University of Connecticut

DEPARTMENT OF ECOLOGY & EVOLUTIONARY BIOLOGY

8 YEAR PROGRAM REVIEW

SELF-STUDY

2012

Executive Summary

Highlight the most salient points of this self-study. Place particular emphasis on new directions and remediation of existing problems. *(OIR program review data are attached in Appendix ES1)*

The goal of Ecology and Evolutionary Biology (EEB) at the University of Connecticut (UConn) is for its Faculty members to be the leaders of their fields. As evidenced by our enhanced standing in the recent NRC rankings relative to previously designated peer and target institutions, our program has improved substantially since our last review (Appendix ES2). EEB is a strong, vital, and professionally active group of committed researchers, teachers, graduate students and post-docs. Members of the Department are highly productive and influential scholars. Since 2005 EEB faculty have published 658 peer-reviewed articles in leading journals and 111 book chapters. They have authored 16 books and edited another 13 and have garnered more than 53,000 citations to their work. Active extramural awards during this period totaled $28,363,819 (~$75,000,000 if non-UConn funds are included)—a 63% increase in external support over the review period.

EEB engages in research collaborations with colleagues across multiple UConn Colleges, Schools and Departments, and at institutions across the U.S. and the world. Our commitment to professional service is extensive, with faculty members holding an unusually large number of influential positions in professional societies and journals, as well as a major presence on federal review panels. EEB faculty members are routinely selected for leadership roles within the University. Since 2005, these have included Vice Provost for Research and Graduate Education, Interim Dean of the Graduate School, Chairs of 11 University Committees and as members of dozens of other University and College committees.

Nearly all of our mid- and upper-level courses are taught by tenure-track faculty. Departmental means on student evaluations, particularly in upper division courses, are routinely above those of the University. We maintain a signification investment in time-consuming laboratory courses, believing strongly that organismal biologists should be broadly trained. We contribute significantly to courses fulfilling the General Education mission of the University. EEB is responsible for the majority of the introductory biology lab courses, providing 55% of all introductory biology seats offered by the 3 biology departments since 2005 and teaching 55% of all "W"-students in the life sciences (W-courses fulfill the University's writing requirement). We have responded proactively to an unprecedented increase in the total number of students majoring in biology, generally, and in our own major, as well (both of which have doubled since 2005). EEB is heavily invested in undergraduate research and the Honors program, with faculty members having supervised over 300 research undergraduates in their laboratories (56 completing theses, 49 of them Honors) and many of them co-authoring publications. Comparisons with peer and target institutions, and the other biology departments at UConn, indicate that our teaching commitments are large.

We are particularly proud of our graduate program. Feedback from graduate students suggests that our graduate teaching (combining individual mentorship with seminars and lecture courses) is highly successful. NRC data show that the completion rate and time to degree of our graduate students exceeds that of almost all of our peer and target institutions. 82% of our Ph.D. students graduating since 2005 hold professional positions related to their field. Since 2005 our graduate students have earned 25 extramural awards, including NSF Pre-doctoral, EPA Star, NASA and Switzer Fellowships, plus Fulbright awards, NSF Doctoral Dissertation Improvement grants and numerous professional society awards. The Department is home to an average of 20 post-docs per year, 55 in total since 2005; 91% of the 35 no longer in residence have gone on academic or other positions in science.

Public engagement activities range from local and regional efforts to high-profile projects in South America and Africa. While active and successful in traditional outreach venues, EEB has also established a significant presence in cyberspace, educating the public via blogs, social medial and numerous websites.

Space has improved substantially for a subset of our faculty since our last review, with 15 faculty members now housed in the new Pharmacy/Biology building. Unfortunately, the rest remain in poor space within the Torrey Life Sciences building (see below).

Our Vision and its Limitations: We feel that EEB is at a cusp. To this point the faculty have been sincere, united and energetic in their efforts to make the Department an international leader in organismal biology. We have shared a vision of excellence as something always to strive for, but never quite attain, and thus we rise towards an ever-higher bar. As individuals we feel empowered, not diminished, when each new hire is better than we are, and thus we as a whole are better. By many of the metrics used to evaluate scholarship and productivity, we exceed our peers. But we are exhausted. Our investment in the University has not been matched by the University's investment in us. Structural problems identified in the previous review remain. Faculty effort and workloads are approaching an asymptote and morale is eroding. Without a serious University commitment to our program, the progress we have made will stall and we fear we will regress towards the mean. The principal outcomes of this self-study have been the documentation that we truly are doing more than ever and the revelation and clarification of impediments to our further advancement. If we are to move to the level of our target institutions we need to resolve several issues, some raised by the previous review and some newly emerged. Principal among these are (1) a steadily increasing administrative load, (2) an alarmingly top-heavy faculty, (3) inequitable and inadequate space, (4) constraints on graduate recruitment, and (5) an unsupportive environment for the care of our non-model research animals.

(1) The time available to faculty members for innovative and competitive research is steadily eroding owing to excessive 'businessification' of University practices. Responsibility for paperwork (e.g., travel, purchasing and grant accounting) continues to shift from staff to faculty while requirements for more reports, more explicit accounting for time, more mandated training sessions and more emphasis on contractual agreements, skyrocket. This wasteful use of faculty members' time diminishes their ability—and commitment—to making EEB and UConn the best they can be. The return of a lost office staff position would help to relieve this administrative strain.

(2) The number of tenured faculty members has decreased by 2 since 2005, despite substantial increases in undergraduate enrollments, with the student-to-faculty ratio rising from 71:1 to 103:1. Two new hires (one starting 2013, one search ongoing) will return us to our 2005 number, but given the impending retirement of 2 senior faculty members, improvement will be very short-term. Multiple years of University hiring freezes, have left our faculty exceptionally top-heavy (76% are, or will soon be, Full Professors and only two—including our newest hire—are Assistant Professors). Implementation of our cluster hire proposal for 6 junior faculty members in Biodiversity and Global Change would help to return balance to departmental demographics.

(3) The quality and quantity of EEB space is starkly dichotomous, with half the department in the new Pharmacy/Biology building (PBB) and the other half in the decaying Torrey Life Sciences building (TLS). The last minute, unannounced elimination of a planned bridge between PBB and TLS has fragmented the department, causing an erosion of departmental cohesion. We are encouraged by the President's recent efforts to obtain funding for a new building, but also recognize that even if successful, it cannot address departmental space needs for many years.

(4) Our graduate program has remained static at ~48 students and the number of TAs has not kept pace with the doubling of undergraduate enrollment. NRC data show that EEB's average number of University-supported students per faculty member (0.63) is lower than 5 of 9 peer and target institutions. We continue to see a decline in our ability to recruit some of our best applicants because our competitors offer evermore attractive support packages. Enhancement of our graduate program requires additional student support, particularly the availability of full fellowships, summer support and a larger TA pool. But, we are about to implement a new model of TA assignments in introductory biology that we believe will help to mitigate our present shortage.

(5) EEB experimentalists often study non-model species requiring animal care. The Office of Animal Care (OAC) continues to impede work on such 'exotic' animals. Three faculty members have now been forced to change their research programs as a result of this lack of support.

A. Unit Description, Mission, Goals, and Recent History

Note: Relevant data are provided in the Appendices associated with detailed descriptions Scholarly Productivity (Section B), Undergraduate Program (Section C), Graduate Program (Section D), Assessment (Section E), Outreach (Section F), Collaborations (Section G), and University-wide support (Section H).

1. Describe briefly (with summary tables):
   a. the profile of full-time and part-time faculty, including adjuncts and graduate assistants in the teaching programs of the unit. Clarify the primary campus appointment of each instructor.

EEB is one of 3 departments in the biological sciences at UConn, the others being Molecular & Cell Biology (MCB) and Physiology & Neurobiology (PNB). Tenure-track biology faculty members at Storrs total 73, with 6 searches underway. MCB is the largest department with 33 faculty (3 searches underway), followed by EEB with 26 faculty (1 search underway), and PNB with 15 faculty (2 searches underway). EEB is responsible for the biology courses offered at 3 of the 4 regional campuses that offer biology, with one tenured faculty member based at each of the Hartford, Stamford, and Waterbury campuses (Appendix A2).

The Storrs EEB faculty (Appendix A2) currently includes 17 Professors, 7 Associate Professors (2 of whom are up for promotion this year) and 2 Assistant Professors including our new plant genomicist who arrives in Fall 2013. There is a search currently underway for a junior tenure-track faculty member. In addition, EEB has 2 Lecturers, and 1 Assistant Professor in Residence (APR). Two emeritus Professors remain research-active, and a Distinguished Research Professor (and member of the National Academy of Sciences) (Likens[1]) joined EEB in 2004 and teaches a regular variable topics seminar course, as well as serving on graduate committees and as Environmental Advisor to the President. One additional faculty member (Willig) was hired as Director of the Center for Environmental Sciences and Engineering (CESE) in 2005 and thus does not have undergraduate teaching duties, but contributes to our research and graduate programs. Of the 25 departments across campus that are home to the University's 45 Board of Trustees Distinguished Professors, EEB has a greater number than all but one (4 vs. 5 in Psychology). Based at the regional campuses EEB are 1 Associate Professor (Hartford), 2 Professors (1 each at Stamford and Waterbury), 5 Lecturers (3 at Stamford, 2 at Waterbury), and 1 APR (at Avery Point); courses at Torrington are handled by Lecturers from one of the other regional campuses.

In response to the Administration's recent call for cluster hire proposals as part of the President's initiative to hire ~290 new faculty University-wide, EEB submitted a request for 6 new faculty working in the area of Biodiversity and Global Change. The Dean has approved a search for the first of these lines and we anticipate hiring a junior faculty member to begin in Fall 2013.

The number of EEB tenure-track faculty has declined from a high of 27 in 2005. One faculty member (Cardon) left for a position at Woods Hole, 4 have retired (Anderson, Rich, Schaefer, Taigen), and 1 (Holsinger) currently serves full-time as the Interim Provost for Graduate Education and Dean of the Graduate School. The decline in tenure-track faculty was slightly offset by 2 new hires (Bush 2005, Urban 2008) so that we are now at 25 (Appendix A3). Our newest hire (Yuan[2]) and the Biodiversity and Global Change biologist will return us to 27 in Fall 2013, but we will soon return to 25 faculty with the imminent retirement of 2 senior professors.

Departmental staff includes 2 office personnel, 2.2 collections managers who oversee the Biodiversity Research Collections, 3 greenhouse staff, and a professional academic advisor who, in addition to advising all of our EEB majors and well over one-third of the upper division Biological Sciences majors, provides some support for the Department's upper division courses.

Since 2005, the Department's graduate program includes an average of ~48 students per year (on average, 44.8 Ph.D., 4 M.S., 6 B.S./M.S.), with little deviation from this number over the last 8 years.

[1] We have not included the prodigious record of Gene Likens in any of our metrics.

[2] Because he will not join our faculty until Fall 2013, we have not included Yaowu Yuan in our calculations.

Annually, an average of 6.5 of these are supported on competitive fellowships and 12.9 on external grant funds. The number of graduate teaching assistantships was 29 in 2005 and has fluctuated around an average of 26.5 since then. With the exception of summer intensive field courses, graduate students assigned teaching assistantships oversee the laboratory components that complement lecture courses, or they assist faculty with large-enrollment courses. EEB has also sponsored 55 post-doctoral associates since 2005, generally about 20 per year. Of the 35 no longer in residence, 91% have gone on in science: 74% hold academic positions; 8.5% work for government agencies; 8.5% are currently in a second post-doc (Appendix A4).

Enhancing diversity within organismal biology has long been a central goal of the Department. We have been reasonably successful in recruiting women to EEB, with 28% of the faculty and 60% of the graduate students female. One tenured faculty member is a member of a minority group and our new hire (Yuan) represents the first Asian member of the Department. Nevertheless our multicultural diversity remains poor despite the fact that we have explicitly included specialty advertizing venues in all our searches, specifically to attract more minority candidates—something the Dean of CLAS strongly advocates. Unfortunately, as those who work in the fields of organismal biology know, the minority candidate pool is embarrassingly small. We attempt to address this concern by promoting diversity among our undergraduate and graduate students, areas in which we have been far more successful. Our graduate student population is more ethnically diverse, with 10% minority and 17% International students at present. The Graduate School has been particularly supportive of the recruitment and retention of minority students; since 2005 we have had 6 students supported through its Multicultural Fellowship and recently established Outstanding Multicultural Fellowship programs. We are very active, and have had some success, in recruiting and encouraging multicultural undergraduates to work in our labs for independent or honors studies (Appendix C6).

b. the instructional offerings associated with the unit, including graduate and undergraduate degrees and certificates.

EEB is a major contributor to the Biological Sciences degree—the degree of choice for the majority of the students in biology. Because we are committed to a well-rounded education, the Biological Sciences degree is the major we recommend to all but the most focused of students. Students electing to pursue this degree are required to take classes in all 3 biology departments (EEB, MCB, and PNB). EEB also offers both B.S. and B.A. degrees in Ecology & Evolutionary Biology and a minor as well. The number of Biological Sciences majors has more than doubled from 611 students in Fall 2004 to 1,319 at present, accounting for 65% (vs. 58%) of all majors in the biological sciences (Appendix C8). The EEB major remains the smallest among the 3 biology departments; it has increased from 47 students in the Fall 2004 to 68 at present. However, our courses are major components of several other degrees in CLAS and other Colleges, including Agriculture and Natural Resources, and Education, as well as for the B.S. degree in Environmental Science. Some of our courses will be available to students enrolled in the new Environmental Studies major as well.

EEB staffs 3 of the 5 (4 given that BIO 1103 is no longer offered) introductory biology courses: Foundations of Biology for non-majors (BIO 1102), Principles of Biology II (BIO 1108), and Introduction to Botany (BIO 1110); MCB and PNB are responsible for the remaining 2 courses (BIO 1107). In total 22,027 seats have been offered in these 5 courses since Fall 2004; EEB has provided 12,142 (or 55%) of them (Appendix C1). All 3 courses fulfill the University's General Education Science and Technology laboratory course requirement. A fourth course, EEB 2202 (Evolution and Human Diversity), fulfills the University's General Education Multiculturalism & Diversity content area requirement. Its enrollment has doubled to 150 since it was first offered in 2008 and is now being offered every year, rather than every other year.

EEB offers 35 upper division courses (Appendix C5), many of which include a laboratory component designed to provide students with hands-on experience in the relevant subject area. These include: 6 (lecture only) at the 2000 level, 17 (12 with labs) at the 3,000 level, and 11 (8 with labs) at the 4000 level. Several

of the 3000 and 4000 level courses are cross-listed as graduate courses (5000 & 6000 level). Ten of our regularly offered courses fulfill the University's General Education Writing Competency (i.e., "W") requirement for more than half of all biology students. Since 2005 the Department has provided 1,653 (~55%) of the 3,029 W-seats offered across the 3 biology departments (Appendix C10). As enrollments have increased, we have reluctantly moved towards having introductory courses taught by Lecturers to enable tenure-track faculty to accommodate increased enrollments in upper division courses. At the regional campuses, EEB offers 12 courses (i.e., 6 each at the 2000 and 3000 level, each) including one W-course (Appendix C3).

The 3 biology departments contribute to a combined Honors program with a large proportion of the biology faculty supervising independent study and honors theses. Biology Faculty, including EEB, advise a larger percentage of honors student projects and University Scholars (the most exclusive and prestigious undergraduate program at the University), than any other group on campus. EEB also offers a course targeting freshman honors students aimed at assisting them to identify a research lab. Since 2005 EEB faculty have supervised the completion of 49 honors theses.

In response to the departmental vision developed in our previous self-study, in which Conservation Biology emerged as a new area of interest, a 5-year B.S./M.S. program in Biodiversity and Conservation Biology, emphasizing internships over research, was established in 2003. To date, 27 students have graduated from this program and 6 are currently enrolled.

Following a streamlining of the University's graduate programs over the last decade, the Department consolidated several Fields of Study (Botany, Zoology, Ecology, and Entomology) and now grants M.S. and Ph.D. degrees in the single Field of Ecology and Evolutionary Biology. In total, the Department offers 30 courses that can be taken for graduate credit (Appendix D3). These cover a range of theoretical and conceptual topics, but also include many of the fundamental "-ology" courses. Graduate seminars provide more in-depth coverage of special topics and recent advances. Most of these are offered voluntarily by faculty, as an addition to their required teaching load. Typically, at least 3 such seminars are offered each semester.

c. the areas of scholarly productivity and creative performance associated with the unit.

Research in EEB is directed towards understanding the processes responsible for the origin and maintenance of biological diversity. Faculty, staff, and students employ a wide range of analytical and conceptual techniques in their research. At many U.S. universities, traditional taxon-based departments (e.g., botany and zoology) were replaced with an interdisciplinary, hierarchically-based organization such as ours (MCB, PNB, EEB). This restructuring left many interdisciplinary programs in ecology, systematics, and evolutionary biology strongly zoology (especially vertebrate) biased. EEB is unusual in maintaining a faculty balanced between traditional botany (12—with research on angiosperms, bryophytes and protists) and zoology (17, divided between 8 vertebrate and 8 invertebrate biologists). EEB faculty members have a wide range of research interests. We do not have formal subdivisions within the Department, but several overlapping areas of strength can be identified: **Ecology**, including physiological ecology, behavioral ecology, population and community ecology, landscape ecology and paleoecology; **Evolution and Systematics,** including both plant and animal taxonomy and systematics, molecular systematics, speciation, population genetics, and genomics; **Functional Biology of Organisms**, including behavior, physiology, functional morphology, and development.

d. the outreach, service, public engagement, and clinical activities of the unit.

Outreach and public engagement activities of the Department extend from local and regional efforts to those that extend to high-profile projects in South America and Africa. While active and successful in traditional outreach channels, EEB also has established an important presence in cyberspace, educating the public via blogs, social medial, and numerous websites.

Service: In large part because of their research and scholarly reputations, department faculty members play a major role in service to their professional societies and granting agencies. Since 2005 EEB faculty members have served as Presidents of 5 major professional societies, and as Editors, Associate Editor, or

Editorial Board member of 50 major journals. In addition, over that time. Department faculty members have also served on 31 grant and program review panels at Federal granting agencies (especially the National Science Foundation). Many faculty members are similarly engaged in service to the University through participation in University, College, and department level committees.

2. What are the major goals of the unit? How have these evolved through recent years with respect to the unit's mission statement? How are they expected to change in the future?

Consistent with the spirit of the University's Academic Plan, EEB intends to further improve on its status as one of the leading programs nationally and internationally in the areas of systematics, biodiversity, ecology and evolution, and conservation biology, as well as to enhance its reputation in global change biology. Research programs that focus on integration of systems within organisms, relationships among organisms, the functioning of organisms in communities, and the conservation of the earth's living mantle are centerpieces of EEB. We are excited about developing the areas of Biodiversity and Global Change if our cluster hire proposal is realized because it will build on the Department's existing strengths, provide synergisms between our evolutionary biologists and ecologists, and will help the University to realize its goal of building strength in environmental research and education. With this cluster, we specifically plan to build in the areas of the genetics of adaptation, interactions among coevolving organisms, evolutionary processes, and disease ecology and evolution.

EEB is dedicated to the best possible teaching, both formally in the classroom and informally through mentorships, at the undergraduate and graduate levels. The faculty, staff, and graduate students of the Department commit themselves to service to the University, the profession, and to the general public through consulting, service as officers, editors and committee members.

3. How do these goals relate to the mission and plans of the university as expressed in the University of Connecticut Academic Plan?

