



# the *EEL*

edited by Catherine Graham

questions using clear and compelling prose. His work continues to inspire.

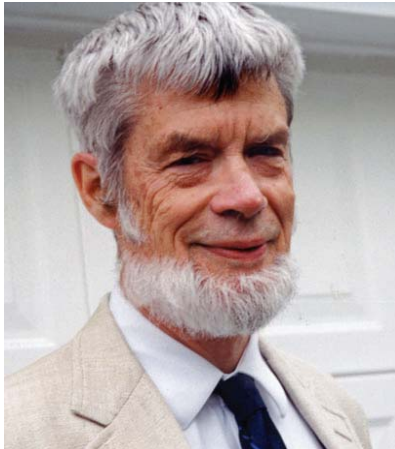
## A View from the Chair

The department has experienced many events, both achievements and losses, in the past year. Five students received Ph.D.s this year. Both faculty and students have been awarded numerous grants and awards. The research of our students, in particular, has been widely acknowledged, and some of their awards and achievements are listed in this newsletter. James Rohlf has retired, but he will continue as part of the E&E community as the university's first Toll Professor, working part time for the next three years, including continuing to teach Morphometrics and Multivariate Statistics. We are delighted to welcome a new faculty member, Heather Lynch, who joins us as an Assistant Professor. Dr. Lynch does exciting research on penguins and climate change, and on elegant applications of statistics in ecology, and will teach Biometry (big shoes to fill on that!).

The department, and the university, continue to struggle with recent budget cuts and the cumulative effect of years of budget cutting. With creativity and the generosity of faculty and alumni, we manage to keep our standards and spirits up.

We are sad to note the passing of George Williams, one of the founders of the department; his intellect, curiosity and wisdom have been an inspiration to us and to evolutionary biologists everywhere. –Jessica Gurevitch

## In Memoriam: George C. Williams



We mourn the passing of George C. Williams, who joined the Department of Ecology and Evolution in 1960. Dr. Williams was one of the most influential evolutionary theorists of this century. In his book "Adaptation and Natural Selection," published in 1966, Williams argued that selection acted at the level of individuals and genes, a concept fundamental to modern evolutionary theory. Throughout his career Dr. Williams explored many unexplainable phenomena in evolution, such as why women go into menopause instead of continuing to have offspring. Together with Dr. Randolph Nesse, a psychiatrist at the University of Michigan, Dr. Williams wrote "Why We Get Sick," (1995) inventing the field of Darwinian medicine. Dr. Williams, along with John Maynard Smith and Ernst Mayr, was awarded the prestigious Crafoord Prize in 1999. Throughout his life, George Williams asked challenging questions in evolution and wrote about these

## A BRIEF LOOK AT SOME RECENT PUBLICATIONS BY E&Eers:

Dávalos, L.M. *et al.* 2011. Forests and drugs: coca-driven deforestation in global biodiversity hotspots. *Environmental Science and Technology*, 45: 1219–1227.

Levinton, J.S., Doall, M., Ralston, D., Starke, A., Allam, B. 2011. Climate change, precipitation and impacts on an estuarine refuge from disease. *PLoS One*, e18849.

Park, P.J. and M.A. Bell. 2010. Variation of telencephalon morphology of the threespine stickleback (*Gasterosteus aculeatus*) in relation to inferred ecology. *Journal of Evolutionary Biology*, 23:1261-1277.

Colyvan, M., and L.R. Ginzburg. 2010. Analogical thinking in ecology: looking beyond disciplinary boundaries. *Quarterly Review of Biology*, 85:1-12.

Futuyma, D.J. 2010. Evolutionary constraint and ecological consequences. *Evolution*, 64:1865-1884.

Gurevitch J. *et al.* 2011. Emergent insights from the synthesis of conceptual frameworks for biological invasions. *Ecology Letters*, 14:407-418.

