

# the EEl

edited by Catherine Graham

## A BRIEF LOOK AT SOME RECENT PUBLICATIONS BY E&E FACULTY AND STUDENTS:

Futuyma, D. J., and A. A. Agrawal. 2009. Evolutionary history and species interactions. *PNAS* 106:18043-18044.

Moen, D. S., S. A. Smith, and J. J. Wiens. 2009. Community assembly through evolutionary diversification and dispersal in Middle American treefrogs. *Evolution* 63:3228-3247.

Karatayev, A.Y., L. E. Burlakova, D. K. Padilla, S.E. Mastitsky and S. Olenin. 2009. Invaders are not a random selection of species. *Biological Invasions* 11:2009-2019.

Dávalos LM, A.C. Bejarano and H.L. Correa. 2009. Disabusing cocaine: pervasive myths and enduring realities of a globalised commodity. *International Journal of Drug Policy* 20:381-386.

Graham, C.H., J.L. Parra, C. Rahbek, J. A. McGuire. 2009. Phylogenetic structure in tropical hummingbird communities. *PNAS* 106: 19673-19678.

Chan, Y. F., M. E. Marks, F. C. Jones, G. Villarreal, Jr., M. D. Shapiro, S. D. Brady, A. M. Southwick, D. M. Absher, J. Grimwood, J. Schmutz, R. M. Myers, D. Petrov, B. Jónsson, D. Schluter, M. A. Bell, and D. M. Kingsley. 2010. Adaptive evolution of pelvic reduction in sticklebacks by recurrent deletion of a Pitx1 enhancer. *Science* 327:302-305.

## A View from the Chair



The Department continues to thrive, even in the face of major budget cuts to the SUNY system in the past year. Eight

students received PhDs this year and have gone on to a variety of exciting positions. We wish them success. We have expanded our Masters program to include both Applied Ecology and Applied Evolution.

A highlight of this year was a very successful Darwin meeting in celebration of the 150<sup>th</sup> anniversary of the *Origin*. We also participated in a new Center for the Impacts of Regional Climate Change (CIRCC) which held its first symposium in February.

Both faculty and students have been awarded numerous grants and awards, including major NSF awards to two of our junior faculty members and others (see below). Edwin H. Battley was presented the Lavoisier Medal from the The International Society for Biological Calorimetry. Two faculty members received tenure: Catherine Graham as Associate Professor and Resit Akçakaya as full Professor. Three faculty members have left: R. Geeta, Massimo Pigliucci, and Jukka Jernvall. One result of the budget crisis is the inability to replace them or other faculty who have left the department in the past few years.

We are sad to note the passing of our founding Chair, Professor Larry Slobodkin; however his spirit, integrity and academic fervor will grace our Department for years to come.

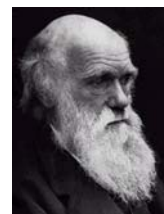
## Lavoisier Medal Presented



## To Edwin H. Battley

The Lavoisier Medal is awarded by the International Society for Biological Calorimetry to an internationally acknowledged scientist for an outstanding contributions to the development and/or application of direct calorimetry in biology and medicine. This award represents the highest honor in the field of Biological Calorimetry. This year Lavoisier Medal will be awarded to Edwin Battley for his important contribution to the development of calorimetry and thermodynamics of microbial and cellular metabolism. Ted Battley is an Emeritus faculty member who continues to publish decades after most academics have stopped.

## Darwin 2009 Workshop Hosted by E & E



The Department of Ecology and Evolution at Stony Brook University hosted the "Darwin 2009 Workshop" from November 4 to 7, 2009. It comprised 21 lectures with ample time for formal and casual discussion among the participants. In addition to the speakers, discussants from both outside and inside Stony Brook participated.

Doug Futuyma opened the meeting with a review of developments in evolutionary biology, mostly since the Darwin Centennial in 1959. His lecture was followed during the next two and a half days by lectures on the history of evolutionary biology, populations, genes and genomes, evolution of form, adaptation and speciation, diversification and phylogeny, paleobiology, human cultural and biological evolution, and applied evolution. Hopi Hoekstra of Harvard closed the last session with a lecture on prospects for the future.