The Department's mission aligns beautifully with the Academic plan's emphasis on building the University's strengths in environmental research and education. Our faculty are directly involved in multiple endeavors that "Leverage our emerging excellence in environmental studies to offer focused programs that will enhance the ability of our students to understand and solve critical environmental and ecological issues" (Academic Plan, p. 9). All 4 of our current research areas and our teaching expertise (i.e., systematics, ecology, evolution, and conservation) lie directly within the context of the environment, as does much of our public outreach. Other initiatives include creation of our vocational B.S./M.S. degree in Biodiversity and Conservation Biology and our participation in the 4 interdisciplinary programs in environmental sciences detailed below (see G.5). The focus of our proposed cluster hire in Biodiversity and Global Change was inspired in part by the emphasis on the environment in the Academic Plan.

4. Describe the process for reviewing the unit's strategic plan and assessing its achievements and goals.

Since it was established in 1985, the Department of Ecology and Evolutionary Biology has undergone one external review (2001). Our current strategic plan has largely been guided by the results of that review. The external review committee found the faculty to be high-performing, with outstanding records of scholarly productivity, external funding, teaching and advising effort with scholarly output that was greater than faculty at our peer institutions. Especially noteworthy were the many editorships and offices held in organizations. The committee also lauded the strengths of our graduate program and undergraduate research endeavors. Areas it identified as needing attention included a number of infrastructural issues such as space and the poor condition of our physical plant, potential separation of the faculty into different buildings, the fate of the EEB greenhouses, and poor support for non-model research animals. The committee considered our faculty teaching loads to be high relative to peer institutions. Other areas of concern were the lack of a coordinator for our upper division courses, small size of our graduate student population, a poor system for advising undergraduate majors, and faculty losses at the regional campuses.

We are pleased to report that a number of these concerns have now been addressed, such as new space in the Pharmacy/Biology building for 15 of our faculty, upcoming greenhouse renovations, and the hire of a professional advisor (albeit in place of a member of our office support staff), who also provides some support for upper division courses. Furthermore, in response to our previous self-study, we have succeeded in building strength in Conservation Biology.

Given our existing heavier commitments to research and teaching, we have had little time for reflection and planning as a department. Nonetheless, the decision to focus our cluster hire proposal on the area of Biodiversity and Global Change emerged from discussions at a series of faculty meetings.

5. What peer units at other universities provide targets of aspiration for this unit?

Peer institutions are the Universities of Arizona, Massachusetts-Amherst, and Tennessee, as well as Rutgers, SUNY Stony Brook, and Florida State University. Target institutions are the Universities of California-Berkeley, Kansas, and Texas-Austin, Indiana University and Michigan State University.

B. Scholarly Productivity and Creative Performance

1. Include a list of recent intellectual contributions in an Appendix

A list of our intellectual contributions since 2005 is provided in Appendix B1.

2. Evaluate the level of scholarly activity in the unit. Address the quality and quantity of the unit's publications, presentations at academic and/or professional forums, and performances, as appropriate.

Members of EEB are highly productive scholars. Taken together, our creative work places the Department at the forefront of the disciplines within our purview (evolutionary biology, systematics, ecology, and conservation biology), while maintaining an unusual balance of strength among them. Since 2005, members of the Department have authored 658 [3] peer-reviewed articles, 111 book chapters and 16 books, and have edited another 13 (Appendix B2). This represents a substantial increase in productivity since 2005 (Appendix ES2). Many of these publications have appeared in the leading national and international professional journals in our fields and multiple have appeared in some of the most influential journals in science: *Nature*, *Proceedings of the National Academy of Sciences USA*, and *Science*. Faculty members have, in addition, developed 5 widely-adopted software packages for ecological and phylogenetic research (Appendix B1).

In total, publications by EEB faculty have been cited 105,202 times, 53,906 since 2007. Every tenure-track faculty member in the Department has at least 1 publication cited 50 or more times, 22 have at least 1 paper with 100+ citations, 10 have at least 1 paper with 500+ citations, and 6 members of EEB have 1 or 4 papers with 1,000+ citations. The mean (Google Scholar) h-index for the Department is 24.23 overall and 17.53 since 2007; the mean i 10-index overall is 42.03 and 28.43 since 2007 (Appendix B2). Data generated for this self-study indicate that our record of scholarship has substantially improved since the NRC study (2006) (Appendix ES2).

Members of the Department were invited as plenary or featured speakers at 30 national and international symposia in addition to contributing nearly 500 oral presentations at annual meetings, have accepted almost 200 invitations for seminars at other institutions (Appendix B3), and have received numerous honors and awards (Appendix B6a).

3. Evaluate the level of internal and external funding for research, performance, or creative activity in the unit. Is the unit competing effectively for external support?

Since 2005 EEB has received ~$21 million in external grant funds of ~$28 million awarded (Appendix B4) (~75.6 million when allocations to co-PIs at other institutions are included), with a dramatic increase of 62% in external grant revenue between 2008 and 2012 (Appendix ES2). The Division of Environmental

[3] This number represents unique publications; the number given in Appendix B2 is higher (i.e., 692) reflecting publications co-authored by 2 or more members of EEB, and every co-author being credited for the publication.

Biology (DEB) at the National Science Foundation has been the primary source of external support for research activities in the Department since 2005, funding most of the approximately 170 projects (Appendix B5). Faculty have been supported by awards from the various incarnations of 11 DEB programs: Assembling the Tree of Life, Biotic Surveys and inventories, Dimensions in Biodiversity, Ecological Statistics and Geography, Ecological Studies, Ecological Biology, Long Term Ecological Research, Long Term Research in Environmental Biology, Partnership for Enhancing Expertise in Taxonomy, Planetary Biodiversity and Inventory, Population Biology, and Systematic Biology. Additional support has come from 7 other NSF Divisions: Biological Infrastructure, Major Research Instrumentation, Integrated Organismal Systems, International Science and Engineering, Earth Sciences, and the "Cross Cutting" divisions of Dynamics of Coupled Natural and Human Systems and Information Technology Research. Our awards also have supported improvement of UConn facilities such as digitizing of the herbarium in our EEB Biological Research Collections and purchase of a new Scanning Electron Microscope for the combined biology Electron Microscopy facility. Beyond NSF, activities in the Department are also supported by grants from a variety of other external sources, most notably NASA Exobiology, the MacArthur Foundation, the James S. McDonnell Foundation, and the U.S. Department of Agriculture. We note that the number of faculty with proposals pending (Appendix B5) is down considerably from all previous years; we attribute this largely to NSF's recent reconfiguration of its submission process requiring pre-proposals and a single, rather than 2, annual competitions.

4. Describe any significant research interactions with external entities (public or private) developed by the unit. What have been the benefits of these interactions and the drawbacks, if any? How do they contribute to the unit's research goals?

The broad interests and overlapping research agendas of EEB faculty stimulate many interactions and collaborations. Most members of our faculty collaborate with colleagues from other departments in the University and from other institutions in the U.S. and around the world. EEB faculty have done particularly well with large collaborative awards and are currently involved in 7 such projects, each with budgets of over $1 million; in most cases the lead PI is the UConn faculty member:

(i) Three awards from NSF's Assembling the Tree of Life program have been made to EEB faculty since 2005: L. Lewis (http://marple.eeb.uconn.edu/gratolwww/); 2010-2015) leads efforts among colleagues from 5 institutions to reconstruct the evolutionary history of green algae. B. Goffinet contributed organellar genomes to the liverwort tree of life (http://biology.duke.edu/bryology/LiToL/); 2005-present) led by Shaw (Duke) and involving 7 institutions. He now leads a recently funded project aimed at resolving relationships within the crown group of 600 moss genera, in collaboration with Duke and the Chicago Botanical Garden.

(ii) J. Caira leads a Planetary Biodiversity Inventory program collaborative award with K. Jensen (University of Kansas) and co-PIs T. Littlewood (London) and J. Mariaux (Geneva) to "Survey the Tapeworms of Vertebrate Bowels of the Earth" (http://tapeworms.uconn.edu); 2008-2014). The project includes Cestodologists from institutions in 21 countries and is aimed at expanding knowledge of tapeworms globally through examination of previously unexplored hosts and geographic regions, generation of a comprehensive phylogeny and expansion of the Global Cestode Database.

(iii) 4 EEB faculty members (K. Holsinger, C. Jones, C. Schlichting and J. Silander) were awarded a Dimensions of Biodiversity grant, investigating parallel evolutionary radiations of two South African plant genera, *Protea* and *Pelargonium*. Collaborative proposals were funded for research at Univ. of Chicago (J. Borevitz) and U.C. Davis (A. Latimer). Additional collaborators are from the Univ. of Cape Town, Univ. of Wageningen, Australian National Univ. and South African National Biodiversity Institute.

(iv) M. Willig participates as senior personnel and in various leadership roles in the Luquillo Long Term Ecological Research Program (http://www.lternet.edu/) in Puerto Rico. The program involves over 50 collaborators from Universities or federal agencies throughout the U.S. He is currently a member of the Luquillo Executive Committee and is a co-PI on the recently recommended renewal NSF proposal. His

primary focus is on the role of disturbance and environmental gradients in affecting the spatio-temporal dynamics of populations, communities, and metacommunities.

(v) J. Silander leads a citizen science project, called the Invasive Plant Atlas of New England (IPANE) that focuses on gathering information and field data on the occurrences of invasive plant species across the New England landscape and developing predictive models of their current and future distributions (http://www.eddmaps.org/ipane). This collaborative project involves researchers from UConn and other institutions from the East Coast.

5. To the extent data are available; briefly describe how the research, performance, or creative activity in your unit compares nationally with respect to these activities.

Criteria for judging the quality and impact of scientific research are notoriously subjective. Even judging the quantity of research produced is difficult because single papers might consist of a short note describing a simple empirical observation, a 100-page monograph describing a decade of observational or experimental research, a journal article developing sophisticated mathematical models for evolutionary or ecological processes, or a lengthy synthetic review involving several years of library research, to pick just a few examples. Moreover, taxonomic papers and monographs describing species, defining genera, and providing keys that are of critical importance to everyone who must identify plants or animals in the field, are used much more frequently than they are cited, meaning that citation analyses strongly underestimate their contribution to the field. Despite the larger amount of taxonomic work taking place in this department compared to peer and target institutions (with the exception of the University of Kansas), our analysis shows that EEB is comparable to, or better than, all peer programs, and not far behind those we identified as targets, which are the leading programs in the country.

Based on the most recent NRC data EEB's standing has improved significantly since our previous self-study. Appendix B7 provides NRC data for the 5 peer and target institutions identified for the earlier review, plus the addition of Michigan State University. Both the NRC "R" rating (i.e., Research: derived from faculty publications, citation rates, grants and awards) and "S" rating (i.e., Scholarly reputation: derived from criteria scholars consider most important) suggest that (a) our program now ranks considerably above those of 2 of our previous peer institutions, Univ. Tennessee and Florida State, (b) that 2 of our previous target institutions, Univ. Arizona and Stony Brook, are now more appropriately considered peers. The University of Kansas (now home to several of our graduate student and post-doc alumni) has risen from peer to target status, and we have added the Michigan State to our list of target institutions for additional comparison. Among the 94 institutions with equivalent programs included in the NRC study, our program ranks as high as 14th in the "R" ranking, and as high as 22nd in the "S" ranking—despite the fact that our core faculty was smaller than all but one of our target institutions and 2 of our peer institutions at the time the NRC data were generated. Furthermore, based on data obtained from NSF DEB, EEB ranks 4th among its peer and target departments in terms of research funds per faculty, Overall, these data suggest that the Department is at least as productive and influential as its peer programs at other institutions and not far behind those it has identified as targets. Given the time and infrastructure constraints under which EEB operates, we regard our research productivity and impact as very good.

With respect to the other biology programs at UConn (Appendix B8), EEB ranks well above PNB and all 3 MCB programs considered by the NRC in 6 of the 7 metrics used to assess research and scholarship. The exception is percent of faculty with grants, in which we (74.2%) are exceeded by the smaller programs of Microbiology (80.3%) and Cell Biology (85.9%).

6. Indicate what the unit does to encourage and develop research, performance, or creative activity?

The Department recognizes that it is especially important to help its newest members to establish independent, productive research programs. To this end, all newly-hired Assistant Professors are assigned fewer teaching responsibilities in their 4th or 5th year to give them additional time to focus on their research as they prepare for tenure evaluation. The Department also seeks to accommodate unusual research

opportunities or needs (e.g., seasonal fieldwork) by flexibility in teaching assignments, but this has become more difficult as enrollments have grown.

EEB's annual discretionary budget consists of an operating budget allocation from the Dean of CLAS and a return of 5%, and more recently 10%, of the indirect costs recovered from faculty grants (Appendix H1) as specified by a formula developed by the Research Advisory Council (RAC) (see section H1b below). As mandated by the RAC, the latter funds are to be used solely to support research and scholarship. The Department Head allocates these funds on an ad hoc basis as needs arise. These funds have been used to purchase new equipment, maintain and repair existing equipment, purchase computers for faculty members, to provide support for our weekly seminar speaker program, and to fund miscellaneous research costs for faculty members and students. The most important thing the Department does to encourage research activity is to provide an environment in which faculty, staff, and students feel that they are part of a larger effort to make the Department its best. Collaborations and lab interactions are encouraged by providing shared research space, and by supporting the development of common space and equipment such as our molecular systematics lab which houses a shared ABI capillary sequencer, PCR cyclers, centrifuge and imaging systems. When possible, exceptional faculty contributions are recognized through the annual merit award process. In this context, the freeze of Connecticut State Employee salaries and suspension of merit allocations for multiple years has removed one of the few mechanisms in place to reward productivity. This has had a strong, negative effect on faculty morale. There is growing concern that unless this situation improves, our newest hires and most productive faculty may be lost to other, more well-supported institutions.

EEB and the University have invested heavily in our research support facilities, specifically the greenhouses and Biodiversity Research Collections. Most of our staff are involved in the activities of these entities. This strategy has not only aided existing research programs, but the high quality research greenhouses on the roof of the BPS building likely contributed to our ability to out-compete several other institutions in hiring the top candidate in our recent plant genomicist search. As of 2003, the Biodiversity Research Collections are housed in a state-of-the-art facility in the Biology/Physical Sciences building that has resulted in 2 awards totaling ~$1 million from NSF's Biological Infrastructure program. Furthermore, the Dean has recently committed funds in the amount of $1 million for the renovation of the dilapidated ground-based greenhouses attached to the aging Torrey Life Science building, which house the largest live-plant collection at a public institution in New England. Such investments will further strengthen the quality of our support facilities and thereby our ability to recruit top notch scholars.

7. Describe and evaluate the unit's participation, leadership, and influence in the academic profession through such avenues as professional associations, review panels, and advisory groups.

EEB faculty members provide leadership and service to many professional societies, editorial boards, review panels and advisory groups (Appendix B6). Since 2005, EEB faculty members have served in editorial positions for 45 scientific journals, including both those with topic or taxon-based foci, as well as many leading journals in our fields (e.g., *Evolution*, *Ecology, The American Naturalist*, *BioScience*); 5 faculty members served as Editors (*Biotropica, The Bryologist, Cliodynamics, Annals of the New York Academy of Science*), 21 as Associate or Subject Editorships, and 24 as Editorial Board members. Beyond editorial service, faculty in EEB have served as Presidents of 5 major scientific societies (American Institute for Biological Sciences, American Society of Parasitologists, Botanical Society of America, International Society of Limnology, and Society for Systematic Biologists), and 12 faculty members were major officers or served as an Executive Committee members. Other faculty members chaired or served on committees for student awards, helped to plan entire conferences or individual symposia at conferences, or served on long range planning committees for these various scientific societies (Appendix B6c).

Since 2005, faculty members have served on 31 review panels at the National Science Foundation. In addition, they provide ad hoc reviews for a wide spectrum of journals in ecology, evolution, and systematics, and organismal biology, and for grant proposals from the National Science Foundation beyond

those involved in panel service. The prominence of EEB Faculty is also evident in advisory board and sabbatical, adjunct, joint, and courtesy appointments held outside UConn, both within the U.S. and internationally, since 2005 (Appendix B6).

8. Describe the unit's potential for responding to changing directions and new external opportunities. What indicators show the level of morale, commitment, and sense of continuing self-improvement of the unit?

Our success in obtaining increased external funding and expanding our scholarship have occurred at a time when University enrollments, and thus individual teaching loads and faculty/student ratios, have increased substantially. In addition, administrative tasks, formally the responsibility of administrative offices or support staff are increasingly passed on to faculty, further eroding the already limited time available for innovative and creative research and mentorship. This is particularly troubling given the number of large and complex collaborative grants our faculty currently oversee. Faculty members are feeling overwhelmed and frustrated because, despite their best efforts, the quality of their contributions to teaching and service is in peril of deteriorating thereby compromising EEB's commitment to overall excellence. Our support staff also is overwhelmed as administrative regulations, and reporting needs escalate while the number of staff members has decreased. Over the course of some of EEB's most productive years, salaries have remained essentially static and merit has been suspended. We are concerned that we may lose some of our most productive members to other institutions where faculty support is better and conditions are less stressful. Given the current situation, EEB's faculty and staff simply lack the time required to respond to challenges and to capitalize on new opportunities.

C. Undergraduate Programs

1. Show summary table of enrollments and credit hours by major, campus, etc., as appropriate.

Summary data on enrollments for all courses offered by EEB faculty at the Storrs campus are provided in Appendix C1. At Storrs, EEB is responsible for 3 of the 5 total (more recently 4) courses offered in introductory biology: non-majors biology (BIO 1102), introductory biology for majors (BIO 1108), and introductory botany (BIO 1110). EEB regularly teaches ~38 lecture courses at the 2000-level or above; 20 of these (67%) include complementary laboratory components. The Department regularly offers 10 W-courses. EEB is responsible for 10 courses at the regional campuses, with the vast majority of enrollments in the 3 introductory courses (Appendix C2).

2. What proportion of these courses are taught by full-time faculty, part-time faculty, and graduate students? How is the quality of general education instruction assessed? Where graduate assistants have a primary instructional role, how are they supervised?

Most courses in EEB are taught by full-time faculty members. The exceptions are the large introductory biology and the summer field courses. At present 2 of the large enrollment undergraduate courses, are taught by a non-tenure track permanent Lecturer (BIO 1102) or by one of our 1–2 APRs (BIO 1108 as of Fall 2012). On occasion, the duties of the APRs include teaching in the upper division core courses (General Ecology or Evolution) and assisting with W-instruction. All W-courses are taught by full time faculty or APRs. The field summer courses (e.g., Summer Flora, Field Entomology, Field Methods in Ornithology and Field Herpetology) are taught primarily by graduate students, or by faculty from regional campuses. Graduate student instructors for these summer courses are selected competitively from the pool of EEB applicants. All graduate students are formally evaluated by students in each of their lab sections or classes at the end of each semester. Most laboratory instruction is provided by graduate student teaching assistants (TAs); TAs are supervised and mentored by lecturing faculty via informal feedback and instruction in weekly TA meetings.

3. With respect to the undergraduate major(s) curriculum and courses:
   a. How does the undergraduate major reflect the goals of the academic program? What evidence is available to compare the curriculum with that of similar programs nationally? Does an accrediting body prescribe any portion of the curriculum? If so, how?

Our EEB curriculum is designed to encourage students to develop a firm understanding of the patterns and processes in ecology, evolution and systematics of organisms, as well as a strong foundation in plant and animal diversity. Scales of study range from molecules to global systems. This curriculum emphasizes laboratory and field experiences that facilitate experience-based learning. The EEB major (Appendix C3) incorporates a full year of introductory biology and chemistry as well as core courses in Ecology and in Evolutionary Biology. Additional courses are required within and outside of the Department in animal and plant diversity, physiology and genetics.

The curriculum for Biological Sciences majors is substantially more "flexible" and varies depending on the Department home of a student's academic advisor. Students are required to take 36 credits of biology coursework, ideally 24 of which emphasize one of the 3 departments. However, the curriculum of these majors is in no way formalized. Unfortunately, the University's emphasis on departmental majors exacerbates the lack of cohesion of the Biological Sciences majors, as they are not assigned to any specific department and thus tend to be overlooked—despite constituting 65% of all biology majors. None of our degrees is overseen by an accrediting body.

b. How are courses in the undergraduate major(s) coordinated? How do the courses in the major contribute to its student learning outcomes?

