

Plant Science Says



August, 2007

Association of Tropical Biology and Conservation by Matt Lavin

During the week of 14 July, the annual meeting of the Association of Tropical Biology and Conservation (ATBC) was held in Morelia, Mexico, which lies about a 4-hour drive west of Mexico City. Morelia is the capital of the State of Michoacan and is located inland at about 6,000 ft elevation. Located near pine-oak forests, the climate is moderate all year long, much like an average Bozeman summer.

Over 800 scientists from Asia, Africa, Latin America, Europe, Canada, and the United States attended the ATBC meetings, which were largely focused on the ecology of seasonally dry tropical forests, a forest type that abounds in Mexico. These forests are nearly as species diverse as tropical rain forests, but they are located in regions much more desirable for people to live, such as Pacific Coastal Mexico. These forests thus represent a threatened ecosystem, as much as or more so than the rain forest. Toby Pennington, who was on sabbatical last winter at MSU, and I were invited to speak at an ATBC symposium on the integration of genetic and ecological data for better understanding the biodiversity and ecology of seasonally dry tropical forests. The methods of biodiversity analysis that we presented are similar to those being used in the studies of viral diversity in Yellowstone hot springs (in collaboration with the Mark Young lab) and plant diversity in the sagebrush steppe (in collaboration with Tim Seipel).

Morelia is an excellent destination spot for those wanting to experience the diversity of

Mexican culture. The food, drink, architecture, people, climate, and surrounding landscape are all as good as it gets.



Water fountains are placed in some of the round-abouts (glorietas) at the main street intersections of Morelia. This one is in honor of Tarascan people, the original inhabitants of Michoacan.



Water fountains are common in plazas and parks within Morelia.

The Latest News from Bloomington By Norm Weeden

Early in July, I had the pleasure of spending most of a week in Bloomington, Indiana attending the annual symposium of the American Genetic Association (publishers of *Journal of Heredity*). In the summer, Bloomington is a quiet university town, and the campus is one large arboretum with so many deciduous species it boggled the mind of a poor botanist from Bozeman. The closest airport is Indianapolis, so I was also able to see the vast cornfields in central Indiana during the 90-minute shuttle between the two cities. The weather was a bit more humid than here in Bozeman, but not bad. Most of the rain fell during the night, and the evenings were very pleasant for an after dinner stroll. The first night a group of us had dinner at a Tibetan restaurant owned by the brother of the Dalai Lama. Naturally, there was a photograph of the Dalai Lama on the wall along with one of Joan Baez and several other notables. Apparently, Bloomington is a big hub for Tibetan immigrants, with three Tibetan restaurants and a big program on Tibetan studies at IU (Indiana University).

The symposium was entitled "Mechanisms of Genome Evolution," and the topics covered ranged from mechanisms of mutation through the nucleomorph genomes of kelp to gene duplication in ray-finned fishes. My favorite presentation was by Jeff Palmer on horizontal gene transfer in plant mitochondria (graduate students planning to take PSPP 541 take note—we will be discussing this subject). The mitochondrial genome of one primitive angiosperm that grows in the tropical rainforest of New Caledonia currently holds the record for the most diverse collection of genes, possessing genes from several other genera of flowering plants, much of the mitochondrial genome of a moss, and several genes from green algae. Apparently horizontal gene transfer is rampant among plant mitochondria--the secret to such promiscuity being the ability of the plant mitochondria (but not plastids) to fuse with other mitochondria and thereby mix DNA molecules. Who'd have thunk!

New Employees Heather Rimel – Montana Seed Growers Association



My name is Heather Rimel and I am originally from Missoula. I grew up there on a small cattle ranch. In 2006, I graduated from MSU with my Bachelor Degree in Animal Science and my option in

Livestock Management.

In my free time, I enjoy horseback riding, helping with the Western Montana Fair and working out at the ranch.

I am excited for this opportunity to work as Program Coordinator for the Montana Seed Grower's Association.

New Graduate Students Peter Zuck (Alan Dyer)



I grew up in a small town in western New York and graduated from MSU in 2000 (BS - Horticulture). Some of you might recognize me as a PGC technician from

'99-'00. In the years following graduation, I worked on farms in Springdale, MT and in Bar Harbor, Maine. I spent nearly three years living in Maine and Vermont. During this time, I moonlighted as a DJ at weddings and events. I returned to Bozeman in 2005 to start Fresh Tracks DJ Company. It's doing very well, but about a year ago I got the itch to go back to school for my masters. Summers are going to be crazy between weddings and working in the field, so forgive me if I look haggard. I promise I will shave tomorrow. When I do have some free time, I enjoy skiing, biking, fishing, and camping.

Nick Reynolds (Mike Giroux)



I grew up in Colorado Springs. In high school, I met Kacey who I would marry five years later. Both of us went to Colorado State

University for our undergraduate work. I received my bachelor's degree in Biology and Natural Resources and I also earned a teaching license for the state of Colorado. Unfortunately, as soon as Kacey finished school, we decided to move to the Portland, OR area, so I never actually taught in Colorado. Last year, I had a teaching position in Woodland, WA, at an alternative high school. After a year living in the fast-paced city of Portland, Kacey and I decided we wanted to live somewhere a little less crowded. Since I had been considering going back to school, Bozeman seemed to be the perfect fit. I am currently working with Mike Giroux and Jack Martin on genetics and wheat grain end quality.

Grants

Cathy Cripps, Restoration of Whitebark Pine seedlings on Dunraven Pass, Yellowstone National Park: Availability of native mycorrhizal fungi in soil. Rocky Mountains Cooperative Ecosystem Studies Unit, FS/NPS Interagency Funding Agreement.