*Evolution Since Darwin: the First 150 Years* will be an edited volume with 22 chapters by invited speakers and eight commentaries by other participants in the Workshop. It will be edited by Mike Bell, Doug Futuyma, Walt Eanes and Jeff Levinton and published by Sinauer Associates in 2010. In addition, M. Caitlin Fisher-Reid has produced a recording with all of the Workshop lectures, which will become available through the department website. There was a broad consensus that the Workshop was a success.

Darwin 2009 was supported by a NSF grant to Massimo Pigliucci, and the organizing committee included Bell, Eanes, Futuyma, Levinton, and Jessica Gurevitch. Fisher-Reid served as the graduate assistant. -- *Bell*

## Center Holds Interdisciplinary Meeting on Climate Change

The newly formed Stony Brook University (SBU) – Brookhaven National Laboratory (BNL) Center for the Impacts of Regional Climate Change (CIRCC) held an all-day symposium on February 16 that was notable for its cross-disciplinary coverage of many aspects of regional climate change. A group from the Ecology and Evolution Department

presented a comprehensive vision of connections between climate change, spatial patterns of biodiversity, niche occupation, and effects on population and species range fluctuations. A number of atmospheric scientists presented modeling results of the relationship of CO<sub>2</sub> forcing to atmospheric responses, and the effect of aerosols on regional climate.



<http://modis.gsfc.nasa.gov/gallery>

Prof. Minghua Zhang presented a comprehensive introduction to the totality of modeling required to understand climate change. Also notable was a presentation from the School of Marine and Atmospheric Sciences, covering a range of topics relating global warming to patterns of productivity and also changes of carbon dioxide ocean concentrations to potentially harmful effects on calcium-carbonate shells of larvae of bivalve mollusks. Also valuable were a wide range of brief but informative talks on recent research done by both BNL and SBU researchers. This meeting will lead to a next step of focused workshops that will bring nuclei of interdisciplinary teams together to formulate future collaborative research. – *Levinton*

## Promotion

Catherine who joined the Department in 2003 was promoted to Associate Professor this fall. Since joining the faculty she has received two NASA grants, including the prestigious NASA New Investigator Award, and

two NSF's. Her current grant is titled: *Integrating phylogeny and ecology to study diversity patterns of Andean hummingbirds*. This research combines information on species ranges, morphology, ecology and relatedness to evaluate patterns of diversity in these hummingbirds. Initial results on the project were published in PNAS (Graham & Parra et al. 2009, 106: 19673-19678). --*Daniel Dykhuizen*

## A Lab in the Spot Light

In recent months my lab has been fortunate to continue several projects. One project we have ongoing involves a long-running interest in the population genetics associated with life history adaptations that have arisen as *Drosophila melanogaster* has expanded from subtropical to temperate climates in many parts of the world. This particular project started as collaboration back in the early 2000s with Paul Schmidt, who is now an associate professor at Penn. We have been able to obtain support from the NSF for a continuing three year collaboration between labs to expand our studies of an interesting gene that affects diapause on a global scale. I have also continued a long-standing interest in probing the distribution and evolution of biochemical pathway control by looking at the effects of perturbing steps in the glycolytic pathway on flight performance in flies. This research uses tethered flight and the monitoring of wing beat frequency as a direct measure of flux down the pathway. We were fortunate to receive an NSF award from the physiology panel to reconvene these studies for three more years. Finally, in keeping with our long running interest in metabolic genes and other pathways, John True and I recently proposed a project looking the role

that the energy producing and dopamine pathways play in “energy-state sensing”; the ability of the fly to know what its calorie status is and then signal downstream pathways to control the partitioning of energy under periods of flush and starvation. We have just received a four year NIH grant to work on this problem. Times are good. -- *Walt Eanes*