The curriculum of the EEB major continues to be modified to accommodate the needs of the students and course availabilities. By serving on the College Course and Curriculum Committee, one member of our faculty monitors changes in the availability and offering of courses outside of EEB that affect the EEB and Biological Sciences majors. Coordination of upper division courses across the 3 biology departments is lacking, but the extensive slate of courses offered across biology and the flexible nature of the Biological Sciences major work synergistically to serve the needs of these students.

Non-core upper division EEB courses are offered at least once every 2 years. This ensures that all students have at least 1 or 2 opportunities to take each course during a typical 4-year degree program. It also allows our faculty to teach more than a single upper division course and thus increase the diversity and number of courses offered. We generally offer 9–11 upper division courses each semester (Appendix C4; enrollment data provided in Appendix C5).

c. What specific efforts are made to incorporate new knowledge and perspectives into the curriculum? What efforts are made to involve students actively in their learning through internships, research projects, seminars, independent study, studio courses, etc.? Describe any innovations added to instructional programs since the last review.

All EEB faculty members are research-active, and this activity is reflected in their incorporation of recent and relevant information from the primary literature into their courses. Nearly all courses in the Department are now taught within an evolutionary context, including introductory biology for majors (BIO 1108: Principles of Biology). Three new courses that emphasize recent issues and findings have been added since our last self-study. Current Issues in Environmental Science (EEB 3205) is capped at 20 students to facilitate active participation in discussions. Introduction to Conservation Biology (EEB 2208) and Evolution and Human Diversity (EEB 2202, a non-lab general education course that also satisfies a science and a diversity requirement) are high enrollment courses (demand currently exceeds capacity). In addition, advanced undergraduates are encouraged to participate in graduate seminars and journal 'clubs' and thus are exposed to the primary literature.

Our newly hired plant genomicist will offer a course in Bioinformatics. If we are allowed to implement fully our proposal to build a world-class cluster of specialists in Biodiversity and Global Change, we believe the course offerings associated with these areas will be highly relevant to students.

EEB faculty members enthusiastically embrace the concept of active student learning. In addition to our emphasis on incorporating laboratories, discussion sections, and field trips into our upper division courses, we actively engage undergraduate students in research. Over the past 8 years, EEB faculty members at Storrs and the Regional Campuses and our 2 full Collections Managers (both of whom have Ph.D.s), have provided independent research or work study opportunities for over 300 undergraduate students; these students collectively completed 536 independent study credits. Appendix C6 summarizes these data and the

current status of some of these students. Over this same period 56 students, most in the Honors program, completed theses. This year 46 Honors students in various stages of completing their 9 credits of research are being advised by EEB faculty. In the last 8 years, these undergraduate research experiences have yielded at least 11 publications that included undergraduate student authors. Numerous students have presented the results of their work as oral presentations or posters at regional or national meetings.

Funding to support undergraduate research comes from several different sources. Some funds come from sources that specifically target undergraduate students (e.g. over 52 students have been supported on REU supplements to NSF grants and an NSF-IRES grant) and some are available for small projects through a several-week field course in South Africa (13 students). Most undergraduate research is supported through their advisor's funds. Several EEB undergraduates have been awarded competitive Summer Undergraduate Research Fellowships ($3,500-4,000), provided by UConn's Office of Undergraduate Research. EEB offers one undergraduate-specific award (Katie Bu Memorial Award) and undergraduates are eligible to apply for the Department's annual graduate student award competition (see section H2).

4. Concerning the undergraduate major cohort:
   d. Explain any significant changes in the undergraduate major enrollment and in degrees granted since the last review. What are the implications of the average lengths of time required for degree completion? What are the retention rates for the undergraduate majors? Explain low enrollment or low graduation rates, if below Board of Regents (BOR) criteria. What efforts are underway to improve performance in these areas?

Since 2005, UConn has increased its undergraduate enrollment from 20,000 to over 22,000 but the number of science majors has increased disproportionately, significantly affecting our enrollments. The number of Biological Sciences majors has risen from 611 in 2005 to 1,319 at present. The number of majors in the 3 biology departments has also risen (i.e., EEB: 47 to 68; MCB: 244 to 284; PNB: 144 to 357; Appendix C8). Given the relative size of our major, EEB tends to dedicate a larger proportion of its efforts to serving the Biological Sciences majors than either of our sister departments. Over the last 8 years, EEB has provided 12,142 of 22,027 seats (i.e., 55%) in introductory biology offered by the 3 biology departments and EEB is responsible for teaching 3 (BIO 1102, BIO 1110, and BIO 1108) of the 4 (previously 5) introductory biology courses offered. BIO 1108 would undoubtedly be even larger if we could accommodate the full demand. Total EEB course enrollments have increased from 2,116 in 2005 to 2,890 at present (Appendix C1). This is largely reflected in upper division course enrollments, which have more than doubled, rising from a total of 644 students in 2005 to 1,327 at present, requiring the addition of evening lab sections in a number of cases.

The University Academic Plan states that all students must fulfill a requirement for intensive writing instruction within the major. A significant portion of teaching effort in EEB is devoted to offering writing-intensive W-courses. In association with particular courses, this instruction involves a 15+ page writing assignment with repeated faculty edits and rewriting for each student, as well as individual meetings with W-instructors (generally not the course lecturers). In our 10 regularly offered W-courses (Appendix C9), EEB has provided W-instruction to 1,653 students, or ~55% of the 3,029 W-seats offered by the 3 biology departments in the last 8 years (Appendix C10). Because the concept of writing instruction "within the major" is interpreted liberally, our courses also fulfill this requirement for students in a diversity of life sciences outside of EEB.

   e. What indicators does the unit utilize to monitor the success of its graduates? How does the quality of these graduates compare with student quality in this field nationwide? Describe any honors or awards received by the unit's graduates.

Our undergraduates have been awarded 17 fellowships or honors including prestigious Udall and Goldwater fellowships, a Truman award and Graduate fellowships from the National Science Foundation. Among the undergraduate students engaged in research, 5 have received an award for best presentation at regional or national meetings. Fifty-nine students received intramural awards in recognition of their accomplishments or to support their research projects (Appendix C7).

f. Comment on the quality of the unit's efforts to attract, support, and graduate traditionally underrepresented groups. How does the proportion of degrees granted to underrepresented gender and minorities compare to the university as a whole and to the field nationwide? What specific plans and programs does the unit have in place for increasing the proportion of graduates from traditionally underrepresented groups? Include measures taken to provide special advice and support for such students while enrolled.

The University of Connecticut has 2 programs focused on this goal: Student Support Services (SSS; (http://www.cap.uconn.edu/sss/about/index.html) and the Louis Stokes Alliance for Minority Participation (LSAMP; (http://www.lsamp.uconn.edu/about.html). SSS serves students in all majors at the University and LSAMP is specific to majors in a STEM field. At present there are 98 Biological Sciences majors in the SSS program and 21 Biological Sciences majors in the LSAMP program.

All EEB faculty members who have mentored undergraduate researchers in their labs have worked with students from underrepresented groups (Appendix C6) but beyond the programs described above, EEB does not have its own program to recruit students from these populations, other than individual faculty efforts. Developing such a program would improve our ability to engage members of underrepresented groups in biological research. We note that the Department recently provided summer undergraduate Multicultural Fellowships as matching components to some NSF awards.

g. What is the unit doing to serve nontraditional and part-time undergraduate students?

Unfortunately, given current enrollments and increased workload, we have not been able to give much consideration to accommodating nontraditional and part-time undergraduate students beyond offering 4 summer session courses, 1 intersession field course, 1 intersession on-line course, and adding additional evening lab sections to some of our introductory biology and several of our upper division laboratory courses.

h. Describe the process and structure of the undergraduate advising in the unit. What is the quality of advising for undergraduate majors? How has the advising process been evaluated?

Historically, EEB faculty members were responsible for advising undergraduates in the EEB major, while Biological Sciences majors were divided among faculty in EEB, MCB and PNB. With the number of majors growing precipitously, and also in response to the issues of effective advising raised in our previous review, EEB created the position of Undergraduate Coordinator in 2003, taking the place of a vacant office staff position. This position was the first professional staff advisor position created within CLAS (18 professional advisors now serve CLAS students). In addition to providing support for upper division EEB courses, the EEB Undergraduate Coordinator advises all non-Honors EEB majors as well as a large number of Biological Sciences majors. At present she advises 329 students—a dramatic increase from 105 students in Fall 2004. In Spring 2005, 2 retired faculty members (one EEB), were hired to advise freshman biology students regardless of their major. In Fall 2011, a professional staff advisor was hired to assume that responsibility. As required by the Honors program, Honors students continue to be advised by faculty members. Six EEB faculty members advise EEB Honors students and a subset of Biological Sciences Honors students, for a total load of 10–12 students per faculty member. Three EEB faculty members advise undergraduates at regional campuses. Annual caseloads for all EEB advisor categories are provided in Appendix C11. EEB has just instituted a mandatory survey of EEB graduating seniors that includes 2 questions on the quality of advising. Prior to this survey, there was no formal evaluation of advising.

5. Where are program graduates placed, or what do they do after graduation? How do graduates of the program view their experience, and how are their views solicited? What program modifications do these views suggest?

We currently have no formal system in place for tracking undergraduates once they leave our our program. We began an annual EEB Newsletter, which has become a source of information on our graduates. Individuals receiving the Newsletter are asked to provide information on their own achievements and whereabouts as well as on those of their classmates. We have sent out specific requests to our alumni on two occasions over the past 8 years, but received very few replies. Faculty members often keep in touch

with students who have worked in their labs on independent research projects or as research assistants, but the information provided in Appendix C6 is nevertheless limited. These data, however, lead us to believe that our students are generally successful in entering professional or graduate schools, and in obtaining positions in education, government agencies, or are working in some other capacity related to biology. Developing a formal system for tracking undergraduates (EEB and Biological Sciences) who complete degrees under our supervision is an important goal.

The quality of education provided by courses offered by EEB staff is assessed through formal student evaluations administered by the Office of Instructional Research (OIR) and by feedback from students who have attended other institutions or who go on to graduate/professional school. OIR summary data for Storrs faculty for the past 8 years are provided in Appendix C12 (data are presented separately for introductory biology and EEB upper division courses). In the introductory biology courses, faculty generally perform approximately at the level of Biology and overall University for similar courses. In upper division courses EEB faculty generally perform above the University mean, sometimes significantly so (average across years for EEB is 8.95 vs. 8.72 for UConn overall), which we find to be particularly satisfying given the number of our upper division courses that now have enrollments exceeding 100 students.

D. Graduate Programs

1. Summary table of enrollments.

Composition and size of the graduate student population, and enrollment in graduate courses are summarized in Appendix D1.

2. Overview of the graduate programs:

   a. Describe, in general terms, the graduate program(s) offered by the unit. How do the graduate programs reflect the basic goals of the academic program?

Among the 3 biology departments, EEB is the primary focus for graduate training in basic (and increasingly, applied) research in organismal biology, including ecology, evolutionary biology, conservation biology, systematics, and animal behavior, although colleagues in other departments share interests in each of these fields.

(i) *Research Degree Programs:* EEB offers research-intensive M.S. and Ph.D. degrees requiring a written thesis/dissertation. All M.S. and Ph.D. degrees are now granted in the 'Field' of Ecology & Evolutionary Biology. Coursework satisfying the credit requirement is determined by the student's advisory committee composed of at least 3 faculty members.

The EEB graduate program reflects faculty strengths, with a focus on a wide diversity of organisms including insects, plants, parasites, and vertebrates, and a broad range of conceptual areas: population, community, landscape, behavioral and paleoecology; systematics and taxonomy; phenotypic evolution, evolutionary development and functional morphology; and conservation ecology and genetics. These programs share a common focus on biodiversity: its origin, maintenance, function, conservation, and loss.

As the study of biodiversity has matured, the importance of integrated training has moved from desirable to necessary as the scope of investigation into complex systems has become increasingly interdisciplinary. Although ecology, conservation biology, systematics, and evolutionary biology are parts of graduate curricula at many institutions, few U.S. universities provide rigorous, interdisciplinary programs integrating all 4 of these fields. EEB has developed an especially strong, well-balanced program, with proven success in fostering a high level of cross-disciplinary research competence in both technical and conceptual aspects of evolutionary and ecological research. Recent M.S. and Ph.D. students trained jointly by faculty partnerships have investigated many dissertation topics that integrate systematics, evolution, and ecology across all of our core disciplines and levels of organization. Our students (and faculty) are increasingly incorporating information and training from other fields into their work, including physics, mechanics, chemistry, mathematics, statistics, agriculture, social sciences and the humanities, to name a few. This increasing breadth in our graduate training anticipated initiatives at NSF and many professional organizations that are now calling for greater interdisciplinary training in the sciences.

(ii) *B.S./M.S. Program:* Initiated in Fall 2003, our combined B.S./M.S. program in Biodiversity and Conservation Biology was designed for EEB and Biological Sciences undergraduates with career interests in biodiversity and conservation, who do not require extensive research experience. The program focuses on internships and on complementing undergraduate training with advanced course work. Since its inception, 27 students have graduated, 5 left before completing their degree, and 6 are currently enrolled. We are unaware of similar programs in this field that integrate a non-thesis M.S. with a B.S. degree program.

b. What evidence is available concerning the quality of the unit's graduate program(s)? How is this information used to strengthen the graduate program(s)? Describe, in particular, extramural awards and grants for the purpose of graduate education, either to individual students or to the program.

(i) *Research Degree Programs:* The recent NRC report placed UConn EEB in the 3rd quartile for graduate program size. Our admission has been highly selective—we accept only 23% of applicants (see 4a for more detail). Since 2005, EEB graduate students have garnered an impressive list of extramural fellowships, grants for research support and awards. Their 25 extramural awards include 6 NSF Pre-doctoral Fellowships, an EPA Star Fellowship, a NASA graduate Fellowship, 2 Fulbrights, 1 Switzer Fellowship, and 15 NSF Doctoral Dissertation Improvement grants. In addition, students have received 64 research, 10 travel and 18 best presentations awards from professional societies. Their 56 intramural awards include 7 Outstanding Scholar and 4 Multicultural Scholar Fellowships (Appendix D2).

(ii) *B.S./M.S. Program:* Since students in the B.S./M.S. program do not typically conduct independent research, they rarely apply for extramural awards and grants. Their quality can be judged by the grades of students entering and leaving the program (see below), and by the employment of most graduates in their target field (although this has become less successful in the past two years, presumably a consequence of the weak economy having especially affected hiring by government agencies and non-profit groups where many of our graduates seek employment).

c. What changes in the program(s) have occurred since the last review? What changes (especially innovations) are now underway?

(i) *Research Degree Programs:* The areas of specialization of the 4 faculty who recently retired from Storrs (Appendix A3) were in plant biology (Anderson), vertebrate physiological ecology (Taigen), and arthropod systematics (Schaefer), limnology (Rich). Although 3 of these faculty members were research active, their contributions to the graduate program had been declining. With respect to the 3 recent hires, paleobiology (Bush) reestablished a historical presence in this field at UConn and the 2 subsequent hires expanded and updated our breadth in ecology (landscape ecology) and evolutionary biology (plant genomics). The proposed cluster hire in Biodiversity and Global Change will both deepen and broaden strengths in EEB.

(ii) *B.S./M.S. Program:* This program was approved at the time of the previous program review. Subsequent changes include: (a) expansion to attract students from outside UConn in order to build the size and quality of the program, (b) conversion to a Professional Science Master's program, and (c) reconfiguration of the coursework (e.g., to match certification requirements of certain professions). The program has existed in its current form long enough to allow adequate assessment of that format and we are now re-opening discussions on this topic.

3. With respect to graduate curriculum and courses:

a. What evidence is there of sufficient offerings and balance among the unit's various specialties? Is there sufficient breadth of course offerings and sufficient depth for specialization? How are the courses in the graduate program coordinated? What plans are underway to modify the graduate curriculum in light of available information?

(i) *Research Degree Programs:* EEB offers 30 lecture courses for graduate credit (Appendix D3), taught by 21 faculty members. Not only do we offer a large range of theoretical and conceptual courses but we also offer the basic "-ology" courses that many universities have cut. At least 3 courses are available in each of the areas of ecology, evolution and systematics. We currently have only one graduate level lecture course in conservation biology. More in-depth and specialty topics are accommodated with seminars

focused on specific areas (e.g., regular seminars in vertebrate biology and systematics), or one-time offerings (e.g. ecological genomics or discussion of a new book). Our proposed cluster hire offers some hope for further broadening our course offerings. In addition, with support from the Dean, EEB developed a Cyberinfrastructure program (http://web2.uconn.edu/cyberinfra/index.html) consisting of a series of 5 modules. These modules were offered in Spring 2011 and retain a web presence. Some of our graduate students participated in an inter- and cross-University distributed seminar and related activities with partners from 15 institutions in 5 countries that yielded 5 publications, as part of a Dimensions in Biodiversity program.

(ii) *B.S./M.S. Program:* All EEB courses are available to B.S./M.S. students. With the exception of 2 graduate seminars (EEB 5369: Current Topics in Biodiversity and EEB 5370: Current Topics in Conservation Biology), the small program size precludes designing a large number of courses specifically for this audience. However, many of our existing courses nicely serve the B.S./M.S. program curriculum.

b. What evidence is there of whether the courses meet student needs?

(i) *Research Degree Programs:* An area of deficiency recognized by both students and faculty is a course in biometry (basic graduate- or advanced-undergraduate-level statistics specifically for biologists). Although some students meet this need with courses in the Statistics Department, others feel that these courses are not accessible. Several attempts have been made at offering such a course, with mixed success. The greatest obstacle is the necessity of taking qualified faculty from other teaching duties in order to offer biometry. The need is now great and we plan to address this deficit soon either by reassigning the teaching duties of an existing faculty member with this expertise, or with one of our new hires.

(ii) *B.S./M.S. program:* Exit interviews indicate that courses largely meet student needs.

c. In what ways besides individual thesis or dissertation research are students involved actively in their learning; for example, through internships, practica, and/or graduate assistantships?

(i) *Research Degree Programs:* Graduate student active learning is enhanced via the following endeavors. *Collaborative research*: working on projects with faculty, sometimes in other departments or schools and participating in side projects with other grads. *Teaching*: A wide variety of teaching-related activities are available to EEB students beyond TAs and their associated required one-day teaching workshop. Graduate students often guest lecture in courses taught by faculty, teach summer field courses, organize and lead undergraduate seminar discussion groups, and mentor undergrad research interns in collaboration with faculty. *Outreach*: EEB graduate students engage in various local activities, such as talking in elementary and high school classes, or sharing their expertise with the public through lectures or greenhouse tours, etc.. *Practical Experience*: conducting fieldwork in the U.S. and many foreign countries; attending and presenting papers or posters at national and international meetings; writing grant applications independently or in collaboration with faculty; learning software relevant to EEB research and teaching; working as editorial assistants; working in one of the collections with collections managers and organization of a yearly graduate student symposium, well attended by both students and by faculty.

(ii) *B.S./M.S. Program:* Students must complete 4 credits of research to acquire experience in interpreting research and in interacting professionally with those who conduct it. Students are also required to complete at least one internship. Students are frequently integrated into the research groups of their advisor, providing additional exposure to the research and outreach activities of their peers conducting thesis or dissertation research. TA opportunities are occasionally available.

d. Do students have adequate resources to carry out their studies (e.g., library, office and lab space, supplies, equipment, travel, photocopying, etc.)?