## James Rohlf Semi-retires



Jim Rohlf, Distinguished Professor, has played a critical role in Stony Brook's Department of Ecology and Evolution for over four decades. He worked with Robert Sokal to transform our disciplines from largely descriptive fields to ones in which statistical analysis is a strict requirement. He has trained generations of students in our fields in the use of statistics and provided expert advice to his departmental colleagues – as well as anyone else who sent him an e-mail message seeking his advice.

In the spring of 2011, Rohlf accepted a John S. Toll Professorship, which reduces his teaching and other university obligations to about 20%. This appointment means that he is officially semi-retired but in actuality allows him to devote more time to continue developing Geometric Morphometrics and to explore interesting new areas of research. In the immediate future, Rohlf and Sokal are completing the fourth edition of their classic textbook, *Biometry*.  
– Mike Bell

## Welcome Heather Lynch!

We are delighted to announce that Dr. Heather Lynch will join the faculty in Ecology and Evolution at Stony Brook. Dr. Lynch's research focuses on the development and application of statistics and mathematics to

conservation biology. A main theme of her current research is to understand the complex spatiotemporal dynamics of Antarctic penguins, in particular their response to climate change on the Antarctic Peninsula.

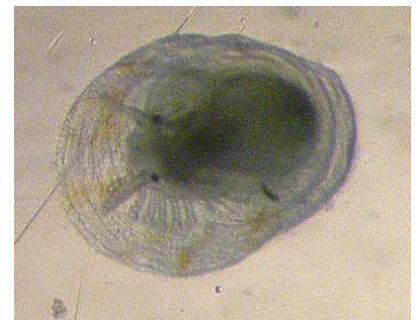


Dr. Lynch received her A.B. in physics from Princeton University in 2000, graduating summa cum laude and receiving the American Physical Society's LeRoy Apker Award for the best undergraduate physics thesis in the U.S. After receiving an M.S. in physics at Harvard she transferred into the Organismal and Evolutionary Biology Department to pursue her interest in statistical ecology. Under the advising of Dr. Paul Moorcroft, Dr. Lynch received her Ph.D. in 2006 for her thesis "Spatiotemporal Dynamics of Insect-Fire Interactions". She conducted post-doctoral research in Dr. William Fagan's lab at the University of Maryland, applying her expertise in statistical analysis of complex datasets to a range of problems such as survivorship in mammals. – Mike Bell

## A Lab in the Spot Light

With recent funding from NSF, my lab has been working on aspects of the life history and functional ecology of molluscs. Mollusc larvae use fused cilia to feed on individual microalgae, but then transition at metamorphosis to their adult feeding mechanisms. Suspension feeders use a gill to filter particles from the water, which is

energetically expensive. At metamorphosis these molluscs appear to be too small to efficiently obtain sufficient resources to grow and survive. The new gill of a freshly metamorphosed bivalve is very small, with just 4-6 short filaments compared to 100s of long, slender filaments in the adult. As a consequence of small size, the hydrodynamic environment (Reynolds number) results in a very low particle capture rate, and a very high energetic cost of moving water. Estimates of the costs and gains indicate that these recently metamorphosed animals should not be able to feed fast enough compensate for the costs. But, they do! We are using the slippersnail, *Crepidula fornicata*, to try to learn how they do it. One hypothesis we are testing is that feeding during the larval stage is critical for building energy stores that can then be used to fuel growth after metamorphosis until body size crosses some critical threshold where the Reynolds number changes and it becomes energetically efficient to suspension-feed. Feeding in *Crepidula* is convergent with bivalves, but like all good gastropods, it also has a radula for feeding on benthic algae.