## In Memoriam: Larry Slobodkin



Sadly but with appreciation of his many contributions, we note the passing, on September 12, 2009, of Professor Emeritus Lawrence Basil Slobodkin, who founded the Department of Ecology and Evolution in 1968. Larry was a world-renowned ecologist at the University of Michigan when he was lured away, by George Williams and Robert Smolker among others, to develop a new concept (the first or nearly the first E&E Department) at a new university campus that was envisioned as the “Berkeley of the east”. Stony Brook may not have quite lived up to that, but its stature in ecology and evolution soon challenged or bettered Berkeley’s, thanks largely to Larry and the faculty he attracted. As department Chair for five years and Director of the graduate program for seven, Larry had a casual but liberating style that matched his

personality and discourse. He was a large personality, whose conversation, often a stream of anecdotes, erudite references, jokes, and casual but profound insights into matters both scientific and nonscientific, was the light to which all present were mothlike drawn. Like his own mentor G. E. Hutchinson, Larry was interested in all things intellectual (one of his favorite phrases), which in his approach to biology meant posing large questions and framing broadly applicable hypotheses – a conceptual approach that distinguished our Department, in its early years, from many other biology departments. He had a ceaselessly inquisitive mind, endless enthusiasm for new ideas or discoveries, and a sparkling playfulness of thought. Larry had some hard edges, but usually, especially with students, he was soft and caring, especially for the foreign and the disadvantaged. He had 13 Ph. D. students at Stony Brook (and eight at Michigan), who worked on a great variety of questions and experimental systems, from his beloved hydra to the species diversity of coral reefs, for he allowed his students as much freedom as they wanted. Many other students found the inspiration for their research in his ideas or conversation. Larry not only launched the E&E Department, but for 41 years thereafter helped to steer it clear of disaster, to nurture our young faculty, and to remind us of our ideals. He was a friend, an inspiration, a leader. -- *Doug Futuyma*

## Recent Grants & Awards

**Resit Akçakaya**, US Army Corps of Engineers. “Use of population models to assess risk of climate change effects and human disturbances on the distribution of shorebirds on Florida military installations”.

**Resit Akçakaya**, NASA (collaborative grant). “Integrating remotely-sensed

data and ecological models to assess species extinction risks under climate change.”

**Stephen Baines** (collaborative grant). NSF “Effects of Fe:C ratios in food on marine copepod productivity and physiology”

**Abigail Cahill**, NSF-IRES for data collection at the Station Biologique de Roscoff, France.

**Liliana Dávalos Álvarez**, NSF (collaborative grant). “Phylogeny and rates of evolution in an ecologically hyperdiverse mammalian radiation (Chiroptera: Noctilionoidea).”

**Liliana Dávalos Álvarez**, 2009 Hispanic Heritage Month Latino Faculty Recognition Award

**Dan Dykhuizen**, NIH (sub-contract) “Pathoadaptive Evolution in *Salmonella*.”

**Walt Eanes**, NSF. “The glycolytic pathway and the physiological genetics of flight metabolism.”

**Walt Eanes**, NSF (collaborative grant). “Evolutionary dynamics of a molecular polymorphism for diapause and life histories in *Drosophila*.”

**Walt Eanes & John True**, National Institute of General Medical Sciences. “Metabolic and dopamine pathways in energy sensing and adaptation in *Drosophila*”

**Rebecca Grella, Dianna Padilla, Laurie Perino & Lisa Cantadella**, Toyota Tapestry Grants For Educators. “Assessment of larval recruitment and habitat disruption in a salt marsh ecosystem using GIS and field sampling methods.”

**Sarah Gray** was among four graduate students in the University chosen to speak at the Provost's Graduate Student Mini-Symposium for the Inauguration of President Stanley, a part of the Provost's Graduate Student Lecture Series **Joseph Lachance**, will talk later in the series **Jeffrey Levinton & Michael Doall** have been awarded three grants that

will combine to allow a comprehensive three-year study of the future of oyster restoration in Jamaica Bay, a National Wildlife Refuge. Monies were obtained from the NFW and a Cooperative Agreement with the National Parks Service

**Caitlin Karanewsky**, Primate Conservation, Inc. "Study of effects of habitat disturbance and climate change on hibernation patterns of *Microcebus rufus* in Ranomafana, Southeast Madagascar."

