Letter from the Chair
By Mark Bertness

Greetings from Walter Hall. It has been an unusual fall. With both Doug Morse and Ted Goslow on sabbatical (Doug in Australia and Ted at Friday Harbor) we have learned the hard way how much Doug and Ted have spoiled us. As the new responsible adult of the Department I can confirm to you what we all suspected. We owe Doug an enormous thank you for looking out so well for us for so many years.

This year has been an exciting one at Brown. Our new president, Ruth Simmons, has brought new energy and vitality to campus that has given everyone a very optimistic view of our future. Her Academic Enrichment Initiative is going to increase the faculty by 100 over the next few years in an effort to move Brown from being one of the best undergraduate institutions in the country to being one of the best universities in the country. So these are exciting times for all of us.

This year has also been exciting for our Department. This fall we underwent an external review that went exceptionally well, positioning us to benefit substantially from the strengthening of areas of excellence with the Academic Enrichment Initiative. Two of the four interdisciplinary themes of the initiative, Global Environmental Change and Computational Biology will likely benefit our department directly with new hires and indirectly by focusing attention on our recent success. Biomedical engineering and the biology of aging are also themes that are attracting attention in University Hall that would benefit EEB. Brown is also developing a joint graduate program with the Marine Biological Laboratory at Woods Hole that could have an enormous positive impact on our Department over the next decade. Also looming on the horizon is the new Life Science Building to be started this spring and a major University reevaluation of space and long-term campus planning. We will almost certainly be leaving Walter Hall for new digs in the next 5-7 years. Where we will end up is uncertain, but we will most likely end up all together in one space for the first time with room to grow. Maintaining the Departments collegial culture that has grown out of the cozy confines of Walter Hall will be a challenge, but the prospect of growth is exciting. So stay tuned. The times they are a changing.

New to the Department in 2002

- James Cypser: post-doc working with Marc Tatar
- Adella Francis: administrative support staff
- Dae Sung Hwangbo: graduate student in the Tatar lab
- Jose Iriarte-Diaz: graduate student in the Swartz lab
- Jeannette Kanefsky: DNA sequencing manager
- Tonia Korves: post-doc working with Johanna Schmitt
- Brian Leib: greenhouse technician
- Benjamin Nomann: graduate student in the Hughes lab
- Nanette Reese: research assistant in the Schmitt lab
- Eric Sanford: post-doc working with Mark Bertness
- Bhoomika Singh: post-doc working with Johanna Schmitt

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In the Greenhouse

By Fred Jackson

Spring is the usual time for many greenhouse experiments, but many are already underway. From the Schmitt lab, two students are working diligently on senior thesis projects with *Arabidopsis thaliana*. Robin Hopkins is looking at kin and mediated selection in the plant, and Matthew Jackson is observing the effects of cold shock on flower production. Graduate student Yuko Toyonaga has been keeping the three growth chambers filled with plants, as she continues research on *Arabidopsis*. She is investigating how nutrient levels affect flowering. Other on-going projects, such as maintaining *Impatiens capensis* seed lines, are being monitored by Schmitt research assistants Nanette Reese and Bhoomika Singh.

On the marsh front, Bertness lab graduate student Caitlin Mullan and undergraduate Ben Fogel are keeping one bay in the greenhouse filled as they study the influences of waterlogging on the morphology of wetland plants.

And now, when visiting the conservatory greenhouse, you will be greeted and given a tour of all plants flowering and fruiting by Brian Leib. Brian, a recently hired fulltime greenhouse technician, is making an enormous effort to have many plants flourish throughout the year. The conservatory greenhouse which houses many types of plants from all over the world, is a great resource for biology and art classes on campus.

Finally, in a few weeks, our smallest greenhouse will be soon filled with large geraniums and other cultivated bedding plants used for May commencement ceremonies. If you always wondered where these plants originated from, we have been growing them for the past 10 years. Come by and take a tour when you have time from your busy schedules.

News Update

Steve Hamburg was awarded an EPA Environmental Merit Award, and his research group has received an NSF grant to study biotic control of calcium supply in regrowing forests.

The presidential address to the Society of American Naturalists was given by Annie Schmitt at the ASN annual meeting in Banff.

Steve Gatesy’s work on merging fossil specimens with computer-generated information was featured in an NSF News Tip story at http://www.nsf.gov/od/lpa/news/02/tip021022.htm

Postdoc in the Tatar lab, Jim Cypser was awarded the Geron-Samuel Goldstein Distinguished Paper Award. He was invited to present the work at the 55th Annual meeting of the Gerontology Society.