(i) *Research Degree Programs:* The Department has a diverse internal grant program funded by interest generated from a series of endowed accounts in the UConn Foundation established and sustained largely through donations by faculty, staff and alumni (see Section H2). Most of these funds are used to assist with graduate (and occasionally, undergraduate) research and travel. Since 2005, these accounts have provided 205 awards, totaling ~$119,000—an average of 25 awards/year @ ~$580 apiece. Graduate students also are each allocated an annual photocopying budget by the Department. The Graduate School provides a stipend of $2,000 for research to each Ph.D. students who have achieved doctoral candidacy (i.e., passed general

exam; dissertation prospectus approved) and $1,000 for travel once they have completed 30 credits of coursework. All graduate students have excellent access to scientific literature, much of it electronic, provided by the Babbidge Library and its interlibrary loan resources. Beyond desktop computers available in research labs, the McCarthy Room computer lab provides access to computers, many of which are equipped with software resources for GIS and phylogenetic analysis. Access to equipment is good, given the active nature of most research labs. In addition, graduate students have the same access to all shared research facilities (e.g., Greenhouses, EM lab, molecular, and collections facilities) as faculty. If a faculty advisor does not have funds to cover use of the latter, the Department will provide some funds. Office space, however, is limited and that available for students housed in the Torrey Life Sciences building is generally very poor.

(ii) *B.S./M.S. Program:* Dedicated office space for B.S./M.S. students was made available early in the program, but it has been eliminated owing to other departmental space needs; students are now accommodated within their advisors' labs, an arrangement they actually prefer. B.S./M.S. students receive the same access to resources as research graduate students.

4. Concerning the graduate student cohort:
   a. Assess the quality of the graduate student cohort, based on collective GRE/GMAT or other test scores, collective grade point averages, or other admissions criteria. How does the quality of students in the graduate program compare with student quality in other similar programs? How does the quality of current students compare to the students in the program since the last review? Base the answer on objective and anecdotal data.

(i) *Research Degree programs:* In the 2 years preceding the previous review, verbal GREs averaged in the 85th percentile and quantitative GREs in the 65th percentile. Over the last 6 years, average GRE percentiles are V= 82nd and Q= 69th (Appendix D4). However, as the appendix figure shows, these values have increased significantly over that period (3 yr rolling averages increased from V=76th to 88th , and Q=65th to 72nd). The number of students supported on external and internal fellowships has reached its highest level ever in the 2012-2013 cohort @ 20%. The 2006 NRC report shows that the GRE scores of our graduate students are, on average, low relative to those of all of our peer and target institutions (Appendix B7). We believe this is in part because the acceptance rate for offers made (65%) has declined somewhat; i.e., we are loosing some of our best candidates to institutions offering more competitive support packages including full fellowships, which we are lacking.

(ii) *B.S./M.S. Program:* Most students entering the B.S./M.S. program do not take GREs. Of those that have (n = 9), mean percentiles were: V= 66th, Q= 58th . Mean B.S. degree GPA for students who have entered the program was 3.26 (n = 26). Mean M.S. degree GPA for students who completed the program was 3.67 (n = 26).

   b. What is the current gender and race/ethnicity composition of the graduate student cohort? How do these figures compare with those for undergraduates within the unit and for similar graduate programs at other peer and aspirational schools? What efforts are underway to attract and retain well qualified students from underrepresented groups? What mechanisms are used to support these students?

(i) *Research Degree Programs:* Current compositions are 40% male, 60% female; 10% minority and 17% international (Appendix D5). These numbers show substantial change over those of our previous review, when male was 60% and female 40%. We are able to attract strong minority Ph.D. students largely because of the University's Multicultural Scholarship program. This program provides 50% support throughout the student's career and is supplemented by a half TA from the Department.

(ii) *B.S./M.S. program:* Gender composition of graduated students is 58% female. Race composition is: 20 white, 1 black, 5 undeclared; 5% minority. Most students are drawn from UConn undergraduate biology students and thus gender and race composition are constrained by that pool.

   c. What is the current composition of the graduate student cohort with respect to geographic origin? How do these figures compare with figures for similar graduate programs at other peer and aspirational schools?

In total, 17% of current EEB graduate students are international. In the past 8 years they have come from Brazil, Canada, China, Colombia, Costa Rica, Croatia, Czech Republic, Iran, Ireland, Korea, the Netherlands, Serbia, and South Africa. Nationally, our program has included students from 13 states.

d. What mechanisms are used to recruit students? Is the program competing well for top students?

(i) *Research Degree Programs:* As shown in Appendix D5, EEB is very selective, with an offer rate of only 23%. Our program sometimes competes effectively with top 10 programs, but we also lose candidate to other institutions, most likely as a consequence of our less competitive support packages. The virtually non-existent summer support, lack of full graduate fellowships and teaching loads are of most concern. At present we do little active recruiting, and lack the funds to recruit effectively from our existing pool of candidates. We encourage candidates to visit our department and meet faculty and graduate students in March when our annual graduate symposium is held, but unless individual faculty members sponsor such visits, candidates often are unable to visit and experience for themselves the quality of our program—an experience that often convinces them to accept admission.

(ii) *B.S./M.S. Program:* Program information is provided to UConn biology majors via informational meetings, advisors, departmental emails and the program web site. Although formal analysis is lacking, the program appears to be competing well for top students. The academic quality of students could be increased by extensive and targeted recruitment outside of UConn, but the program was designed to serve students already at the institution and the already high existing teaching commitments of faculty prevents increasing the capacity of the program beyond its current levels.

e. Are stipend levels adequate? Is stipend availability adequate? In addressing this, consider how many of the total number of graduate students have a teaching or research assistantship (both full and half). Also address other forms of support available to graduate students (i.e., pre-doctoral fellowships). What sources and amount of funding is available for summer support?

All EEB Ph.D. students receive full support of one kind or another; none is supported only partially. Over 90% of M.S. students also receive a stipend. Support is offered for up to 5 years to Ph.D. students making good progress and 2 years for M.S. students. Additional support is contingent upon individual circumstances, availability of funding, and teaching needs. B.S./M.S. students are enlisted as TAs when required by teaching needs. Current stipends per academic year are: beginning $19,384; M.S. $20,396; Ph.D. candidates $22,676. These packages also include Health coverage and a full tuition waiver.

We are concerned that stipend levels are falling behind peer and target institutions. The average annual increment since 2001 has been 2.4% (= average inflation rate). Although EEB has been highly successful in competing for UConn's Outstanding Scholar Fellowships, these are limited in 2 ways: the University-wide pool of awards is relatively small and the fellowships provide only 50% support, and hence must be paired with a 50% TA or RA. *We identify this as a major limitation to our competitiveness*—we have called upon the Administration for years to expand these to full fellowships and to increase the number available. In several instances we have lost top recruits to Institutions that offer full fellowships. The meager amount of summer support is *the other major limitation to our competitiveness*. The Department receives a total allocation of $9,400 from the Grad School for summer support. These funds are typically divided among the students who do not quality for work study (e.g., our foreign grads). Based on 7-8 international students per year, support of only $1,100 to $1,350 can be provided to each student. Fortunately, many of our U.S. students qualify for work study, but this only provides about $2000 per student for the summer. Others are supported on faculty grants when available.

The size and sources of support for our graduate program are summarized in Appendix D1. The program is virtually the same size as it was in 2005. Despite the unprecedented increase in our undergraduate enrollment, our allocation of TAs, although improved from an unsustainable low in 2009, has recovered only to nearly the same level it was in 2005. Based on NRC data, the number of TA lines per faculty is substantially lower than 3 out of 5 target institutions and is the same or lower than all but one of our peer institutions (Appendix B7). The number of students supported on Fellowships (mostly external) now exceeds that supported on RAs—the reverse of the situation in 2005. Furthermore, the total number of graduate students supported on RAs has declined from an all time high of 19.5 in 2009, to an all time low of

8.5 at present (Appendix A4). We attribute this, at least in part, to the University's mandated charging of graduate tuition on grants, which was instituted in 2009.

f. What is the nature and quality of the advising for graduate students and how has advising been assessed? What is the average ratio of student/faculty during thesis and/or dissertation supervision?

(i) *Research Degree Programs:* The student to faculty ratio is typically ~1.7. Students have a minimum of 3 faculty on their advisory committees. General exams and dissertation defenses require 5 participating faculty.

(ii) *B.S./M.S. Program:* Quality of advising is assessed via exit interviews conducted by the program coordinator. Information sought is descriptive rather than quantitative, but students almost uniformly respond positively to most aspects of the program. Items of concerns are largely structural, requiring major changes above the Departmental level.

g. What are the retention rates in the graduate program for both master's and doctoral students? What is the average time to degree completion? How do these figures compare with those from the last review?

(i) **Research Degree programs.** 92% of M.S. and 95% of Ph.D. students have completed their degrees over the past 8 years. Average time to degree completion is 2 years for the M.S. and 5.3 years for the Ph.D. NRC data attest to the highly successful nature of our graduate program. The median time to degree (5.3 years) is shorter than all of our peer and target institutions; our average completion percentage in 6 years or less (55.6%) is greater than all peer and all but one target institution. On average we graduate a greater number of Ph.D.s (7) than all of our peer institutions and the same or greater number than 2 of our target institutions. Only Berkeley and Michigan State graduate substantially larger numbers of Ph.D.s (12.8 and 18, respectively), but their programs are also substantially larger.

(ii) **B.S./M.S. program.** 84% of students have finished the program. Because the M.S. program is integrated with the B.S. program, time to completion cannot be clearly separated from undergraduate offerings/requirements. This degree was not offered at the time of our last review.

h. Explain any significant changes in graduate student enrollment and in degrees granted since the last review. How do these figures compare to peer programs? Explain low enrollment or low graduation rates, if below BOR criteria. What efforts are underway to improve performance in these areas?

No major changes.

5. Describe the extent to which this unit interacts programmatically with other units (both within and without the university) at the graduate level. Cite other units where students frequently take coursework or other program options in your unit. List courses in your unit that are frequently taken by students within other graduate degree programs.

EEB has strong connections with the Center for Environmental Sciences and Engineering, which "promotes multidisciplinary research, education and outreach in environmental sciences, engineering, policy, and sustainability." Faculty from other departments or schools (Statistics, Marine Sciences, Natural Resources and Environment, Engineering) have served on the committees of some of our students. Students take classes in a number of other departments, including, for example: Agricultural and Resource Economics—Environmental Economics and Resource Policy & Management courses; Geography—Geographic Information Systems courses; Molecular & Cell Biology—Genomics courses; Natural Resources and the Environment—Environmental Law, Remote Sensing, GIS courses; Physiology & Neurobiology—Electron Microscopy course; Philosophy—Environmental Ethics course; Statistics—statistics and experimental design courses. EEB and Statistics have co-hosted a seminar in Spatial Statistics and many of our special seminar courses (e.g., Systematics) include active participation by faculty and students from other departments, MCB in particular.

6. Provide a list of all graduate students from the last three to five years and indicate to the extent possible where they have been placed. How do graduates of the program view their experience, and how are their views solicited? What program modifications do these views suggest?

Current placements of the 55 Ph.D. students who graduated from our program since 2005 are provided in Appendix D6, as are placements for M.S. and B.S./M.S. students for whom we have data. These data provide additional support for the success of our program. Of the 55 students, 18 (~33%; 9 M, 9 F) hold tenure-track positions, 11 (~20%; 9 M, 2 F) hold scientific positions at institutions such as museums or government agencies, and another 16 (~29%; 8 M, 8 F) are post-docs. In total 83% have succeeded in obtaining positions in science beyond their Ph.D.

E. Student Outcomes Assessment

1. Referring to the Learning Outcomes document, describe what the graduates of the program should know and be able to do when they leave the university, and how the unit measures or otherwise assesses actual student achievement.

Undergraduate Programs: Assessment of the B.A./B.S. degree program in EEB is based on majors achieving 4 goals: (1) acquiring knowledge of the unifying concepts and major results of Ecology and Evolution; (2) becoming familiar with the biology of a group of plants and a group of animals; (3) developing observational, organizational, interpretive, evaluative, and synthetic skills; (4) reflecting upon the impact of Ecology and Evolutionary Biology on their personal future. Multiple objectives and learning outcomes have been identified for each of these goals.

Student achievement is assessed using exams, papers, and other products of student work. Lecture courses administer multiple hourly exams and also always a final exam, many of which are cumulative. Lab courses additionally assess student achievement with lab reports, practical examinations, presentations, field notebooks, and/or specimen collections. Student achievement in our W-courses is assessed by reviewing drafts and final versions of 15–20 page papers on student-selected topics within the course's subject area.

Graduate Programs: Students earning an M.S., primarily those completing a B.S./M.S. Degree in Biodiversity and Conservation Biology, must demonstrate mastery of a subject area in these fields, typically focusing on a habitat, geographic area and/or organismal group. Furthermore, students must apply these principles during an internship and a research project. Assessment is provided through course grades, and a final oral exam administered by the student's advisory committee. Research M.S. students must have their thesis work approved by their advisory committees and pass a final thesis defense.

In addition to advanced coursework, students earning a Ph.D. in the graduate field of Ecology and Evolutionary Biology are required to demonstrate the ability to execute a substantial body of original research within the purview of the Department. This is assessed via (1) an oral comprehensive general exam conducted by the student's advisory committee and at least 2 other faculty that evaluates the student's progress towards developing a research plan grounded in fundamental knowledge and rigorous design; (2) a dissertation defense, consisting of a public presentation of the dissertation research and an oral exam conducted by the student's advisory committee and any other interested faculty, serve as summative assessment of the student's execution of his/her research plan; and (3) evaluation of the written dissertation by the student's advisory committee. Additionally, EEB places a high value on student contribution to the primary peer-reviewed literature and on career development.

2. Specify how student outcomes are aligned with the mission and goals of the unit, the college (if appropriate), and the university.

Undergraduate Programs: The mission of the EEB B.S./B.A. undergraduate degree programs is to promote the intellectual growth and professional preparation of students by educating them in the principles, practices and applications of Ecology and Evolution. This mission is consistent with the CLAS mission to promote lifelong learning, thinking and informed citizenry. The Department aligned the degree mission with student outcomes by developing an assessment plan in 2006 (reviewed annually).

Graduate Programs: It is our goal for all graduate students pursuing research degrees to have a firm grasp of practices and principles of Ecology and Evolutionary Biology, and to have the skills required to expand knowledge in these areas through original research. The mission of the more vocationally-focused B.S./M.S. program is to provide students with a deeper understanding of Evolution and Ecology than can be

achieved with a BS alone and to prepare them for positions as advisors or consultants by exposing them to broader issues in biodiversity and conservation science policy and law.

3. Describe measures of student learning used in the program.

Undergraduate and B.S./M.S. Programs. We measure student progress towards learning outcomes using a combination of course-embedded assessment, review of submitted work, and surveys. We assess student progress towards outcomes aligned with goals (1) and (2) (E1, above) by harvesting responses to specific exam questions in our core classes, and applying established rubrics to the student responses to these questions. We assess skills of students listed in goal (3) by reviewing lab reports, field notebooks and papers submitted in W-classes. We gauge student integration of EEB subject matter with their personal perspective and life goals using summative surveys administered at the time the final plan of study is completed and soon we will also be implement formative surveys that are administered at the time a student declares the EEB major to assess how the degree program has shaped this integration. Finally, performance on the final oral exam is a key measure of learning in the B.S./M.S. program.

Graduate Research Programs. Early in their degree programs, graduate student progress towards learning is measured primarily by course-embedded assessment. In the case of Ph.D. students, performance on the general comprehensive oral exam is paramount and serves to identify deficiencies in knowledge that can be addressed through additional coursework and other means. Later in their programs, measures of graduate student learning focus more on research outcomes including publications, grant applications and oral presentations at national meetings.

4. How do you use assessment of student learning outcomes to make curricular offerings more effective at meeting the goals set for the students? How has it been used in formulating the unit's strategic plan?

Undergraduate Program: The Department annually reviews data on assessment of learning outcomes. Implementation of the assessment plan is still in its early stages and we have accumulated limited data owing to a small number of majors and a short duration of data gathering. Reflection on preliminary data engendered discussion on how to implement a more comprehensive assessment plan.

Graduate Programs: As a result of EEB's current commitment to undergraduate courses, our graduate curriculum is beginning to stagnate and only a subset of our faculty are able to offer graduate courses. We addressed this, in part, by offering a diversity of graduate seminar courses that allow us rapidly to alter our curriculum to reflect recent advances in Ecology and Evolution.

5. How will the results of the student outcomes assessment be incorporated in strategic planning and curricular review process?

Results of a comprehensive assessment plan will be considered in EEB's strategic planning, within which curriculum review will consider how best to improve outcomes for all our students.

F. Outreach and Public Service

In this self-report, please describe your outreach and public service, specifically referring to educational efforts, leadership, and sharing of knowledge off-campus, for example in the local community and throughout the state and beyond.

1. Describe the nature of academic outreach and public service activities in the unit.

EEB has an extraordinary record of active engagement with the citizenry of Connecticut and environmental matters across the globe. Some form of science or environmental outreach and public engagement is written into all of EEB's NSF-funded projects. Departmental efforts include public lectures and programming, public tours of greenhouses; K-12 education; citizen science projects; active involvement in local, regional, and global conservation efforts; board service; media and science communication, including publication of popular articles; and minority recruiting and related efforts to engage underserved groups. While active and successful in traditional outreach channels, EEB has also established an important presence in cyberspace, creating channels of communication on blogs, and through

social media, and by providing content for numerous websites. One faculty member (C. Yarish) and one staff member (C. Morse) have received Provost's awards for Public Engagement. A partial list of many of EEB's outreach activities over the past 8 years is given in Appendix F1 and a summary of EEB's online public outreach is provided in Appendices F4 and F5. The following 8 endeavors highlight the spectrum of EEB outreach activities.

(i) Bioblitz (http://web.uconn.edu/mnh/bioblitz/) Events: In collaboration with the Connecticut State Museum of Natural History, EEB faculty, staff, and students have served as the backbone of these events which seek to survey all species in a discrete urban area in CT, exposing hundreds of citizens to biodiversity and environmental issues. The 3 most recent events (2005 in East Hartford, 2007 in Middletown, and 2009 in Hartford) were directed by D. Wagner.

(ii) Invasive Plant Atlas of New England (http://www.eddmaps.org/ipane/) (IPANE): Spearheaded by J. Silander and recently deceased staff member L. Mehrhoff, this project emphasizes education about invasive plants and their deleterious effects on biodiversity. Over 900 volunteers from across the Northeast have participated in the project.

(iii) EEB greenhouses (http://florawww.eeb.uconn.edu/): Public outreach is a central focus of the daily operations of the EEB greenhouse facilities (Appendix F2). Formal tours are the most visible form of outreach with 728 formal tours to nearly 12,500 visitors over the past 8 years. Among other useful resources for plant lovers, its website provides full access to its complete holdings.

(iv) Biodiversity Research Collections (http://www.biodiversity.uconn.edu/BRC.html): The Department's state-of-the-art Biodiversity Research Collections (Appendix F3) provides tours to school groups and the public and is home to D. Les and B. Caper's NSF funded Virtual Herbarium (http://bgbaseserver.eeb.uconn.edu/database.html) and its associated "Virtual Herbarium Goes to School" (http://bgbaseserver.eeb.uconn.edu/Teacher_website/index1.html) program, which provides lesson plans that allow high school students to use the University's botanical collections online database to analyze the spread of invasive species, track declines in abundance, etc.

(v) Digital tools for outreach: The Department has moved energetically into online efforts that include web and Facebook pages, citizen-science projects with members of the public contributing data through online portals. (e.g., Social Evolution Forum (http://socialevolutionforum.com/); Uncommon Grounds (http://darwin.eeb.uconn.edu/uncommon-ground/): Reflections on Academics, the Environment and Biodiversity; Amphibian Tracker (http://hydrodictyon.eeb.uconn.edu/people/urban/tracker.html).