In collaboration with Sandra Shumway and Evan Ward, University of Connecticut, we are comparing growth and survivorship of juveniles post metamorphosis, which have different amounts of stored energy from the larval phase, when they are provided only suspended algae (must

suspension feed), only benthic food (feed with their radula), or both, allowing them to supplement their diet if they are unable to get enough food by suspension feeding. Sandy and Evan, experts on suspension feeding, are working with Particle Image Velocimetry (PIV) and video analysis to figure out how *Crepidula* feeds. Our results will provide information about size limits for eggs and larvae of bivalves, consequences of larval diet quality and duration of the larval stage, as well as important factors affecting invertebrates with these complex life histories. – Dianna Padilla

## Thank You Iris Roth and Welcome Lee Stanley

The faculty and graduate students of E&E past and present thank Iris Roth, who recently retired as Graduate Program Coordinator, for her excellent service to the Department and Graduate Program. Iris, who served as GPC from 2004 to 2010, contributed to all aspects of the graduate program, especially in providing a nurturing, supportive and caring presence for the graduate students (and nagging them only when absolutely necessary). She retired in December 2010 and is enjoying relaxing with her husband, children and grandchildren, and cooking for her extended family. We are delighted to welcome our new Graduate Program Coordinator, Lee Stanley, who joined us this spring. She is an avid birder, naturalist and gardener and has spent a lot of time in the Long Island pine barrens. Lee is getting to know the faculty and graduate students and fitting into department life beautifully. The Department and Graduate Program look forward to working with Lee in the coming years.

## Gurevitch elected a AAAS Fellow



Jessica Gurevitch was elected a fellow of the American Association for the Advancement of Science (AAAS) in 2011. Her introduction of contemporary quantitative research synthesis and meta-analysis to the fields of ecology and evolution, her research on plant population and community ecology, efforts to improve implementation of effective design and analysis of experiments in ecology and evolution, and insightful perspectives and critiques of important ecological issues were acknowledged in making the award. She is the co-author of the leading undergraduate textbook in the field of plant ecology, *The Ecology of Plants*. Perhaps Dr. Gurevitch's most influential and significant accomplishment was to introduce current approaches to research synthesis and meta-analysis to the fields of ecology and evolution, changing the way scientists in these fields conceptualize and review scientific data. E&E extends congratulations to Dr. Gurevitch on this prestigious award recognizing her stature and accomplishments.

## Recent Grants & Awards

**Stephen Baines**, Hudson River Foundation: "Quantifying the role of dissolved organic matter (DOM) as

the missing source of energy to zebra mussel populations in the Hudson River"

**H. Resit Akcakaya**, NASA (subaward). "The effects of extreme climate events on avian demographics: the role of habitat refugia in mitigating climate change." **Jessica Gurevitch** (collaborative with N. Fowler, UT-Austin, and **Graham**), NSF-DEB, "Demographic heterogeneity at landscape scales in an emergent invasive species, *Centaurea stoebe*, in New York State."

**Daniel Moen and John Wiens**, NSF-DDIG: "The role of history in adaptation to novel environments: the relationship between morphology, performance, and phylogenetic history in frogs."

**Mary Aldred**, Hudson River Foundation, Tibor T. Polgar Fellowship, "Interactions between invasive species removal and nitrogen-removal ecosystem services in freshwater tidal marshes."

**M. Caitlin Fisher-Reid**, American Society of Ichthyologists and Herpetologists, Gaige Award to fund microsatellite data collection in *Plethodon cinereus* salamanders on Long Island.

**Catherine Graham** (collaborative), NASA: "Combining remote-sensing and biological data to predict the consequences of climate change on hummingbird diversity."

**Javier Monzon**, American Museum of Natural History, the American Society of Mammalogists, Stony Brook University Turner Fellowship, and NSF AGEF grants to conduct research on northeastern coyotes using genomic tools.

**Liliana Dávalos**, Network of Conservation Educators & Practitioners of the American Museum of Natural History, Professor of the month, Jan. 2011

**Sarah Gray**, Selected by the Stony Brook graduate program to represent

the University in the Research That Matters" Exposition in Albany, NY. **Peter Park**, Best Doctoral Student Poster, Metropolitan Association of College, New York Marine Sciences Consortium and University Biologists. **Rebecca Grella**, Recommended for the NSF Presidential Award for Teaching in Math, Science and Technology. **Catherine Graham**, elected Direct at Large of the International Biogeography Society **Dan Dykhuizen**, Award for Faculty Mentoring from Stony Brook University.