Meng-Ping Tu of the Tatar lab received an American Federation of Aging post-doctoral fellowship to study how nutrition and development interact affect Drosophila life history traits.

Following publication of her work on ice storms in the northern hardwood forest, Anne Rhoads was interviewed by the Toronto Star, which published a feature story on the work.

Jose Miguel Farina (Kongo) of the Witman crew has been appointed Assistant Professor at the Center for Advanced Studies in Ecology & Biodiversity, Pontificia Universidad Catolica de Chile, Santiago. Jon Witman was awarded a NSF grant for research on marine communities in the Galapagos. Andrew Altieri advanced to Ph.D. candidacy.

Jeffrey Townsend (BS ‘94) was awarded the Walter Fitch Prize for young investigators in Molecular Biology & Evolution at the Society for Molecular Biology & Evolution meetings in Athens, GA in July 2001. Jeff was awarded his Ph.D. from the Dept. of Organismic & Evolutionary Biology at Harvard Univ. in June ’02 and began a Research Fellowship from the Miller Institute for Research in the Basic Sciences at the Univ. of California at Berkeley this past September.
Graduate Student Research Update

By Kristin Bishop

Physical modeling of aerodynamic forces generated by a flexible wing.

Although it is generally accepted that bats evolved from arboreal gliders, it is commonly assumed that gliding and flapping flight represent two separate adaptive zones. It is also thought that mammalian gliding membranes are not effective flapping wings and that typical bat wings are not effective gliding membranes; if so, there is no functional continuity between these modes of locomotion. To address whether bat-like wings have functional continuity across gliding and flapping, I tested whether bat-like wings have poorer gliding performance than wings with a more glider-like morphology. Good performance was defined as a high lift-to-drag ratio, which results in a low glide angle and thus a long glide distance for a given vertical drop. I built physical models of differently shaped wings with an elastic wing membrane, spanning the morphological range of glider-like and bat-like shapes. I measured the lift and drag of these models in a wind tunnel at various speeds and angles of attack. This study will soon be extended to include models of flapping wings to clarify whether a transition to flapping from gliding was physically possible in mammals.

Research Feature

By Steve Hamburg

Acid rain has been a concern to ecologists for more than 20 years. During that time the accumulating data show a negative impact on high altitude lakes, alpine forests and even the breeding success of some birds. But, the impact of acid rain on the forests of New England has been less clear. It was thought that exposure to acid rain, along with declining calcium in precipitation, was decreasing the availability of base cations (Ca⁺, Mg⁺, K⁺) in forest soils. Such a decline would threaten the health of forest ecosystems, as the available Ca would be insufficient to maintain long-term productivity. In the late 1990’s Molly Smith, then a Brown undergraduate and currently a doctoral student at Berkeley, and I investigated whether long-term (17y) trends in terrestrial snail populations indicated that the decline of available calcium in central New Hampshire was taking place. Snails provide a useful index of calcium availability in the forest leaf litter. Our results suggested that the story was complex: older forests had declining numbers of snails but the number of snails was increasing in young forests over the same period of time.

To investigate how forest age regulates this pattern we joined forces with Ruth Yanai (SUNY-Syracuse) and Mary Arthur (Univ. Kentucky). We discovered that the snail data was consistent with patterns of forest floor dynamics and stream water chemistry. Young forests were accumulating Ca⁺ at high rates and must be tapping a previously unrecognized source of this ion. Joel Blum, a geochemist at the University of Michigan was able to show that the trees in the region were finding Ca⁺ in the unweathered apatite of deep soils. Bio-mining may mitigate the potential effects of acid rain on all but the oldest undisturbed forests of the region.
By Caitlin Mullan

Though it has long been assumed that Patagonia is one of the coolest places in the world, this hypothesis has simply never been rigorously tested. A graduate student, raised on depauperate New England saltmarshes and North Atlantic rocky shores was transplanted to the coast of southern Argentina accompanied by two guys with big white curls. Preliminary results were stunning…

Because rocky intertidal shores of the North Atlantic have received so much experimental attention, many of the processes driving patterns of species distribution are well understood. To investigate the generality of what has been discovered in the North Atlantic intertidal, Mark Bertness and his lab have taken these experimental methods to a new frontier in Argentina where the rocky coasts have not been studied. This project, funded by the Mellon Foundation, also aims to encourage cultural and scientific exchange and thus I became a lucky transplant on a recent trip to Patagonia in November.