(vi) Websites: EEB hosts more than 20 websites that serve content on invasive species, distributional data for plants and animals, mapping and modeling tools, identification resources, and myriad other aspects of our planet's biodiversity (Appendix F5). EEB also supplies considerable content for sites hosted elsewhere, such as 18,000 wild bee records and thousands of plant and caterpillar images to Discover Life (http://www.discoverlife.org/), an interactive encyclopedia about the taxonomy, natural history, distribution, abundance and ecology of species, which routinely receives more than 20 million hits per month.

(vii) Edwin Way Teale Lecture Series: The series, coordinated by G. Anderson and others and now in its 17th year, brings to campus some of the world leaders in nature writing, philosophy, economics, social policy, biology and public policy areas related to the environment (Appendix F6). The audience for the series is very broad based, and extends well outside the University, it serves as a significant outreach arm of the University.

(viii) EEB has an active program of collaborating with Journalism faculty to train both faculty and graduate students to communicate their science to the public through the news media. In general, EEB has generated extensive media interest. For example, a single recent PNAS publication from Ph.D. student Rico-Guevara was covered by the New York Times, NPR, and featured on over 300 web pages in 19 languages, in over 70 countries. Highlights of EEB media coverage are presented in Appendix F1.

2. How do these activities reflect the goals of the university Academic Plan, and the particular needs of the state and region? What evidence is available to document the quality and effects of these activities?

The Environment is one of 4 "Focused Areas of Excellence" emphasized in the University's Academic Plan ("Our World, Our People, Our Future"). In the broad view, all of the Department's research, education, and public engagement efforts bear directly on environmental matters. As evidenced by the activities highlighted above and dozens of others listed in Appendices F1-F5, EEB has an exceptional record of engagement with the citizenry of Connecticut and environmental matters and is active in environmental across the globe. Focal conservation efforts in Madagascar, Patagonia, and South Africa have gone beyond ecology and biodiversity studies to include education, training and active involvement of locals to embrace the cultural, political, and social participation of indigenous peoples. In so doing, these grassroots projects have embraced core areas of the academic plan—in human rights, education, and environmental research and education—upon which the University is seeking to build.

Over the course of the last 10 years, both the greenhouses and state-of-the-art Biodiversity Research Collections have become established as popular 'campus destinations' for visitors, with scheduled tours serving thousands from outside the campus community. As noted above, EEB faculty are using science communication skills and social media to teach in new ways and to reach out to audiences external to the University.

3. Are students involved in activities that are outreach related, and are these activities aligned with the Academic Plan?

Our graduate and undergraduate students are fully engaged in the majority of the Department's outreach activities. Their involvement includes participating actively as members of taxon-focused "teams" for Bioblitz events, working in and leading tours of the greenhouses and Biodiversity Research Collections facility, and contributing content to many of EEB's websites, e.g., much of the herbarium and pollinator data served and mapped by GBIF and Discover Life.

More recently, one of the most tangible ways that undergraduates at the University have participated in outreach is through use of Twitter. M. Rubega developed a class exercise in her Ornithology course that requires students to tweet observations of birds outside the classroom and connect what they see to course content (using the #birdclass hashtag). This effort has been featured 3 times in the NY Times (http://dotearth.blogs.nytimes.com/2011/05/05/on-birds-twitter-and-teaching/).

G. Collaboration with Other Units

1. What are the other departments, schools/colleges, and centers with which the members of the unit collaborate most frequently? Describe the nature of those efforts and an assessment of successes and disappointments.

Individual EEB faculty participate in research collaborations with colleagues in a diversity of departments across CLAS including Statistics, Molecular and Cell Biology, Geography, Economics, Anthropology. Collaborations in other Schools and Colleges include faculty in the Colleges of Agriculture and Natural Resources, Engineering, Education, and Business. Two EEB faculty members have joint appointments in other departments and units: Bush with the Geosciences Program, and Willig with NRE, Statistics, the Environmental Engineering Program (Department of Civil and Environmental Engineering), and the Graduate Program in Public Health at the UConn Health Center. EEB faculty members also participated in developing proposals for interdisciplinary cluster hires in Journalism and Environmental Science.

EEB faculty members serve on Doctoral and Masters Committees for graduate students from a wide range of graduate programs across representing CLAS (Genetics, Statistics, Geography, Marine Sciences, Microbiology, and Physiology and Neurobiology), the College of Agriculture and Natural Resources (NRE, Plant Sciences), and the School of Engineering (Civil and Environmental Engineering, Mechanical Engineering). In turn, EEB graduate students have committee members from NRE, Statistics, Political Science, and Philosophy departments.

Many EEB faculty members also collaborate with other departments and units in teaching endeavors including: an Introduction to Undergraduate Research with MCB and PNB; Communicating Science to Non-scientists graduate seminar with Journalism; Dimensions of Biodiversity with NRE; Graduate Seminar in Symbiosis with MCB; Cyberinfrastructure Short Courses with Statistics, Geography, and Natural Resources and Environment; Environmental Law Graduate Seminar with UConn Law School; Current Topics in Molecular Evolution with MCB.

Our faculty share advising and mentoring activities with other departments, particularly in biology. These include the Biology 1000s Committee, Honors advisors, University Scholars advisors, and the Nomination Committees for National Scholarships (e.g., Rhodes, Marshall, Udall).

EEB faculty and students conduct research in many Centers and Facilities administered by other units on campus. Principal among these is the Center for Environmental Science and Engineering (http://www.cese.uconn.edu/) (CESE), of which EEB faculty member M. Willig is the Director. CESE grants have supported research by over a dozen EEB graduate students since 2007 and EEB faculty serve on the CESE Advisory Committee. EEB faculty use the MiSeq next generation sequencer recently acquired by MCB with support from EEB. Several EEB faculty and their students frequently use PNB's Electron Microscope Laboratory and/or and the Flow Cytometry and Confocal Microscopy Facility. A proposal to NSF's MRI program, by M. Cantino (director of the EM facility), J. Caira (EEB) and C. Dupraz (Geosciences) for the purchase of a new field emission scanning electron microscope (FESEM) for the EM facility was funded this past summer. EEB faculty co-head the Bioinformatics Core Facility, collaborate with the Center for Real Estate and Urban Economics, the Center for Population Research, the Connecticut State Data Center, the Map and Geographic Information Center, and the Center for Microbial Systems, Ecology, and Evolution.

2. In what ways (if any) do disciplinary or unit boundaries inhibit or enhance the ability of the unit to develop new approaches to research, grant competitions, teaching, or service?

In our experience, disciplinary or unit boundaries per se do not inhibit collaborations in research, teaching, or service. Disciplinary boundaries have, however, inhibited the development of a successful proposal for an NSF-IGERT grant. We have not developed sufficient depth of teaching or research collaborations in any single coherent thematic area to develop compelling fundable proposals to the IGERT program despite three pre-proposal submissions and one invited full proposal. Physical barriers are, however, another issue. Distance from CESE (located a mile away) is a major barrier to frequent interaction and use of its facilities. In particular, the physical barrier dividing EEB faculty into 2 buildings is probably as limiting as any other boundary on campus when it comes to inhibiting easy and free collaborative work among colleagues. Being organized around the broad notion of organismal biology, EEB is, itself, highly interdisciplinary. Its faculty work on protists, plants and animals, phenotypes and genotypes, and from molecules to global processes, including everything in between. Our shared interest in organisms and organismal processes, nevertheless, keeps us cohesive and has generated novel, often opportunistic, collaborations between botanists and zoologists, functional biologists and ecologists, empiricists and theoreticians, to name a few. Hence the physical division of the Department between two buildings has had a disproportionate effect on our ability to generate new, interdisciplinary initiatives.

3. Under ideal circumstances, what kinds of collaborations (e.g., research and teaching, grants, alumni programs) with other units would be desirable?

It would be beneficial to offer some joint graduate-level seminar courses in areas where we have close faculty collaborations, such as Statistics, Economics, Civil and Mechanical Engineering, and NRE. These joint seminars could lead to broader collaborations and joint research and training programs, potentially leading to a successful IGERT proposal, additional collaborative research proposals, or new graduate and undergraduate programs. Both faculty and graduate students would participate in these seminars, enhancing training and collaborations at different levels.

4. What opportunities are there for conducting interdisciplinary research projects with other units on campus or with other universities or agencies? How successful is the unit in accommodating these needs? How desirable are these kinds of interdisciplinary relationships?

Because of the national reputations of many EEB faculty, opportunities to collaborate with colleagues at other Universities in the U.S. and internationally abound. Since 2005, faculty have been awarded collaborative grants with colleagues at many U.S. institutions and countries worldwide. Over the same period, faculty members have published with colleagues at numerous other leading U.S. and foreign institutions. An increasing number of faculty and students from numerous countries are spending weeks, months, or full semesters/years in the Department (e.g., sandwich programs or sabbatical visits). Flexible teaching schedules, co-teaching, and sabbatical visits have enabled faculty and, in some cases, students to conduct research away from campus. These collaborations involve both research and teaching/mentoring activities, and provide opportunities for interdisciplinary graduate training far beyond those available on the UConn campus.

EEB highly values and enthusiastically promotes disciplinary and interdisciplinary collaborations, viewing them as key elements in maintaining the high quality of research and training that EEB faculty exhibit. The University's membership in the Organization for Tropical Studies has enhanced international collaboration for both faculty and graduate students for over 30 years. In addition, EEB strongly promotes involvement of faculty in professional societies, which plays a critically important role in enhancing both disciplinary and interdisciplinary research collaborations, as well as program visibility. EEB faculty and graduate students have benefited from participation in workshops and working groups sponsored by the NSF-supported National Center for Ecological Synthesis, National Evolutionary Synthesis Center, and the National Socio-Environmental Synthesis Center. These activities function as springboards for novel collaborative research projects that are often interdisciplinary.

5. Does the unit have any interdisciplinary academic programs? How are these aligned with the goals of the university's Academic Plan?

EEB is formally involved in 4 interdisciplinary academic programs that focus on environmental issues, a central theme of the Academic Plan of the University: (1) the Center for Integrative Geosciences (undergraduate and graduate programs), (2) the Environmental Science Major (undergraduate program), (3) the Environmental Studies Minor, and (4) the EcoHouse Learning Community. EEB has not only offered a 1 credit seminar for EcoHouse residents, but is currently developing a study abroad course in Patagonia targeting these students. Several EEB faculty have also been involved in planning the new Environmental Studies Major.

In oversight roles, EEB faculty members served as co-chair of the Environmental Policy Advisory Council's Environmental Literacy Committee, and as co-chair or active members of the University Climate Impact, Modification and Action Committee. Multiple EEB faculty continue to participate in the oversight of the inter-departmental Edwin Way Teale Lecture Series, inviting and hosting a diversity of distinguished individuals to the University to speak on various environmental issues (Appendix F6). Distinguished Research Professor and NAS member, G. Likens, serves as the environmental advisor to President Herbst.

H. University-wide Support and Facilities Services

1. Describe and appraise the current institutional support services and facilities for the unit's:
   a. teaching programs;

The Institute for Teaching and Learning serves as a valuable resource for faculty teaching innovations. In addition, many of our graduate students benefited greatly from the course "Fundamentals of Teaching and Learning" (EDCI 3820), developed by the Institute's past director Keith Barker, to provide graduate students with basic teaching training.

Three members of the 13 Biology Central Services laboratory support staff are key to the success of our introductory biology laboratories particularly now with heavily increased enrollments. These staff members

bear full responsibility for these laboratories and coordinate, supervise and train all associated teaching assistants.

b. research, creative production, or other scholarly activities;

Research funds: Indirect costs received by the University are allocated through the Research Foundations to subsidize and promote research by faculty and graduate students. Priorities for the allocation of indirect costs are set by the Vice President for Research in consultation with the Research Advisory Council (RAC), an appointed faculty committee. Until recently, PIs and the Department each received a return of 5% of indirects on each external grant; in 2009 the return was increased to 10% (Appendix H1). The Department uses its pool of indirect funds to support research and scholarly activities; funds are allocated on an ad hoc basis by the Department Head. These funds are essential for purchasing new research equipment, maintaining and repairing existing equipment, supporting our weekly seminar speaker series, and providing support for a variety of research-related expenses for faculty members and students.

The RAC also sponsors 2 major grant competitions each year awarding grants between $2K and $25K. Priority is given to new faculty and interim support. Faculty panels in 5 primary areas review competitive grant applications. A large proportion of EEB faculty receiving RAC awards since 2005 have subsequently succeeded in procuring external grants. When funds are available, a research equipment competition is also held, funding, for example, the purchase and upgrade of EEB's capillary sequencer. EEB faculty have received funds totaling $414,732 from various RAC programs since 2005 (Appendix B5C). The Research Foundation also supports faculty travel to present papers at professional meetings in the amount of $750/yr. A "small grants" program allows the VP for Research to allocate up to $1K based on a one to two page request. For example, these funds were used to support the Charles Darwin Bicentennial Colloquium Series organized by K. Wells in 2009.

Facilities: The Department's space currently consists of extremely contrasting elements. We have excellent support space (e.g., the EEB Biodiversity Research Collections facility, research greenhouses on the roof of the Biology/Physics building, and the soon to be renovated ground-based greenhouses), and laboratory and office space for 15 of our faculty housed in the Pharmacy/Biology building (PBB), completed in 2005. However, 12 faculty members, including some of the most well-funded, and three of our Board of Trustees Distinguished Professors, remain housed in the decrepit, 50-year old Torrey Life Sciences building (TLS) where infrastructure is undependable, as basic systems such as plumbing, heating, and electricity are now routinely failing. Furthermore, the amount of space available to faculty in TLS is only about two-thirds that allocated to their colleagues housed in the PBB, and room for expansion in TLS is highly limited. Increased enrollment has necessitated the conversion of research space to teaching lab space in at least one instance. Identifying space for new faculty hires is now a critical concern; all space that is available in TLS is inadequate by any standard and would require major renovation to accommodate any newly hired faculty. Space in PBB for our plant genomicist became available only as a result of a sacrifice of space by one of our more senior faculty members who agreed to move back into TLS. We have yet to identify space for the Biodiversity and Climate Change biologist we hope to hire in Fall 2013. Furthermore, the last minute, "value-engineered" removal of the third-floor bridge connecting PBB to TLS that was an integral part of the original building plan designed to preserve connectivity across EEB, has seriously fragmented the Department, and initiated erosion of departmental cohesion through weakened interactions and collaborations (see G2 above).

Several research programs in EEB benefit significantly from the Biotechnology Facility (http://www.biotech.uconn.edu/), in particular from its Bioinformatics Facility (http://www.biotech.uconn.edu/bf/), co-headed by Paul Lewis, and from the Center for Applied Genetics and Technology (http://www.cagt.uconn.edu/CAGT/). Support outside of EEB includes an excellent electron microscopy facility, managed by PNB, which houses 2 transmission electron microscopes and 2 scanning electron microscopes. One of the latter is new and is equipped with EDS and Cryo-capabilities.

Edwin Way Teale Lecture Series: This lecture series (see F1 above and Appendix F6) has been well supported by the Deans of CLAS, Agriculture and the Graduate School, as well as the Provost and President's offices.

c. recruiting of students, faculty, and staff;

The Dean of CLAS has provided start-up funds ranging from $0.25 to $0.5 million for each of the 3 faculty hired since 2005. In the case of the faculty member housed in TLS, the Dean also provided support for modest renovation of laboratory space. In several years the Department's operating budget has included an allocation of about $2,000 for graduate student recruitment, although those funds have largely disappeared as a result of budget constraints.

d. outreach, including professional and community service;

No resources beyond the Department's budget are available for such activities.

e. administration.

Biology Central Services: The 3 biology departments share a centralized Biology Central Services (BCS) office and staff that provides significant help for centralized purchasing, biological illustration, graduate applications, grants budgets, personnel and building management, introductory biology TA training, laboratory organization, coordination, and limited secretarial help for the latter. The organizational chart in Appendix A1 includes the various elements of BCS. BCS is managed by an Assistant Dean who works for the 3 departments, and for the Dean of the CLAS, who also manages Academic Renovations (more below). The BCS is a model in CLAS for cooperation among departments and for savings generated by shared functions. BCS has professional staff that works very well with the Faculty, embracing the concepts of efficiency and service. Unfortunately, as administrative tasks have grown, the staff is no longer able to assist faculty to the extent they have in the past. Implementation of the new Kuali financial system, which has shifted the responsibility for many administrative tasks (purchasing, etc.) to faculty, has particularly exacerbated the drain on faculty time.

Academic Renovations: This unit covers the spectrum from small repairs to full lab renovations. They do good work, quickly, efficiently and much more inexpensively than the Facilities departments at the University. More importantly, they strive to include faculty lab directors in the planning and execution of their work. Facilities has some first class employees and they generally respond quickly to ad hoc calls. When it comes to renovations, however, the overall attitude is not 'user' or service-oriented and completion of renovations is slow.

2. Has the unit engaged in any entrepreneurial activities, through grants or fundraising, to augment institutional support?

EEB has 17 small accounts (Appendix H2) managed by the UConn Foundation, a private entity associated with the University established to recruit and manage funds given to the University by private donors. The modest interest income from these funds serves primarily to support graduate student research and travel. The expenditures from most of these funds (i.e., those in grey in Appendix H2) are allocated competitively, based on applications to *ad hoc* committees appointed by the Department Head. The other funds are managed by relevant faculty in consultation with the Head. Since 2005 the combined total principal across these 17 accounts has risen from $556,796 to $661,920. Increases have resulted from return of interest on existing principle, and donations from alumni and individuals outside of the immediate University Community, but most of the funds continue to come from donations from faculty and staff. Our experience with the University's Development Officers has generally been disappointing, as efforts by EEB to initiate fundraising have not been endorsed or actively supported. Most of our limited donations to date have been initiated through the efforts of EEB faculty and staff.

I. Summary Assessment and Future Directions

1. Summarize the major strengths and weaknesses of the unit and the problems it faces in the foreseeable future.

Appendix ES2 summarizes the most salient elements of this self-study. We are a strong, active, collegial department of first-rate, highly productive scholars, most with strong national and international reputations, committed to excellence in teaching and research. Our service to professional societies and the University is substantial. The number of Storrs-campus faculty is down from 2005 (from 27 to 25), and we have become "top-heavy" with a large majority of the faculty now Full Professors. Objective teaching evaluations attest to our continued excellence in teaching, but increased enrollments have substantially increased our per capita teaching loads (from 70.5:1 to 103:1). We contribute substantially to 1000s (55%) and W-instruction (~55%) within the life sciences. Our graduate program is strong, but small relative to those of many of our peer and target institutions, particularly in light of the simultaneous increases in our scholarship and teaching loads. While graduate stipends for the academic year are competitive, the lack of summer support and full fellowships is limiting our competitiveness and thus also the quality of our program relative to our peer and target institutions. Space is a critical concern. While about half our faculty are housed in excellent space in the new Pharmacy/Biology building, the remainder is housed in dilapidated space in the Torrey Life Sciences building and there is no space available for new faculty. The last-minute deletion of the connecting bridge between PBB and TLS has seriously fragmented the department substantially reducing interaction. Perhaps of greatest concern at this juncture is the continued erosion of faculty time for research and scholarship resulting from the continued increases in teaching loads and mandated bureaucratic tasks required of faculty. The cost of this combination of conditions, coupled with declining faculty salaries, is high stress, low morale and an increasing likelihood that our best faculty will leave for other institutions.

2. The quality of an academic unit can be assessed in many ways. In terms of the three criteria below, describe the overall quality of the unit.
   a. Resource criteria (e.g., student selectivity or demand; faculty prestige, training, and teaching loads; grants and contracts; library; equipment; and support staff).