Several students won departmental research awards this year. Slobodkin awards were given to Megan Flenniken, Dana Opulente, and Niamh O'Hara. Caitlin Karanewsky received a Williams award. Recipients of Sokal awards were Spencer Koury and Boris Tinoco. **We thank all those who have generously contributed to these funds over the years.**

## Students Receive Prestigious University President's Awards

**Sarah Gray** was the recipient of the Stony Brook University President's Award to Distinguished Doctoral Students. Ms. Gray outstanding scholarship has been recognized by her receipt of many prestigious awards, including the Slobodkin Award, Sigma Xi award and a NSF-DDIG.

**Caitlin Fisher-Reid** received the Stony Brook University President's Award for Excellence in Teaching by a Graduate Student. Ms. Fisher-Reid was an outstanding teacher of all or major parts of Behavioral Ecology, Evolution, & Molecular Diversity Laboratory.

## High School Students in the Lab

The Intel Science Talent Search (Intel STS) is the nation's most prestigious science research competition for high school seniors. This year three students working with Rebeca Grella (a Ph.D. student in E&E) were semifinalists for this award: Norman Cao, Kendra Cornejo, and Sharon Varghese. Bonnie Lei, working with Dr. Liliana Dávalos, was a finalist at the Intel Science Talent Search (and a Siemens regional finalist). Samantha Garvey, Vivian Vuong and Anisha Khemlani were named Siemens semi-finalists for work conducted with Dr. Dianna Padilla on larval recruitment in salt marshes. Finally, Kevin Amaya and Alexander Harwood, students working with Dr. Padilla, received awards at the International Sustainable World (Energy, Engineering, and Environment) Project Olympiad.

## Recently Graduated!

**Joe Lachance**, a member of the True lab, completed a dissertation entitled "Life after beanbag genetics: theoretical and empirical studies on epistasis and penetrance." Joe studied the effects of genetic background in *Drosophila melanogaster* and found substantial levels of synthetic lethality and sterility between naturally segregating X chromosomes and autosomes. Joe is currently a postdoc at Sarah Tishkoff's lab at the University of Pennsylvania.

**Norah Warchola**, a member of the Graham lab, recently completed her dissertation entitled "Butterfly movement in a post-agricultural landscape." Her project monitored the movement of fruit-feeding nymphalid butterflies in a fragmented landscape, at multiple spatial scales. She is

currently a postdoctoral researcher in Elizabeth Crone's lab at Harvard Forest.



**Rodrigo Cogni**, a Futuyma student, studied coevolution in a model plant-herbivore system. He integrated different sub-disciplines to understand patterns of local adaptation in interacting species, and how plant traits and gene flow may affect coevolutionary dynamics. He is currently a post-doc in the Eanes lab. **Jessie Knowlton**, a member of the Graham lab, recently completed her dissertation, "Effects of habitat degradation on species interactions and reproductive success in an Ecuadorian bird community." She examined the effect of livestock grazing on mixed species flocks of birds in a highly threatened tropical dry forest. Jessie is currently a postdoctoral researcher affiliated with Michigan Technological University in David Flaspohler's lab.

**Kelly O'Donnell** studied natural selection and phenotypic plasticity in invasive *Fallopia japonica* (Japanese knotweed) and a related native species. Kelly was advised by Massimo Pigliucci. She is currently a post-doctoral fellow in the Frontiers of Science program at Columbia University working with Hilary Callahan.

Donations for the Slobodkin, Williams and Sokal funds for student research, our department Fund for Excellence, and our new graduate student travel fund are greatly appreciated.

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