Mark Bertness, Brian Silliman, and Alejandro Bortolus began work on this project last year along with three Argentinian graduate students from the University of Patagonia, Puerto Madryn. In a country with severe economic problems, Cielo, Vicky and Fernando are motivated by a sheer love of the work and system and are eager to learn experimental ecology. Fortunately for all of us, enthusiasm transcends spanglish.

The setting itself is stunning. To get to our work sites every morning we drove through the Patagonian steppe of dry shrubs where guanacos (a llama relative), choiques (flightless birds), maras (world’s largest rodent) and flamingos (the pink kind) were common sights. Magellen penguins and sea lions have breeding colonies neighboring the rocky outcropping where we work, so on the few occasions we lifted our heads from the intertidal we would glimpse sea lions gliding by.

The rocky intertidal is dominated in low protected sites by cushions of crustose coralline algae and everywhere else by thick beds of small mussels. If you dig into the beds, in places over five mussels deep, you expose a whole community of miniature organisms within the moist jumble of mussels and byssal threads. Star fish, limpets, chitons, polychaetes, and snails just a few centimeters in size survive within this mussel matrix, and come to find out, can’t live without it! Sponges left on the substrate loose 98% of their water content in two hours, while sponges within the mussel matrix only loose 3% of their water. The Patagonian wind is intense and persistent and dessication stress is a dominant force shaping the intertidal. The thrust of our various experiments there are to investigate the roles of abiotic stress (primarily wind), biotic interactions (especially herbivory by ubiquitous limpets) and the importance of bioengineering by the mussels that enable the diversity of organisms to persist in an otherwise very inhospitable place.

On our final day, we got to see southern Right Whales - they breached and played all around our whale-watching boat, close enough to count the barnacles on their backs. Transplant Experiment Conclusions: Being in Patagonia is like being inserted into a National Geographic movie. But as results are preliminary, more research is required!
REPORTS FROM AFAR

Rand-Wharton Expedition to Switzerland

David Rand is spending a sabbatical semester in Switzerland at the Biozentrum, University of Basel. He is working in Walter Gehring’s laboratory dabbling in the population genetics of eye development in Drosophila and writing a book entitled Cytonuclear Coevolution: Conflict and Cooperation in Genomic Evolution. Results from both projects are scheduled for publication shortly after retirement in 2030. Between long hours in the lab and library, David plans to spend his time writing grants, skiing, cursing at email, eating chocolate, absorbing Old-World culture, skiing, killing flies, writing papers, eating chocolate, absorbing more Old-World culture, hiking, cursing at email, and generally getting away from it all. The whole family will is coming along as well. Kristi is working in Markus Afolter's lab at the Biozentrum which studies the developmental genetics of cell signaling in Drosophila. The girls will attend the Basel International School. As George Bernard Shaw so aptly put it, "Youth, like education, is wasted on the young." As David Rand put it, “All four of us plan to return younger and better educated.”

Morse Expedition to Australia

Doug is at the University of Melbourne working on aspects of sexual selection in the lab of Mark Elgar. Doug alternates his time between preparing a new book, some broadly-focused reading, and writing manuscripts. Plans for hands-on research have dried up with the extreme drought.

Doug and Elsie are enjoying Melbourne and the countryside. Doug notes that “Melbourne is an eminently liveable city (in fact it has from time to time been stated to be the most liveable city in the world, and we could see why), in spite of its 3.5 million population, and there is lots to see and to do. The surrounding vicinity is most impressive as well, and we've managed to see some wonderful landforms. For a biologist, though, the most exciting part is the wildly different fauna and flora. After all, it takes a bit of reorientation to realize that the noise you hear crashing off into the bushes is an emu, and the thought of a fiddlehead the size of your fist (tree fern, of course) is simply wild. And the kangaroos and wallabies are too much!”

Goslow Retreat to Friday Harbor

By Ted Goslow

In these turbulent and unsettling times I am particularly thankful for the opportunity to disappear for 5 months to exercise a sabbatical leave, that jewel of our profession. I am in the Whiteley Center at the University of Washington’s Friday Harbor Laboratories (FHL), a marine station located on San Juan Island, Puget Sound. The FHL are known as a center of the highest caliber devoted to the development, support and education of young people in the course of pursuing research on marine systems. In addition to daily interaction with students, I exchange greetings with poets, musicians, anthropologists, sociologists, astronomers and other biologists from around the globe.