Enrollment in our undergraduate courses has increased substantially since our last review and teaching loads are at an all-time high. Nonetheless, based on waiting lists, demand continues to far exceed capacity. Our graduate admissions process is selective—offers are made to only about 23% of applicants. The large majority of our faculty has external funding. Total extramural support since 2005 exceeds $28 million and includes 19 awards of $500,000 or more. The Department is now home to 4 Board of Trustees Distinguished Professors, and an associated faculty member is in the National Academy of Sciences. We are down one office staff position (secretary), having exchanged one such position for a full time academic advisor to handle the hundreds of additional students resulting from a precipitous increase in biology enrollments.

   b. Reputational criteria (e.g., national or international ranking, or other judgments of the program's students, faculty, resources, and productivity).

The 2006 NRC report suggests that EEB has increased in standing relative to some of the peer and target institutions selected for our previous self-study. EEB also ranked substantially above the other 4 UConn biology programs included in the NRC study. NSF data indicate that we rank 4th among our 11 peer and target institutions in dollars per funded faculty member from NSF's DEB programs. Since 2005, our graduate students have been supported by 25 extramural awards including 6 NSF Pre-doctoral Fellowships, an EPA Star Fellowship, a NASA graduate Fellowship, 2 Fulbrights, 1 Switzer Fellowship, and 15 NSF Doctoral Dissertation Improvement grants. Faculty citations since 2007 exceed 53,000; the mean departmental h-index since 2007 is 17.53, and the mean i 10-index since 2007 is 28.43, suggesting that our scholarly output has a significant impact on our fields.

   c. Outcomes criteria (e.g., faculty scholarly productivity, awards and honors, research contributions, teaching performance, service to state and nation; student gains in knowledge, students' professional achievements, personal placement/or career development, program alumni opinion).

Scholarly output since 2005 has included 16 authored or co-authored books, 13 edited books, 658 peer-reviewed papers and 111 peer-reviewed book chapters; service to peer reviewed journals has included 5 Editors, and 45 other editorial positions. Faculty in EEB have served as presidents of 5 major societies and

on 31 review panels at NSF, alone. Departmental means on student evaluations, particularly for our upper division courses, are routinely above those of the University overall. Since 2005, 55 post-docs have worked in the Department; of the 35 no longer in residence, 91% now hold positions in science, 74% at academic institutions. Over 80% of the 55 Ph.D. students graduating since 2005 now hold positions relevant to their degree: 32% at academic institutions, 20% at museums or government agencies, 29% as post-docs. Undergraduate placement data are not as readily available; data who worked in labs attests to a high degree of success at least among these students.

3. In what areas has the unit improved or changed since the last review? Describe the evidence used to support the conclusions.

Our space has improved substantially given that about half of our faculty and their research programs are now located in the Pharmacy/Biology building. The Dean has recently committed funds to support renovation of our aging greenhouses. We hired a professional academic advisor who now advises all non-Honors undergraduate students. We have initiated a combined B.S./M.S. vocational degree in Biodiversity and Conservation Biology and provided the necessary additional coursework in order for them to be competitive for positions in government agencies, non-profits, etc.

4. Describe new directions in curriculum, resources, research, reorganization, staffing or student clientele planned for the next few years aimed at strengthening the unit, in conjunction with your strategic plan.

This self-study exercise has been useful for helping us to identify areas of concern. (1) Faculty efficiency would be substantially improved by reinstatement of an office staff position (converted to a professional academic advisor) to assist with the increased bureaucratic load mandated by the University, but also associated with the greater number of larger, more complicated grants we now oversee. (2) If fully implemented, our cluster hire proposal would result in a reduction in our teaching loads, while simultaneously increasing our overall scholarly productivity and funding. We are confident that in the near future, at least, the quality and reputation of the Department will continue to draw an outstanding pool of candidates for each position, and that with financial assistance from the Dean, we will continue to succeed in recruiting our top choice from among those interviewed (as for our last 3 searches). (3) The President's recent efforts to secure funds to resolve space issues surrounding faculty in the life sciences is encouraging, but the proposed timeframe (2018 at the earliest), leaves us with major more immediate concerns, particularly with respect to identifying space for stellar new hires. As an interim solution, funds will need to be allocated for renovation of TLS and it seems likely that some of the existing uses of space (e.g., for introductory teaching labs) will need to be reassigned to provide space for new faculty hires. Construction of a bridge between TLS and PBB would be an extremely positive outcome for EEB and the other biology departments. (4) Non-competitive support for graduate students, in terms of summer support and full fellowships, has emerged as a growing impediment to graduate student recruitment.

5. What plans are underway to capitalize on individual faculty strengths and to overcome weaknesses?

For the most part, our faculty members are highly research active. The majority are conscientious and effective teachers. There is a growing inequity among faculty in terms of service to the Department and University as a whole, with only a subset of faculty participating in these activities. We plan to re-evaluate this situation, and also that of total teaching loads and teaching load inequity, in the near future, in the context of a departmental retreat.

6. Are there new ways that the unit can enhance programs for undergraduate and graduate students, for research, service, and University operations?

Some consideration should be given to the Biological Sciences majors as a whole, for they are being neglected relative to their peers majoring in EEB, MCB and PNB, but this must be a coordinated effort among the 3 biology departments. Planning is underway for a reconfiguration of graduate student teaching loads from co-teaching 3 introductory labs, to solo-teaching 2 labs; this is likely to have a positive effect on our ability to recruit outstanding graduate students.

List of Appendices for EEB self-study 2005-2012

Appendix ES1: OIR program review data
Appendix ES2: Overview of EEB's faculty size, productivity, funding, in the context of undergraduate student enrollment and TA support

Appendix A1: Organization of biology departments and Biology Central Services
Appendix A2: List of EEB faculty at the Storrs and Regional campuses
Appendix A3: Size of EEB faculty 2005-2012
Appendix A4: Post-doctoral Research Associates in EEB 2005-2012, and their current positions

Appendix B1: All publications and software by EEB faculty for the period of 2005-2012
Appendix B2: Number of publications per faculty 2005-2012; distribution of citations, life time citations, citations since 2007, h- and i 10-index and h- and i 10-index since 2007
Appendix B3: Presentations made by EEB faculty 2005-2012
Appendix B4: Distribution of extramural awards per year by faculty
Appendix B5: Research grants received or submitted by EEB faculty 2005-2012
Appendix B6: Honors, awards and professional service by EEB faculty 2005-2012
Appendix B7: Comparison of target and peer EEB department based on NRC rankings and NSF-DEB awards
Appendix B8: Comparison of NRC data for EEB and sister biology departments at the University of Connecticut

Appendix C1: Enrollment in EEB course 2005-2012
Appendix C2: Enrollment at the Regional campuses in courses taught by EEB faculty 2005-2012
Appendix C3: Curriculum for an EEB major and minor
Appendix C4: Recent undergraduate course offerings per semester
Appendix C5: Enrollment in EEB upper division undergraduate courses 2005-2012
Appendix C6: Undergraduates involved in research in EEB 2005-2012
Appendix C7: List of EEB undergraduate awards 2005-2012
Appendix C8: Distribution of majors within biology 2005-2012
Appendix C9: Storrs Campus enrollment in writing intensive (W) classes in fall and spring semesters 2005-2012
Appendix C10: W enrollments of three biology departments 2005-2012
Appendix C11: Advising loads in EEB in fall and spring semester 2005-2012
Appendix C12: Summary of student evaluation of EEB faculty teaching 2005-2012

Appendix D1: Support, composition and size of graduate student population in EEB 2005-2012
Appendix D2: Awards received by graduate students in EEB 2005-2012
Appendix D3: Graduate course offerings per semester
Appendix D4: Mean verbal and quantitative GRE percentiles for enrolled graduate students 2007–2012
Appendix D5: Mean applicant pool numbers and overall program percentages for 2007–2012
Appendix D6: Placement of graduates 2005-2012

Appendix F1: Partial list of notable, recent and ongoing EEB outreach activities

List of Appendices (continued)

Appendix F2: EEB living plant collections: Greenhouses
Appendix F3: EEB Biodiversity Research Collections
Appendix F4: EEB Social Media Use for Outreach to Audiences Outside Academia
Appendix F5: Websites maintained by EEB faculty
Appendix F6: Nature & The Environment: The Edwin Way Teale Lecture Series (2005-2012)

Appendix H1: Indirect costs returns to EEB from extramural grants 2004 and 2012
Appendix H2: Departmental endowed accounts and awards made

Appendix ES1: Ecology and Evolutionary Biology Program Review

Element	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011
Faculty, FTE								
Storrs Campus								
Full-time Permanent	29.00	30.00	30.00	29.00	30.00	27.00	27.00	27.00
Part-time Permanent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FTE Permanent	29.00	30.00	30.00	29.00	30.00	27.00	27.00	27.00
Full-time Non-Permanent	1.00	2.00	2.00	3.00	3.00	2.00	2.00	2.00
Part-time Non- Permanent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FTE Non-Permanent	1.00	2.00	2.00	3.00	3.00	2.00	2.00	2.00
Regional Campuses Undergrad								
Full-time Permanent	4.00	4.00	4.00	4.00	4.00	3.00	3.00	3.00
Part-time Permanent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FTE Permanent	4.00	4.00	4.00	4.00	4.00	3.00	3.00	3.00
Full-time Non-Permanent	1.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Part-time Non- Permanent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FTE Non-Permanent	1.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Enrollment, Undergraduate								
Storrs Campus - EEB as Primary Major								
Full-time	43	44	51	46	49	58	48	65
Part-time	3	3	3	1	5	2	3	2
FTE	44.00	45.00	52.00	46.33	50.67	58.67	49.00	65.67
Storrs Campus - EEB as Dual Major								
Full-time	1	0	0	0	1	1	0	2

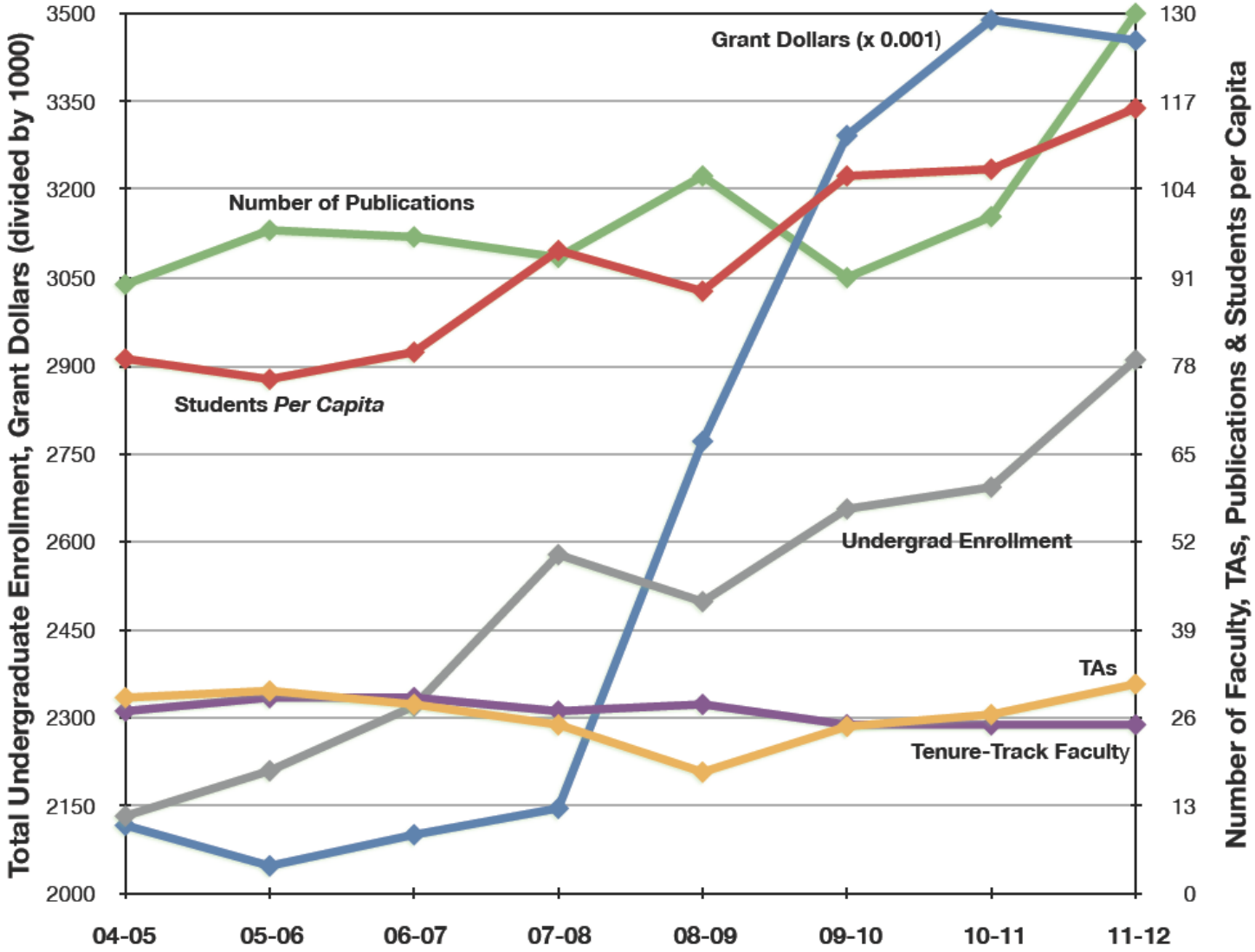
Appendix ES1 (continued)								
Part-time	0	0	0	0	0	0	1	0
FTE	1.00	0.00	0.00	0.00	1.00	1.00	0.33	2.00
Storrs Campus - EEB as Double Major								
Full-time	2	2	0	2	3	1	3	2
Part-time	1	0	0	0	0	0	0	0
FTE	1.17	1.00	0.00	1.00	1.50	0.50	1.50	1.00
Storrs Campus - EEB as Minor								
Full-time	0	0	2	4	6	7	4	7
Part-time	0	0	0	0	0	0	0	1
FTE	0.00	0.00	0.20	0.40	0.60	0.70	0.40	0.73
Storrs Campus Total EEB FTE	46.17	46.00	52.20	47.73	53.77	60.87	51.23	69.40
Regional Campuses - EEB as Primary Major								
Full-time	1	5	5	6	2	2	5	1
Part-time	0	0	2	2	0	0	0	0
FTE	1.00	5.00	5.67	6.67	2.00	2.00	5.00	1.00
Regional Campuses - EEB as Dual Major								
Full-time	0	0	0	1	0	0	0	0
Part-time	0	0	0	0	0	0	0	0
FTE	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Regional Campuses - EEB as Double Major								
Full-time	0	0	0	0	0	0	0	0
Part-time	0	0	0	0	0	0	0	0
FTE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional Campuses - EEB as Minor								
Full-time	0	0	0	1	0	0	0	0
Part-time	0	0	0	0	0	0	0	0

Appendix ES1 (continued)								
FTE	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00
Regional Campus Total EEB FTE	1.00	5.00	5.67	7.77	2.00	2.00	5.00	1.00
Enrollment, Graduate/Professional								
Master's								
Full-time	7	10	4	4	6	10	10	8
Part-time	0	2	1	1	2	1	1	3
FTE	7.00	10.67	4.33	4.33	6.67	10.33	10.33	9.00
Doctoral								
Full-time	44	40	49	47	38	40	46	45
Part-time	5	6	3	5	6	5	5	6
FTE	45.67	42.00	50.00	48.67	40.00	41.67	47.67	47.00
Degrees Awarded								
Bachelor's	13	15	17	18	18	18	16	n/a
Master's	4	8	9	3	6	4	1	n/a
Doctoral	6	10	6	9	6	4	4	n/a
Budget and Grants								
Instructional Expenditures	$5,024,318	$5,120,225	$5,442,739	$5,595,212	$5,994,910	$5,391,107	$5,991,111	n/a
External Grant Expenditures	$2,230,672	$1,910,084	$2,065,265	$2,673,451	$2,383,578	$2,657,679	$2,372,045	n/a
Graduate Assistantships								
State Funded FTE	36.75	34.50	41.50	37.00	34.00	32.50	36.00	33.50
Externally Funded FTE	11.25	10.50	7.50	9.50	6.50	15.00	12.50	13.00
Other Funded FTE	0.50	1.00	1.00	0.00	0.00	0.00	1.50	0.00
Total FTE	48.50	46.00	50.00	46.50	40.50	47.50	50.00	46.50
Post Doc Fellows								
State Funded FTE	1.00	1.00	0.40	0.00	0.00	0.00	0.00	1.00

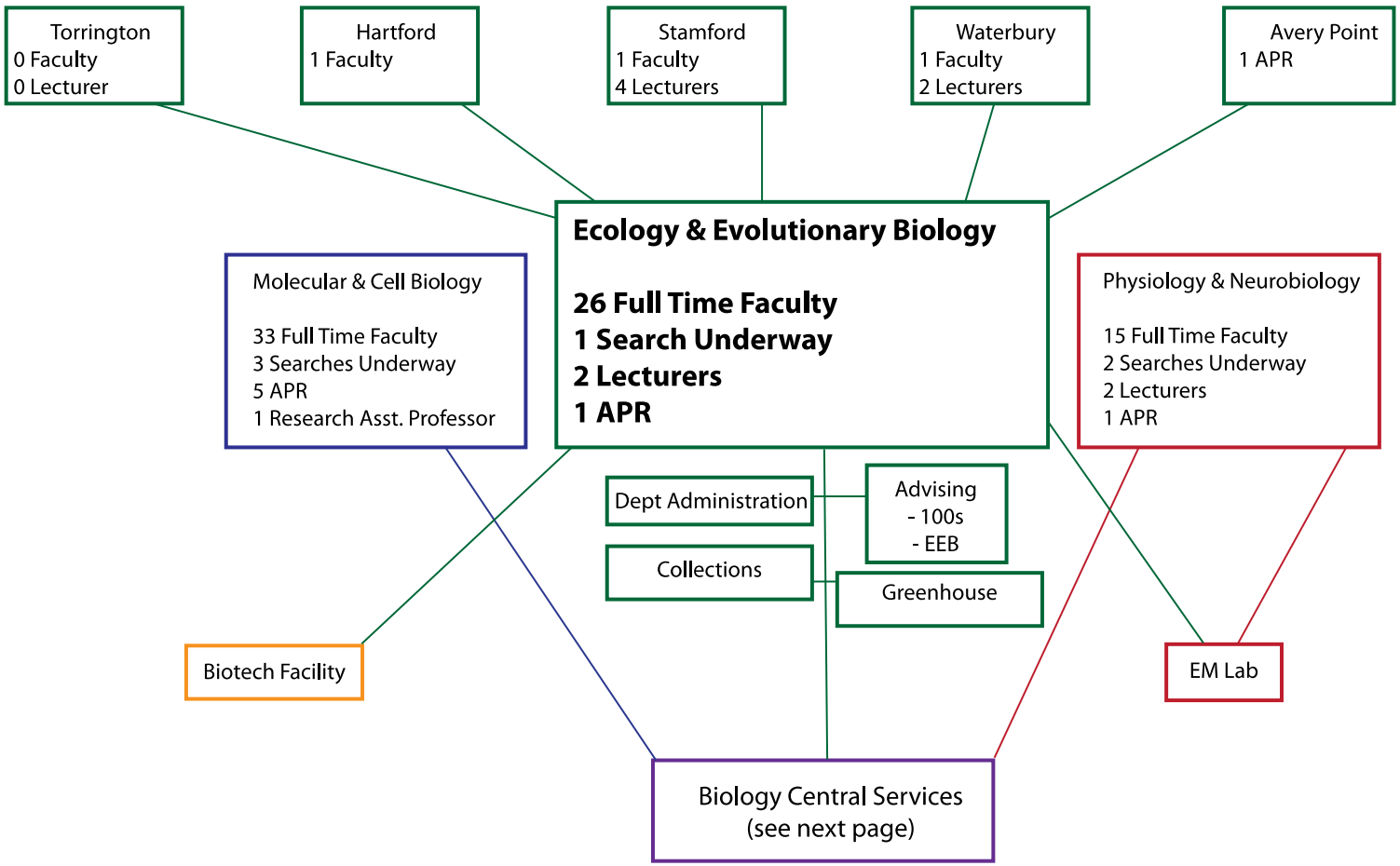
Appendix ES1 (continued)

