DGE Newsletter, March 2008

Field & Berry Lab Groups

March 3: Adam Wolf led us through a classification of the Family Poaceae that includes the grasses Poa, Avena, Stipa & Lolium.

March 10: Joe Berry gave us a fine lecture/demonstration of several local representatives of the Family Chenopodiaceae. He described some of the research done here in the Dept. Plant Biology by Nobs, Bjorkman, himself, and a number of visiting scientists on the C4 & C3 species of Atriplex. We looked at magnified and projected leaf cross-sections of several species to see the unusual anatomy of their stomata and surrounding mesophyll cells.

Tasting: Joe also served a delicious spinach salad to represent this Family.

March 17: Nona covered three plant families: The Asteraceae, many of which used to be lumped with the Compositae, but still contains star thistles & sunflowers. The Rosaceae (e.g. strawberry), and The Ranunculaceae (e.g. buttercup). Chris followed with the Scrophulariaceae (e.g. figwort) where again many genera have been removed. For example, *Minulus*, now in the Phrymaceae, was the basic plant used in long-range studies relating phenotype to genotype by researchers in Carnegie's Dept. Plant Biology over 50 years ago. Next Ted Raab told us about the Laminaeae that contains many aromatic herbs such as the Mints. He called our attention to a 1959 paper in Science Vol. 129 by Gottfried Fraenkel titled *The Raison d'Etre of Secondary Plant Substances. These odd chemicals arose as a means of protecting plants from insects and now guide insects to food.* This paper spurred entire branches of Ecology.

Tasting: Nona & Chris brought cooked artichokes and sunchokes (Jerusalem artichokes) as well as dried salted sunflower seeds for us to sample.

Asner Group

March 4: Choy Huang spoke for the Tuesday Seminar Series on the Applications of Remote Sensing to Non-native Plant Monitoring. This was based on his dissertation work using a MODIS satellite sensor to study the phenology of invasive species in desert grasslands.

March 5: Greg Asner reports that a recent paper about the effects of plant invasion on the 3-D structure of Hawaii rain forests over large areas is the first in a series of papers coming out or in preparation by his lab and will represent a fundamental scientific step forward. It is especially important to him because, not only did his team push the bleeding edge scientifically, the work is already causing a measurable response in how the State and Federal Agencies are going to manage. Calls are coming in from the agencies suggesting a new adaptive management approach based on Carnegie science. He hasn’t seen such movement since their 2005-2006 papers that affected Brazilian policy. Science magazine was among the groups that picked up the story:

[http://sciencenow.sciencemag.org/](http://sciencenow.sciencemag.org/) (although they called the CAO lidar a radar...)

This work is a direct result of some very dedicated effort by Carnegie's Dave Knapp, Ty Kennedy-Bowdoin, and Robin Martin. Greg wants to thank them publicly for the relentless drive they exhibit day in and day out.

March 25: Eben Broadbent was awarded a GREF/GCEP (Global Change Education Program Graduate Research Education Fellowship) that will begin early next fall and cover most of his graduate student costs for up to the next three years. He will be doing a project to investigate how forest architecture interacts with climate changes to influence carbon dynamics in a Hawaiian rainforest.

Seminars

March 18: Michael Keller. Chief of Science at the National Ecological Observatory Network, NEON, Inc., Boulder, CO spoke about designing this new, non-profit corporation. It will be primarily an open-source, interactive data-base for all sorts of information related to climate change on a continental scale over a 30 year period. Michael outlined both the capability and requirements for meeting this challenge.

March 28: Dr. Donald R. Ort from the USDA/ARS Photosynthesis Research Unit, Univ. Illinois, gave a seminar titled: *The dependence of yield on photosynthesis: Opportunities for improvement.* Don described studies of potential ways to increase the efficiency of photosynthetic yields of various crop plants that might be used for biofuel.

Faculty/Staff Activities

March 3: The Stanford Global Climate & Energy Project (GCEP) celebrated its Five-Year Anniversary with a Special Event during which Chris Field took part in a Panel Discussion titled Future Directions for GCEP.

March 5: The Official Wednesday Morning (10:30) Coffee Time Returns. This first morning worked well with several mini discussions across party lines. Cookies were provided because of the well known axiom that the family that eats together stays together. Please everyone, add this Break to your Wednesday Calendar.

March 7: A paper by Damon Matthews & Ken Caldeira titled *Stabilizing climate requires near-zero emissions,* appeared in Geophysical Research Letters, 35, L04705, 2008 with a spectacular picture of the warming planet earth on the cover of the Journal. It also was part of a front page article in the Washington Post on March 10.

March 17: Caldeira welcomed Dr. Douglas MacMynowski who will be working in the Department as a Visiting Investigator. Doug is a Senior Research Fellow in Control and Dynamical Systems at the California Institute of Technology in Pasadena. He has been working to understand the dynamics of phenomena such as the North Atlantic Meridional Ocean Overturning Circulation and El Nino. If these processes are truly chaotic, at certain points in time and space the evolution of these systems could depend on the flutter of a butterfly's wing. Doug is working to find where and when those bifurcation points appear and better understand how the butterfly's wing would need to flap to make the system go in one direction or the other. Although he will be working primarily with Caldeira, Doug is happy to interact with other researchers working on problems related to control theory.

March 26: Ken Caldeira attended a meeting of the Hawaii Conservation Alliance at the Univ. Hawaii, Manoa. He talked about ocean acidification by CO2 and its deleterious effects on coral reefs and other marine organisms. That evening, his presentation was shown on Television News, creating much interest.

March 27: Congratulations to Hal Mooney on being named a 2008 laureate of the Tyler Prize for Environmental Achievement, a recognition he shares with James Galloway of the Univ. Virginia.


Page 1 of 2
Our Landscape

March 18: Chris had sent out a call for help with the annual spring weeding around the building, and as usual, many willing hands answered. And also as usual, food was the reward. For the record, the ceanothus are still as beautiful as ever, and lemon tree still producing.