bouillon granules  
1 sugar pumpkin

Heat 2 tablespoons oil in a large saucepan over medium-high heat. Place beef in the saucepan and cook until evenly brown. Mix in the water, potatoes, carrots, green bell pepper, garlic, onion, salt and pepper. Bring to a boil. Reduce heat and simmer approximately 2 hours.

Dissolve the bouillon into the beef mixture. Stir in the tomatoes.

Preheat oven to 325 degrees F (165 degrees C). Cut top off the pumpkin and remove seeds and pulp. Place the pumpkin in a heavy baking pan. Fill the pumpkin with the beef mixture. Brush outside of the pumpkin with remaining oil.

Bake in the preheated oven 2 hours, or until tender. Serve the stew from the pumpkin, scraping out some of the pumpkin meat with each serving.

### November Birthdays

Jim Berg	4
Kathi Trujillo	8
Jack Martin	8
Harvey TeSlaa	15
Leila Feiz	17
Adam Richman	22



**These are pictures from our Halloween Potluck. Jack did a great job grilling, as usual. Great Halloween spirit Tracy!**