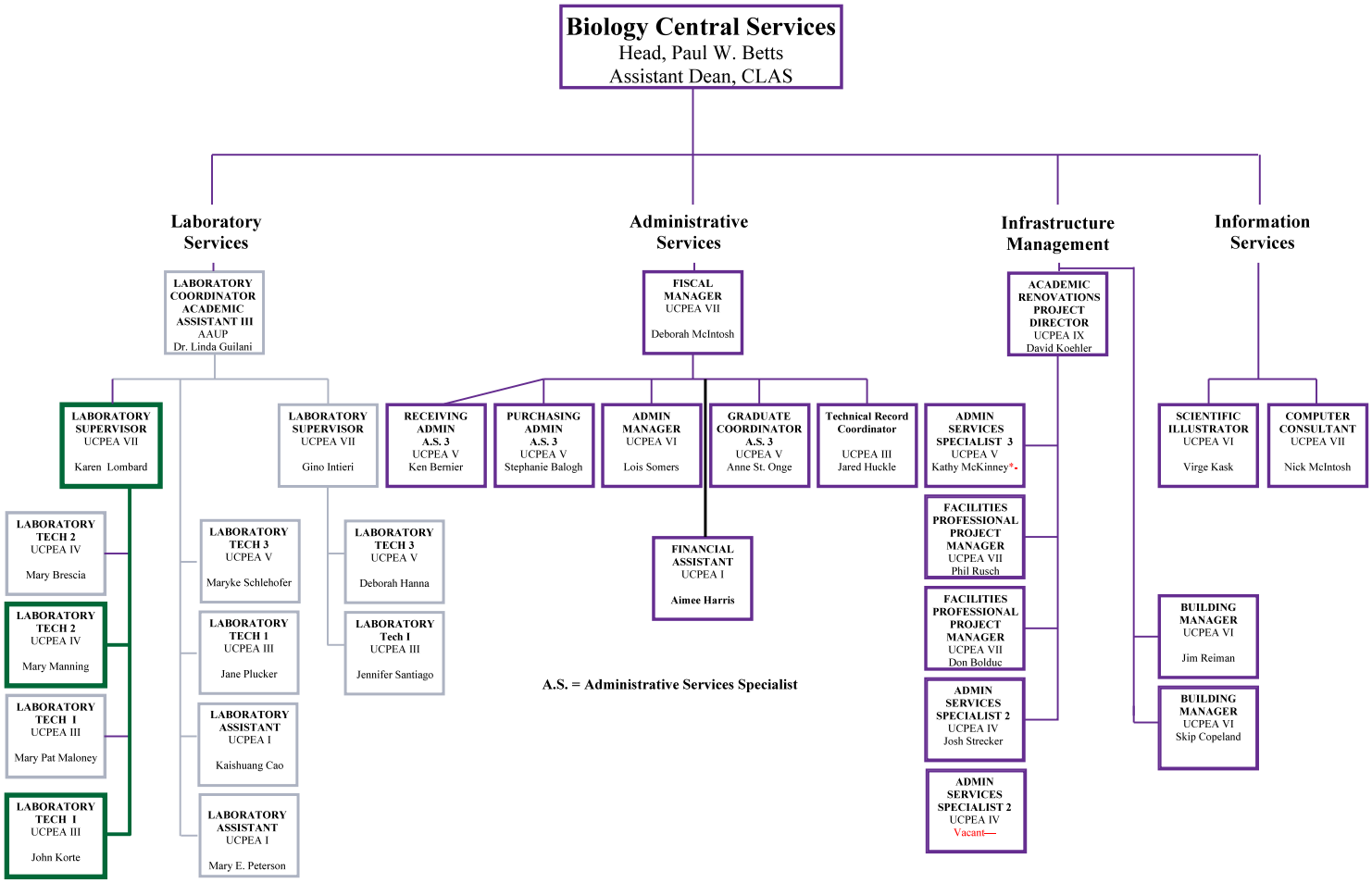
Externally Funded FTE	5.56	2.00	2.60	9.00	5.00	5.00	6.00	6.00
Other Funded FTE	1.44	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Total FTE	8.00	4.00	4.00	10.00	5.00	5.00	6.00	7.00
Student Credit Hours: Subject Based								
Undergraduate								
For Storrs Majors	458	371	485	516	528	567	502	685
For Storrs Non-Majors	1,696	1,873	2,042	2,646	2,806	3,133	3,341	3,771
For Regionals Majors	0	5	0	0	3	6	3	3
For Regionals Non-Majors	30	75	81	84	225	150	264	436
Graduate/Professional								
For Storrs Majors	737	693	782	725	652	618	799	714
For Storrs Non-Majors	64	79	118	93	145	130	158	65
For Non-Storrs Plus Majors	0	0	0	0	0	0	0	0
For Non-Storrs Plus Non-Majors	0	0	12	0	0	0	0	0
Student Credit Hours Beyond Unit's Subjects: Faculty Taught Subjects Outside Unit								
Subject Areas Outside EEB Unit	BIOL, GEOL, INTD, MCB	BIOL, GEOL, GS, INTD, MARN, MCB, SCI	BIOL, CE, ENVE, GEOL, INTD, MCB, SCI	BIOL, GEOL, GRAD, INTD, MARN, MCB	ANTH, BIOL, GEOL, MCB	AMST, ANTH, BIOL, GSCI, INTD, MCB	BIOL, GSCI, MCB, SCI	AMST, BIOL, GSCI, INTD, MCB, NRE
Undergraduate Storrs	2,872	2,780	3,405	3,921	3,133	3,250	2,337	2,515
Undergraduate Regionals	986	1,252	1,454	1,413	1,465	1,723	1,430	1,477
Graduate/Professional Storrs	17	20	21	9	16	6	9	24

Appendix ES2: Overview of EEB's faculty size, productivity, funding, in the context of undergraduate student enrollment and TA support



Appendix A1: Organization of biology departments and Biology Central Services




Biology Central Services
Head, Paul W. Betts
Assistant Dean, CLAS
Laboratory Services
Administrative Services
Infrastructure Management
Information Services
LABORATORY COORDINATOR ACADEMIC ASSISTANT III
AAUP
Dr. Linda Guilani
FISCAL MANAGER
UCPEA VII
Deborah McIntosh
ACADEMIC RENOVATIONS PROJECT DIRECTOR
UCPEA IX
David Koehler
LABORATORY SUPERVISOR
UCPEA VII
Karen Lombard
LABORATORY SUPERVISOR
UCPEA VII
Gino Intieri
RECEIVING ADMIN A.S. 3
UCPEA V
Ken Bernier
PURCHASING ADMIN A.S. 3
UCPEA V
Stephanie Balogh
ADMIN MANAGER
UCPEA VI
Lois Somers
GRADUATE COORDINATOR A.S. 3
UCPEA V
Anne St. Onge
Technical Record Coordinator
UCPEA III
Jared Huckle
ADMIN SERVICES SPECIALIST 3
UCPEA V
Kathy McKinney*
SCIENTIFIC ILLUSTRATOR
UCPEA VI
Virge Kask
COMPUTER CONSULTANT
UCPEA VII
Nick McIntosh
LABORATORY TECH 2
UCPEA IV
Mary Brescia
LABORATORY TECH 2
UCPEA IV
Mary Manning
LABORATORY TECH 1
UCPEA III
Mary Pat Maloney
LABORATORY TECH 1
UCPEA III
John Korte
LABORATORY TECH 3
UCPEA V
Maryke Schlehofer
LABORATORY TECH 1
UCPEA III
Jane Plucker
LABORATORY ASSISTANT
UCPEA I
Kaishuang Cao
LABORATORY ASSISTANT
UCPEA I
Mary E. Peterson
LABORATORY TECH 3
UCPEA V
Deborah Hanna
LABORATORY Tech I
UCPEA III
Jennifer Santiago
FINANCIAL ASSISTANT
UCPEA I
Aimee Harris
A.S. = Administrative Services Specialist
FACILITIES PROFESSIONAL PROJECT MANAGER
UCPEA VII
Phil Rusch
FACILITIES PROFESSIONAL PROJECT MANAGER
UCPEA VII
Don Bolduc
ADMIN SERVICES SPECIALIST 2
UCPEA IV
Josh Strecker
ADMIN SERVICES SPECIALIST 2
UCPEA IV
Vacant—
BUILDING MANAGER
UCPEA VI
Jim Reiman
BUILDING MANAGER
UCPEA VI
Skip Copeland

Appendix A2: List of EEB faculty at the Storrs and Regional campuses

Storrs tenure track faculty	Title	Hire Date
Adams, Eldridge	Professor	1997
Bush, Andrew	Associate Professor	2005
Caira, Janine	Professor, Distinguished Professor	1985
Chazdon, Robin	Professor	1988
Colwell, Robert	Professor, Distinguished Professor	1989
Crespi, Jean[1]	Associate Professor	1992
Elphick, Christopher	Associate Professor	2003
Goffinet, Bernard	Professor	1999
Henry, Charles	Professor	1975
Holsinger, Kent	Professor, Distinguished Professor	1986
Jockusch, Elizabeth	Associate Professor	1999
Jones, Cynthia	Professor	1991
Les, Donald	Professor	1992
Lewis, Louise	Associate Professor	1999
Lewis, Paul	Associate Professor	1999
Rubega, Margaret	Associate Professor	1998
Schlichting, Carl	Professor	1988
Schultz, Eric	Associate Professor	1995
Schwenk, Kurt	Professor	1989
Silander, John	Professor	1976
Simon, Chris	Professor	1990
Thorson, Robert[2]	Professor	1984
Turchin, Peter	Professor	1994
Urban, Mark	Assistant Professor	2008
Wagner, David	Professor	1988
Wells, Kentwood	Professor	1977
Willig, Mike	Professor	2005
Yuan, Yao-Wu	Assistant Professor	2013
Regional tenure track faculty	**Title**	**Hire Date**
Coe, Felix (Hartford)	Associate Professor	2004
Trumbo, Stephen (Waterbury)	Professor	1995
Yarish, Charles (Stamford)	Professor	1976
Emeritus Research active	**Title**	**Hire Date**
Anderson, Gregory	Professor emeritus, Distinguished	1973
Schaefer, Carl	Professor emeritus	1966
Affiliated faculty, non-tenure track	**Title**	**Hire Date**
Allen, Jenica	Assistant Professor in Residence (Storrs)	2012
Fry, Adam	Lecturer (Storrs)	2005
Christine Giambartolomei-Green	Assistant Professor in Residence (Avery Point)	
Herrick, Susan	Lecturer (Storrs)	2003
Kraemer, Claudia	Assistant Professor in Residence (Stamford)	2004
Likens, Gene	Distinguished Research Professor	2004
Philbrick, Paula	Lecturer (Waterbury)	2005
Wilson, Roderick	Lecturer (Stamford)	2001

[1 & 2] faculty members nominally associated with our department as a result of the dissolution of the Department of Geology, but with primary affiliation with the Integrative Geosciences Program; these colleagues do not teach courses or supervise graduate students in EEB and are not included in the quantitative analyses in this document.

Appendix A3: Size of EEB faculty 2005-2012 based on a constant faculty number of 22

	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13
Holsinger	+	+	+	+	+	+	Grad School	Grad School	Grad School?
Willig	-	+	+	+	+	+	+	+	+
Urban	-	-	-	-	+	+	+	+	+
Bush	-	+	+	+	+	+	+	+	+
Yuan	-	-	-	-	-	-	-	-	+
Anderson	+	+	Grad School	Grad School	Grad School	-	-	-	-
Schaefer	+	+	+	+	+	-	-	-	-
Taigen	Athletic advisor	Athletic advisor	Athletic advisor	Athletic advisor	Athletic advisor	-	-	-	-
Cardon	+	+	+	0.5	-	-	-	-	-
Rich	+	+	+	-	-	-	-	-	-
Desch (Hfd)	+	+	+	+	+	-	-	-	-
Coe (Hfd)	+	+	+	+	+	+	+	+	+
Total	30	29	29	27.5	28	25	25	25	26

Appendix A4. Post-doctoral Research Associates in EEB 2005-2012 and their current positions.

Appendix A4a: Number (total post-doc years: 154.5; annual average No. post-docs 20)

04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12
14	19	19.5	21	19	15	21	20

Appendix A4b: List and the current position

Angelini, D. R.	Assistant Professor, Colby College, Waterville Maine
Arango, C.	Saint Joseph's University, Philadelphia
Arroyo, J. P.	Research Associate, McGill, Canada
Benoit, L.	Post-doctoral Research Associate; University of Connecticut, EEB
Bois, S.	Conservation Research Program Director, Instit. Applied Ecology Corvallis, OR & EEB
Budke, J. M.	Post-doctoral Research Associate; University of Connecticut, EEB; UC Davis, (01/2013)
Carlson, J.	Assistant Professor, Nicholls State University, Louisiana
Castro-Arellano, I.	Assistant Professor, Texas State University, Texas
Chong, Y. C.	Post-doctoral Research Associate; University of Connecticut, EEB
Cooley, J. R.	University of Connecticut, MBA
Forrest, L. L.	Bar-coding Research Scientist, Royal Botanic Garden, Edinburgh, Scotland
François, P.	Post-doctoral Research Associate; University of Connecticut, EEB
Fucikova, K.	Post-doctoral Research Associate; University of Connecticut, EEB
Fyler, C. A.	Founder and president of Moonrise Media
Gray, D. W.	Post-doctoral Associate with Dr. Thomas Sharkey at Michigan State University
Haukilsami, V.	Finnish Forest Research Institute
Hurme, K.	Post-doctoral Research Associate; University of Connecticut, EEB
Ibanez, I.	Assistant Professor, University of Michigan
Kim, J.K.	Post-doctoral Research Associate; University of Connecticut, Marine Sciences & EEB
Kuchta, R.	Academy of Science of the Czech Republic
LaFleur, N. E.	Lecturer, Kean University, Union, NJ
Latimer, A. M.	Associate Professor, University of California Davis
Lee, Y.	State of Connecticut
Liu, Y.	Post-doctoral Research Associate; University of Connecticut, EEB
Mao, Y. X.	Deputy-Dean, College of Marine Life Sciences and Director, National Experimental Teaching Demonstration Center of Marine Life Sciences, Ocean University of China
Makarikov, A.	Post-doctoral Research Associate; University of Connecticut, EEB & Univ. N. Dakota
Marshall, D. C.	Post-doctoral Research Associate; University of Connecticut, EEB
Martine, C.	Associate Professor, Burpee Endowed Chair in Plant Genetics, Bucknell University
Martinez-Cabrera, H. I.	Université du Québec à Montréal, Canada
Martinez-Solano, I.	Post-doctoral Fellow, Inst. de Invest. en Recursos Cinegéticos Ciudad Real, Spain
McManus, H. A.	Assistant Professor, Le Moyne College, Syracuse, NY
Medina, R	Post-doctoral Research Associate; University of Connecticut, EEB
Merow, C. G.	Post-doctoral Research Associate; University of Connecticut, EEB
Messinger, S.	Post-doctoral Research Associate; University of Connecticut, EEB
Noh, S.	Morgan Lab, Division of Biology, Kansas State University
Norden, N.	Assistant Professor, Universidad Pontificia Javeriana, Bogota, Colombia

Appendix A4b (continued)

Opel, M.	University of Connecticut, EEB, Greenhouses
Oros, M.	Slovak Academy of Sciences
Orosova, M.	Slovak Academy of Sciences
Peredo, E.	Visiting researcher, Woods Hole
Pereira, R.	Senior Research Scientist & principal of AlgaPlus, LTD, Aveiro, PT
Phillips, A. J.	Post-doctoral Research Associate; University of Connecticut, EEB
Polihronakis, M.	University California, SanDiego; Drosophila Species Stock Center,
Presley, S.	Post-doctoral Research Associate; University of Connecticut, EEB
Price, B. W.	Post-doctoral Research Associate; University of Connecticut, EEB
Reyda, F. B.	Assistant Professor, University of Wisconsin-Whitewater, College at Oneonta
Richardson, J.	Post-doctoral Research Associate; University of Connecticut, EEB
Shannon, R.	Assistant Professor, West Virginia Wesleyan College
Smith, C.	Assistant professor, Wofford College (South Carolina)
Sudo, Y.	Okinawa Prefectural Fisheries Experiment Station, Okinawa Prefectural Government;
Tippery, N. P.	University of Wisconsin-Whitewater
Vivar, J. C.	Research Associate in the Department of Statistical Science at Duke
Waeschenbach, A.	Post-doctoral Research Associate; University of Connecticut, EEB & BMNH, London
Wickett, N. J.	Chicago Botanical garden, Northwestern University
Zarnetske, P.	Post-doctoral Research Associate; University of Connecticut, EEB

Appendix B1: All publications and software by EEB faculty 2005-2012.

Appendix B1a: Self-authored and edited books by EEB faculty (2005-2012)

Self authored books (16; in alphabetical order)

Chazdon, R. L. In press. *Second chance: Tropical forest regeneration in an age of deforestation*. University of Chicago Press.

Floyd, T., C. S. Elphick, G. Chisholm, K. Mack, R. D. Elston, E. M. Ammon, and J. D. Boone. 2007. *Atlas of the Breeding Birds of Nevada*. University of Nevada Press. 608 pp.

Gannon, M. R., M. R. Duran, A. Kurta, and M. R. Willig. 2005. *Bats of Puerto Rico: An Island Focus and Caribbean Perspective*. Texas Tech University Press, Lubbock, Texas.

Goffinet B., R. Rozzi, L. Lewis, W. R. Buck, and F. Massardo. 2012. *Miniature Forest of Cape Horn/Los Bosques en Miniatura del Cabo de Hornos. Ecotourism with a hand lens/Ecutourismo con lupa*. 445 p. University of North Texas Press (Denton, TX) & Ediciones Universidad de Magallanes (Punta Arenas, Chile).

Goffinet B., W. R. Buck, P. Massardo, and R. Rozzi. 2006. *The Miniature Forests of Cape Horn*. Fantastico Sur - Universidad de Magallanes. 255 p. Punta Arenas, Chile.

Last, P. R., W. T. White, J. N. Caira, Dharmadi, Fahmi, K. Jensen, A. P. K. Lim, B. M. Manjaji–Matsumoto, G. J. P. Naylor, J. J. Pogonoski, J. D. Stevens, and G. K. Yearlsey. 2010. *Sharks and Rays of Borneo*. CSIRO Publishing. 298 pp.

Naylor, G. J. P., J. N. Caira, K. Jensen, K. A. M. Rosana, W. T. White, and P. R. Last. 2012. *A DNA sequence based approach to the identification of shark and ray species and its implications for global elasmobranch diversity and parasitology*. Bulletin of the American Museum of Natural History. No. 754. 261 pp.

Ridge, G.E. & C. W. Schaefer. In press. *Atlas of the Heteropteran (Hemiptera) Pterothorax*. Thomas Say Publications of the Entomological Society of America

Rozzi, R., L. Lewis, F. Massardo, Y. Medina, K. Moses, M. Méndez, L. Sancho, P. Vezzani, S. Russell, and B. Goffinet. In Press. *Ecotourisma con el lupa en el Parque Omora*. University of Magallanes Press. Punta Arenas, Chile.

Schweitzer, D. F., M. C. Minno, and D. L. Wagner. 2011. *Rare, Declining, and Poorly Known Butterflies and Moths* (*Lepidoptera*) *of Forests and Woodlands in the Eastern United States.* U.S. Forest Service, Forest Health Technology Enterprise Team, FHTET-2011-01. USDA Forest Service, Morgantown, West Virginia. 517 pp.

Turchin P. and S. A. Nefedov. 2009. *Secular Cycles*. Princeton University Press, Princeton, NJ.