Publications

Hogg A.C., R.H. Johnston, and A. T. Dyer. 2007. Applying real-time quantitative PCR to Fusarium crown rot of wheat. Plant Dis. 91:1021-1028.

Bob's Byte

By Bob Johnston (Irene Decker filling in)

Maybe most of you are aware of this, but I wanted to make all of you aware of all the information available to you by going into My Info on the MSU homepage and then



clicking on Enter Secure Area. The following information is there:

- The status of your flex spending account
- See what you have signed up for as far as health insurance
- Names and addresses of your beneficiaries and emergency contacts
- Your W-4 tax exemptions and your W-2 statement which can be printed out and submitted for tax purposes
- Annual leave and sick leave balances
- Direct deposit information – (you will soon be able to sign up for direct deposit online)
- All pay stubs

Birthday Alarm!

If you would like to create a birthday calendar for all of your family and friends, please click on the link below to get started. From the time the birthdays are entered, you will receive an e-mail from Birthday Alarm reminding you of their birthdays.

<http://www.birthdayalarm.com/>

Northern Gardening Tips: Water Conservation in the Landscape By Cheryl Moore Gough

Conserving water while maintaining a nicely landscaped yard is an important topic. My last column discussed



proper irrigation and the reduction of lawn area to conserve water. (You can still retrieve it and photos of drought-tolerant plants at: <http://www.montana.edu/cpa/news/nwview.php?article=4920>.) This column will talk about mulches and the wise choice of plants.

Mulches are frequently used in the landscape to conserve water by reducing weed growth, minimizing evaporation, and retaining moisture.

You can apply mulches directly to the soil or over landscape fabric. No mulch will give you 100 percent weed control, but there are different grades of landscape fabric, some of which will last much longer than others, so be sure to read the label.

Mulches can be applied directly to the soil. Organic mulches like wood chips, peat and grass clippings will slowly decompose. They will improve the soil, but will need to be replenished periodically. Use grass clippings with caution. If you have applied a broad-leaf weed killer to your lawn, there may be residual herbicide on them. Be aware, too, that those free hay bales may bring unwanted grain plants into your garden. Organic mulches moderate soil temperatures, keeping the soil cooler in hot weather. Apply organic mulches one to three inches deep.

In organic mulches like rocks and gravel are good in windy areas. They should be applied 2 inches to 4 inches deep. They tend to absorb and reflect heat, so be careful not to put them around cool-loving plants.

To help conserve water in your landscape, consider planting drought-tolerant species or those plants that have made adaptations to low water conditions. For example, fuzzy leaves deflect wind, thereby reducing water loss from the plant. These same fuzzy leaves help to channel water. Lamb's ear (*Stachys byzantina*), is a good example of this kind of plant. Lamb's ear also has light-colored leaves that reflect the sun's rays and help to modify temperatures.

Plants that have adaptations to keep hungry and thirsty predators away also fall into this category. Plants that lose tissue to these critters lose water along with the tissue. Spiny plants like soapweed (*Yucca glauca*) and plants with aromatic foliage like species in the yarrow genus (*Achillea*) have adaptations to keep their foliage from being eaten.

I'm often asked if all native plants are drought tolerant, and the answer is most certainly no. By all means, use native plants to help perpetuate local conditions, but there are many introduced species that can also be used to help conserve water. And keep in mind, even drought-tolerant species require additional water to become established.

Consider eliminating plantings or using drought-tolerant species on the south and west exposure of buildings, which have a tremendous amount of reflected heat and

light and are difficult to keep watered.

A partial list of drought-tolerant plants for Montana and surrounding states

Perennial groundcovers and vines

Bearberry, kinnikinick *Arctostaphylos uva-ursi*
Creeping juniper *Juniperus horizontalis*
Hens and chicks *Sempervivum* sp.
Virginia creeper *Parthenocissus quinquefolia*

Shrubs

Rocky mountain juniper *Juniperus scopulorum*
Siberian peashrub *Caragana arborescens*
Red Japanese barberry *Berberis thunbergii* var. *atropurpurea*
Purple-leaf sand cherry *Prunus x cistina*

Trees

Boxelder *Acer negundo*
Green ash *Fraxinus pennsylvanica*
Ponderosa pine *Pinus ponderosa*

Perennial flowers

Bitterroot *Lewisia rediviva*
Blue flax *Linum perenne* var. *lewisii*
Gayfeather, Blazing star *Liatris punctata*
Yarrow *Achillea millefolium*, *A. filipendulina*
Soapweed *Yucca glauca*
Blanketflower *Gaillardia aristata*
Coralbells *Heuchera sanguinea*
Sedum 'Autumn Joy' *Sedum spectabile* x *S. telephium*

Annual flowers

Moss rose *Portulaca grandiflora*
Tickseed, Calliopsis *Coreopsis tinctoria*
Globe amaranth *Gomphrena globosa*
Cosmos *Cosmos bipinnatus*
just switch it on, use it and then turn it off. By learning how to optimize your machine, you will improve its performance. It will last longer.

August Birthdays

Barry Jacobsen	6
Thamir Al-Niemi	6
Al Scharen	9
Mike Sun	16
John Terry	17
Peter Suci	24
David Sands	30



Recipe of the Month

Five Minute Ice Cream

1 (10 oz) package
frozen sliced
strawberries
1/2 cup sugar
2/3 cup heavy
cream



Combine the frozen strawberries and sugar in a food processor or blender. Process until the fruit is roughly chopped. With the processor running, slowly pour in the heavy cream until fully incorporated. Serve immediately, or freeze for up to one week.