**Dan Moen**, NSF East Asia and Pacific Summer Institutes fellowship. Funding to conduct dissertation research in Southwest China.

**Dianna K. Padilla**, NSF (collaborative grant). "Phenotypic plasticity in feeding: ontogenetic solutions to scaling limitations."

## Recently Graduated!

**Christopher Noto** studied the influence of post-burial environment and plant-bone interactions on vertebrate preservation. Chris was advised by Forster and Levinton. He is currently employed as a Visiting Professor in the Department of Biomedical Sciences at Grand Valley State University in western.

**J. Matt Hoch**, a member of the Levinton lab, studied sex allocation, reproductive behavior and mating success in simultaneously hermaphroditic barnacles. He evaluated how the physical environment and population density affected reproductive allocation and behavior in barnacles. He is currently a Post-doctoral Research Associate at the Southeast Environmental Research Center of Florida International University in Joel Trexler's lab.

**Jonathon Hickman**, supervised by Manuel Lerda, investigated some of the direct and indirect impacts of invasion by kudzu (*Pueraria montana*) on nitrogen cycling and

trace gas emissions in the United States. He demonstrated that kudzu doubled emissions of nitric oxide (NO), one of the two key precursors to the formation of tropospheric ozone, a pollutant damaging to crop production and human health. Johnathon is currently a Postdoctoral Fellow at the Earth Institute at Columbia University with Drs. Cheryl Palm, Cynthia Rosenzweig, and Walter Baethgen as supervisors.



**Melissa Mark's** thesis explored the consequences of habitat selection by two species of *Thryothorus* wren in a coffee agroforestry landscape in Nicaragua. She was advised by Janson and Graham. Melissa found that birds that nest in coffee had lower reproductive success, suggesting that shade coffee may not be appropriate alternative habitat for many bird species, even those found in high abundances in this habitat. Melissa's current position is with Dr. Dustin Rubenstein at Columbia University, Department E3B where she is funded by a NSF Minority Postdoctoral Fellow

**Paul Bourdeau**, a Padilla student, examined how an intertidal snail modified its defensive shell morphology in the presence of predators with different attack strategies. When snails were exposed to one predator, alterations to shell morphology made them less susceptible to that predator, but more susceptible to the other. When both predators were present, snails produced the shell that protected them from the more dangerous of the two

predators. These results have important implications for the evolution of inducible shell defenses in marine snails. Paul is currently doing a Post-doc in Dr. Scott Peacor's Lab at Michigan State University.

**Ramona Walls** completed her dissertation entitled "Form, function, and phylogeny: Angiosperm leaf trait evolution with a case study in the genus *Dioscorea*" under Geeta's supervision. She is currently a post-doctoral researcher at the New York Botanical Garden, working on the Plant Ontology project with Dennis Stevenson.

**Shu-Dan** did her dissertation on the evolution and genetics of functionally-related traits, male wing pigmentation and courtship behavior, in the Oriental *Drosophila melanogaster* Species Group, under John True's guidance. Currently, she is a postdoc in Ranz lab at University of California, Irvine.

**Lei Zhu** completed his dissertation in May of 2009 on the genetic mapping of reproductive diapause in *Drosophila melanogaster*. This was a collaboration with Paul Schmidt (at Penn) in which Lei identified the *couch potato* gene as the first case in any insect where a molecular polymorphism was shown to be associated with a life history trait. He is currently a postdoctoral researcher in David Rand's lab at Brown University.

Donations for the Slobodkin, Williams and Sokal funds for student research and other department activities are greatly appreciated.

<http://life.bio.sunysb.edu/ee/endowment.htm>