I have learned many lessons here, but the best is a general one I’ll share with you. The laboratories are located just above the high tide mark along the edge of a pristine but busy harbor - Douglas firs and Madrone trees extend to the water’s edge. Less than a mile from the station is Friday Harbor, a village of 2,000 people, 50-60 businesses and over 100 boats at their mooring. The harbor also serves passage for the daily arrival of 10-15 ferries, each capable of bringing 100 automobiles to this rural island of 7,000 people in the winter and 20,000 in the summer. And yet almost every morning, coffee in hand, I watch the foraging activities of numerous harbor seals, kingfishers, Harlequin ducks, Great Blue herons and an occasional sea lion. This morning I was graced by a Bald eagle overhead. These activities signal the biological diversity teeming just below the water’s surface and never fail to warm my heart. They are a reminder that we can live in close association to our waterways when priorities are established, care is taken, and we pay attention. Here’s to a prosperous 2003 and another chance to vote in 2004.
Fall 2002 Seminars

The Graduate Program in Ecology and Evolutionary Biology sponsors two weekly seminar series: Brown Bag Seminars for catching up on research and work in progress within EEB, and a more formal colloquium series featuring speakers from outside the university.

Brown Bag Seminars

This informal seminar series provides a time for members of the program to share current research and problems in a relaxed atmosphere. It serves as a sounding board for the new research of both students and faculty and promotes collaboration and interactions within the program.


September 27, 2002 Dr. Marcie Marston, Roger Williams University. Marine viruses in Rhode Island waters: Cyanophage abundance, diversity, and host interactions.

October 4, 2002 Dae Sung Hwangbo, Graduate Student, Brown University. Life-span extension in Drosophila brought about by a down-regulation of insulin-like signaling system (ISS).

October 11, 2002 Dr. Scott Reese, Postdoctoral Research Associate, Brown University. The physiology of overwintering in turtles.

October 18, 2002 Dr. Tonia Korves, Postdoctoral Research Associate, Brown University. Fitness consequences of R gene resistance to pathogen infection.


November 1, 2002 Dr. Michael Palmer, Postdoctoral Research Associate, Brown University. Insulin receptors and their pleitropic interaction.

November 8, 2002 Dr. John Stinchcombe, Postdoctoral Research Associate, Brown University. Evolution of ecophysiological traits in Impatiens capensis.

November 15, 2002 Tyson Hedrick, Graduate Student, Harvard University. Avian flight: muscles, masses and wings.

November 22, 2002 Jose (Pepe) Iriarte, Graduate Student, Brown University. The effect of alterations of body mass on gait transition speed in rodents.

EEB Monday Seminars

Speakers from around the country visit EEB as guests of faculty and the graduate program. These Monday seminars present the best of new research in the fields of Morphology, Behavior, Evolution and Ecology.


October 21, 2002 Dr. Johanna Polsenberg, Knauss Legislative Fellow for Rep. Sam Farr. Educating policy-makers does not mean advocacy: Why scientists must contribute policy and decision making.

October 28, 2002 Dr. Jonathan Grabowski, University of Maine. The influence of trophic interactions, habitat complexity, and landscape setting on community dynamics and restoration of oyster reefs.

November 4, 2002 Dr. David Stern, Princeton University. The developmental genetics of microevolution.

November 11, 2002 Dr. Elena Kramer, Harvard University. Gene duplication, patterns of divergence and the evolution of floral form.

November 18, 2002 Dr. Peter Vitousek, Stanford University. Changing sources of nutrients during 4 million years of ecosystem development in the Hawaiian Islands.

November 25, 2002 Dr. David Fitch, New York University. Evolution and development of the Nematode Male Tail.

December 2, 2002 Dr. Michael Coates, University of Chicago. Body plans, phylogeny and tetrapods.
New Publications


Feedback to the EEB Newsletter

We would like to hear from you!

Comments and information are welcome to:

EEB Newsletter OR email information to:
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Name:______________________________________Undergraduate or Graduate – class Year_________
Advanced Degrees Date & Institution_________________________________________________________

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Home Address: __________________________________________________________________________
City __________________________State _________Zip Code ________Telephone _______________

Business Title: ____________________________Business Phone ___________________________
Alumni Notes (check if only for our files)__________________________________________________

Can we contact you for further information about your activities in Biology?  ___yes  ___no