Turchin P. 2005. *War and Peace and War: Life Cycles of Imperial Nations.* Pi Press. Published as a paperback under the title *War and Peace and War: The Rise and Fall of Empires* by Plume (an imprint of Penguin) in February 2007. (A Serbian and Korean translations have been published and a Russian translation will be published in 2013).

Vanderpoorten, A. and B. Goffinet. 2009. *Introduction to Bryophyte Biology.* 303 p. Cambridge University Press. Cambridge, UK.

Wagner, D. L. 2005. *Caterpillars of Eastern North America: A Guide to Identification and Natural History*. Princeton University Press. Princeton, New Jersey. 512 pp.

Wagner, D. L., D. F. Schweitzer, J. B. Sullivan, and R. C. Reardon. 2011. *Owlet Caterpillars of Eastern North America*. Princeton University Press. Princeton, New Jersey. 576 pp.

Wells, K. D. 2007. *The Ecology and Behavior of Amphibians*. University of Chicago Press, Chicago, Illinois.

Edited books (13; in alphabetical order)

Brokaw, N., T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (editors).

2012. *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press, New York, New York.

Chen, M.-H., L. Kuo, and P. O. Lewis (editors). 2013. *Bayesian Phylogenetics: Methods, Algorithms, and Applications*. Chapman &Hall/CRC.

Elphick, C. S., K. C. Parsons, M. Fasola, and L. Mugica (editors). 2010. *Ecology and Conservation of Birds in Rice Fields: A Global Review*. *Waterbirds* 33 (Special Publication 1). 246 pp.

Goffinet, B. and A. J. Shaw (editors). 2009. *Bryophyte Biology* (2nd edition). 565p. Cambridge University Press. Cambridge, UK.

Jockusch, E. L. (editor). 2012. Small RNAs: Their Diversity, Roles and Practical Uses. *Advances in Insect Physiology*, vol. 42.

Levin, S., R. K. Colwell, G. Daily, S. Diaz, P. Kareiva, D. Karl, G. M. Mace, C. Perrings, D. Tilman, and M. G. Turner, Assoc. (editors). In press. *Encyclopedia of Biodiversity, 2nd Edition*. Academic Press, NY. (About 5000 pages.)

O'Donnell, J. E., L. F. Gall, and D. L. Wagner. (editors). 2007. *The Connecticut Butterfly Atlas*. Connecticut Department of Environmental Protection, Hartford, CT. 368 pp.

Raman, A., C. W. Schaefer, and T. M. Withers (editors). 2005. *Biology, Ecology, and Evolution of Gall-inducing Arthropods*. Science Publishers, Inc., xx1+816 pp. (2 volumes).

Scheiner, S. M. and M. R. Willig (editors). 2011. *Theory of Ecology*. University of Chicago Press, Chicago, Illinois.

Schwenk, K. and J. M. Starck (editors). 2005. Integrative organismal biology: papers in honor of Professor Marvalee H. Wake. *Zoology* 108(4):261-356.

Turchin P., L. Grinin, A. Korotayev, and V. C. de Munck (editors). 2006. *History and Mathematics: Historical Dynamics and Development of Complex Societies*. URSS, Moscow.

Turchin P., L. Grinin, S. Y. Malkov, and A. Korotayev (editors). 2007. *History and Mathematics: Conceptual Landscape and Research Directions (in Russian)*. URSS, Moscow.

Edited by graduate student

Villarreal, J.C., W. Frey & D.C. Cargill (Eds.). 2010. Bryology in the Southern Hemisphere. A tribute in honour of Gabriela Hässel de Menéndez. *Nova Hedwigia* 91(3-4): 1–250 pp. (contributed peer-reviewed papers on biogeography, niche modeling, cryo-microscopy, floristics and evolution of Southern Hemisphere bryophytes).

Appendix B1b: Book chapters by EEB faculty (2005-2012)

Book Chapters (111; in alphabetical order)

In press/accepted (13)

Anderson, G. J. and G. Bernardello. Chapter 13. Reproductive Biology. In: T. Stuessy and D. Crawford (Eds.) *Evolution of the Vascular Flora of the Robinson Crusoe Islands*.

Bernardello, G. and G. J. Anderson. Chapter 17. Plant Origins and Dispersal. In: T. Stuessy and D. Crawford (Eds.) *Evolution of the Vascular Flora of the Robinson Crusoe Islands*.

Caira, J. N. and T. J. Littlewood. In Press. Diversity of the Platyhelminthes. In: *Encyclopedia of Biodiversity*. Academic Press. (Second Edition).

Goffinet, B. and W. R. Buck. 2013. The evolution of body form in bryophytes. In: B. Ambrose and M. Purruganan (Eds.) *The evolution of plant form*. Wiley–Blackwell. *Annual Plant Reviews* 45: 51–90.

Kim J. K., G. P. Kraemer and C. Yarish. In Press. Integrated Multi-Tropic Aquaculture in the United States, in press. In: T. Chopin, A. Neori, S. Robinson and M. Troell (Eds.) *Integrated Multi-Trophic Aquaculture (IMTA)*. Springer Science, New York.

Les, D. H. and N. Tippery. In Press. In time and with water...the systematics of alismatid monocotyledons. In: P. Wilkin (Ed.) *Early Events in Monocot Evolution*. Cambridge University Press, Cambridge. (In Press 5 May, 2011).

Les, D. H. and R. S. Capers. 2012. *Glossostigma*. Pp. xxx-xxx. In: Flora North America Editorial Committee (Eds.) *Flora of North America North of Mexico*, *Vol. 17: Magnoliophyta: Lamiales, Part 2.* Oxford University Press, New York. (provisionally published on-line, 13 March, 2012:

Lopez G., D. Carey, J. Carlton, R. Cerrato, H. Dam, R. DiGiovanni, C. Elphick, M. Frisk, C. Gobler, L. Hice, P. Howell, A. Jordaan, S. Lin, S. Liu, D. Lonsdale, M. McEnroe, K. McKown, G. McManus, R. Orson, B. Peterson, C. Pickerell, R. Rozsa, A. Siuda, E. Thomas, G. Taylor, S. Shumway, S. Talmage, M. Van Patten, J. Vaudrey, G. Wikfors, C. Yarish, and R. Zajac. In press. Biology and Ecology of Long Island Sound. In: J. S. Latimer, M. Tedesco, R. L. Swanson, C. Yarish, P. Stacey and C. Garza (Eds.) *Long Island Sound: Prospects for the Urban Sea*.

Pereira, R., C. Yarish and A. Critchley. In Press. Seaweed Aquaculture for Human Foods, Land Based. B. A. Costa-Pierce and G. G. Page (Eds.) *Sustainability Science in Aquaculture*. In: B. A. Costa-Pierce (Ed.) *Ocean Farming and Sustainable Aquaculture Science and Technology*. *Encyclopedia of Sustainability Science and Technology.* Springer Science, New York.

Schaefer, C.W. In Press. True bugs and their relatives, Diversity of. In: *Encyclopedia of Biodiversity.* Academic Press. (Second Edition).

Schultz, E. T. and S. D. McCormick. In Press. Evolution and Euryhalinity. In: S. D. McCormick, A. P. Farrell, C. J. Brauner (Eds.) *Euryhaline Fishes*. Fish Physiology 32. Academic Press, San Diego. 52 manuscript pp text, 8 tables, 6 figures.

Willig, M. R. and S. J. Presley. In Press. Latitudinal gradients in biodiversity. Pp. 1-15. In: S. Levin (Ed.) *Encyclopedia of Biodiversity* (Second Edition). Academic Press, San Diego, California.

Willig, M. R., S. J. Presley, C. P. Bloch, and J. Alvarez. In Press. Population, community, and metacommunity dynamics of terrestrial gastropods in the Luquillo Mountains: a gradient perspective. In: G. González, R. B. Waide, and M. R. Willig (Eds.) *Ecological Gradient Analyses in Tropical Ecosystems*. Ecological Bulletins 53.

2012 (13)

Brokaw, N., J. K. Zimmerman, M. R. Willig, G. R. Camilo, A. P. Covich, T. A. Crowl, N. Fetcher, B. L. Haines, D. J. Lodge, A. E. Lugo, R. W. Myster, C. M. Pringle, J. M. Sharpe, F. N. Scatena, T. D. Schowalter, W. L. Silver, J. Thompson, D. J. Vogt, K. A. Vogt, R. B. Waide, L. R. Walker, L. L. Woolbright, J. M. Wunderle, Jr., and X. Zou. 2012. Response to disturbance. Pp. 201-271. In: N. Brokaw, T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (Eds.) *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press, New York, New York.

Caira, J. N., C. J. Healy, and K. Jensen. 2012. Elasmobranchs as hosts of metazoan parasites: A revised look. Pp. 547–578. In: J. Carrier, J. Musack, and E. Heithaus (Eds.) *The Biology of Sharks and their Relatives*. CRC Press. Boca Raton.

Chung, I. K., Y. H. Kung, S. J. Ryu, M. S. Kim, C. Yarish, and J. A. Lee. 2012. Seaweed Community Analysis of a Rocky Shore for the Sustainable Seaweed Integrated Aquaculture System (SSIAS) in Korea. Pp. 21-33. In: D. Sahoo and D.B. Kaushik (Eds.) *Algal Biotechnology and Environment*.

He, P., S. Yin, C. Yarish, H. Zhang and S. Lin. 2012. Intracellular Localization and Gene of Rubisco in *Enteromorpha clathrata* (Ulvales, Chlorophyta). pp. 286-296. In: D. Sahoo and D.B. Kaushik (Eds.) *Algal Biotechnology and Environment*.

Les, D. H. 2012. Ceratophyllaceae. Pp. 156–157. In: B. G. Baldwin, D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti and D. H. Wilken (Eds.) *The Jepson Manual: Vascular Plants of California, 2nd ed.* University of California Press, Berkeley.

Lugo, A. E., F. N. Scatena, R. B. Waide, E. A. Greathouse, C. M. Pringle, M. R. Willig, K. A. Vogt, L. R. Walker, G. Gonzalez, W. H. McDowell, and J. Thompson. 2012. Management implications and applications of long-term ecological research. Pp. 305-360. In: N. Brokaw, T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (Eds.) *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press, New York, New York.

Lugo, A. E., R. B. Waide, M. R. Willig, T. A. Crowl, F. N. Scatena, J. Thompson, W. L. Silver, W. H. McDowell, and N. Brokaw. 2012. Ecological paradigms for the Tropics: Old questions and continuing challenges. Pp. 3-41. In: N. Brokaw, T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (Eds.) *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press, New York, New York.

McDowell, W. H., F. N. Scatena, R. B. Waide, N. Brokaw, G. R. Camilo, A. P. Covich, T. A. Crowl, G. Gonzalez, E. A. Greathouse, P. Klawinski, D. J. Lodge, A. E. Lugo, C. M. Pringle, B. A. Richardson, M. J. Richardson, D. A. Schafer, W. L. Silver, J. Thompson, D. J. Vogt, K. A. Vogt, M. R. Willig, L. L. Woolbright, X. Zou, and J. K. Zimmerman. 2012. Geographic and ecological setting of the Luquillo Mountains. Pp. 72-163. In: N. Brokaw, T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (Eds.) *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press, New York, New York.

Naylor, G. J. P., J. N. Caira, K. Jensen, K. A. M. Rosana, N. Straube and C. Lakner. 2012. Elasmobranch Phylogeny: A mitochondrial estimate based on 595 species. Pp. 31–56. J. Carrier, J. Musack and E. Heithaus (Eds). In: *The Biology of Sharks and their Relatives*. CRC Press. Boca Raton.

Pedersen, A., G. Kraemer, S. Hariskov, and C. Yarish. 2012. *Porphyra* spp. From Long Island Sound; Free Amino Acids, Tot. C, Tot. N and Phycobiliproteins Content and the Response to Short Term Uptake of Nitrate. pp. 129-144. In: D. Sahoo and D.B. Kaushik (Eds.) *Algal Biotechnology and Environment*.

Trumbo, S.T. 2012. Patterns of parental care in invertebrates. Pp. 81-100. In: N. J. Royle, P. T. Smiseth and M. Kölliker (Eds.) *The Evolution of Parental Care*. Oxford University Press, Oxford.

Waide, R. B. and M. R. Willig. 2012. Conceptual overview: Disturbance, gradients, and ecological response. Pp. 42-71. In: N. Brokaw, T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (Eds.) *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press, New York, New York.

Willig, M. R., C. P. Bloch, A. P. Covich, C. A. S. Hall, D. J. Lodge, A. E. Lugo, W. L. Silver, R. B. Waide, L. R. Walker, and J. K. Zimmerman. 2012. Long-term research in the Luquillo Mountains: Synthesis and foundations for the future. Pp. 361-441. In: N. Brokaw, T. A. Crowl, A. E. Lugo, W. H. McDowell, F. N. Scatena, R. B. Waide, and M. R. Willig (Eds.) *A Caribbean Forest Tapestry: The Multidimensional Nature of Disturbance and Response*. Oxford University Press, New York, New York.

2011 (10)

Bush, A. M., R. K. Bambach, and D. H. Erwin. 2011. Ecospace utilization during the Ediacaran Radiation and the Cambrian Eco-explosion. Pp. 111-133. In: M. LaFlamme, J. D. Schiffbauer, and S. Q. Dornbos (Eds.) *Quantifying the evolution of early life: numerical approaches to the study of fossils and ancient ecosystems*. Springer, Dordrecht.

Chazdon, R. L., C. A. Harvey, M. Martínez-Ramos, P. Balvanera, K. E. Stoner, J. E. Schondube, L. D. Avila-Cabadilla, and M. Flores-Hidalgo. 2011. Seasonal dry forest biodiversity and conservation value in agricultural landscapes of Mesoamerica. Pp. 195-219. In: R. Dirzo, H. A. Mooney, G. Ceballos, and H. Young (Eds.) *Ecology and conservation of Neotropical dry forests*. Island Press, Washington, D. C.

Colwell, R. K. 2011. Biogeographical gradient theory. Pp. 309-330. In: S. M. Scheiner and M. R. Willig (Eds.) *The theory of ecology*. University of Chicago Press, Chicago.

Crawford, D. J., G. J. Anderson, and G. Bernardello. 2011. The Reproductive Biology of Island Plants. Pp. 11-36. In: D. Bramwell and J. Caujapé-Castells (Eds.) *The Biology of Island Floras*. Columbia University Press.

Fox, G., S. M. Scheiner, and M. R. Willig. 2011. Theory of ecological gradients. Pp. 283-307. In: S. M. Scheiner and M. R. Willig (Eds.) *Theory of Ecology*. University of Chicago Press, Chicago, Illinois.

Gotelli, N. J. and R. K. Colwell. 2011. Estimating species richness. Pp. 39-54. In: A. E. Magurran and B. J. McGill (Eds.) *Frontiers in measuring biodiversity*. Oxford University Press, New York.

Johnston, R. J., E. T. Schultz, K. Segerson and E. Y. Besedin. 2011. Bioindicator-based stated preference valuation for aquatic habitat and ecosystem service restoration. In: J. Bennett (Ed.) *International Handbook on Non-Marketed Environmental Valuation*. Edward Elgar Publishing, Inc. Cheltenham, U.K.

Schaefer, C. W. 2011. *Reduviidae* (Hemiptera: Heteroptera) as agents of biological control: little progress so far. Pp. 21-22. In: D. Ambrose (Ed.) *Insect Pest Managements.*

Scheiner, S. M. and M. R. Willig. 2011. A general theory of ecology. Pp. 3-18. In: S. M. Scheiner and M. R. Willig (Eds.) *Theory of Ecology*. University of Chicago Press, Chicago, Illinois.

Willig, M. R. and S. M. Scheiner. 2011. The state of theory in ecology. Pp. 333-347. In: S. M. Scheiner and M. R. Willig (Eds.) *Theory of Ecology*. University of Chicago Press, Chicago, Illinois.

2010 (4)

Gantt, E., G. M. Berg, D. Bhattacharya, N. A. Blouin, J. A. Brodie, C. X. Chan, J. Collén, F. X. Cunningham, Jr., J. Gross, A. R. Grossman, S. Karpowicz, Y. Kitade, A. S. Klein, I. A. Levine, S. Lin, S. Lu, M. Lynch, S. C. Minocha, K. Müller, C. D. Neefus, M. C. Oliveira, L. Rymarquis, A. Smith, J. W. Stiller, W. Wu, C. Yarish, Y. Y. Zhuang and S. H. Brawley. 2010. *Porphyra*: complex life histories in a harsh environment. *P. umbilicalis*, an intertidal red alga for genomic analysis, In: J. Seckbach and D. Chapman (eds.) *Red Algae in Genomic Age*. Springer Publishers, 13: 125-148.

Jost, L., A. Chao, and R. L. Chazdon. 2010. Assessing community similarity and beta diversity. Pp. 66-84 In: A. Magurran and B. McGill (Eds.) *Biological diversity: frontiers in measurement and assessment.* Oxford University Press, NY

Pereira, R. and Yarish, C. 2010. The role of *Porphyra* in sustainable culture systems: Physiology and Applications. Pp. 339-354. In: A. Israel and R. Einav (Eds.) *Role of Seaweeds in a Globally Changing Environment*. Springer Publishers.

White, W. T., P. R. Last, G. J. P. Naylor, K. Jensen, and J. N. Caira. 2010. Clarification of *Aetobatus ocellatus* (Kuhl, 1823) as a valid species, and a comparison with *Aetobatus narinari* (Euphrasen, 1790) (Rajiformes: Myliobatidae). Pp. 141–164. In: P. R. Last, W. T. White, and J. J. Pogonoski (Eds.) *Descriptions of New Sharks and Rays from Borneo*. CSIRO Marine and Atmospheric Research Paper 032, 165 pp.

2009 (13)

Adams, E. S. 2009. Social Behavior. Pp. 59-64. In: S. Levin (Ed.) *The Princeton Guide to Ecology*. Princeton University Press, Princeton.

Colwell, R. K. 2009. Biodiversity: concepts, patterns, and measurement. Pp. 257-263. In: S. A. Levin, (Ed.) *The Princeton Guide to Ecology*. Princeton Univ. Press, Princeton, New Jersey.

Crawford, D. J., T. K. Lowrey, G. J. Anderson, G. Bernardello, A. Santos-Guerra, T. F. Stuessy. 2009. Genetic Diversity in the Colonizing Ancestors of Asteraceae Endemic to Oceanic Islands: Baker's Law and Polyploidy. In: V.A. Funk, A. Susanna, T. Stuessy and R. Bayer (Eds.) *Systematics, Evolution, and*

Biogeography of Compositae. IAPT, Vienna.

Gannon, M. R. and M. R. Willig. 2009. Island in the storm: Disturbance ecology of plant-visiting bats in the hurricane-prone island of Puerto Rico. Pp. 281-301. In: T. H. Fleming and P. A. Racey (Eds*.) Island Bats: Evolution, Ecology, and Conservation*. University of Chicago Press, Chicago, Illinois.

Goffinet, B., W. R. Buck, and A.J. Shaw. 2009. Morphology and classification of the Bryophyta. Pp. 55-138. In: B. Goffinet and A. J. Shaw (Eds.) *Bryophyte Biology*, *2nd edition* Cambridge University Press.

Les, D. H., R. R. Haynes and A. Novelo-Retana. 2009. Chapter 10: Plants (Embryophyta) of the Gulf of Mexico. Pp. 261–284. In: D. L. Felder and D. K. Camp (Eds.) *Gulf of Mexico Origin, Waters, and Biota. Volume I, Biodiversity.* Texas A&M University Press, College Station, Texas.

Nagle, R. B. and Wagner, D. L. 2009. Sample species illustrating diversity within the Arctiidae. Pp. 233-250. In: W. E. Conner (Ed.) *Tiger Moths and Woolly Bears: Behavior, Ecology, and Evolution of the Arctiidae*. Oxford University Press.

Renzaglia, K. S., J. C. Villarreal, and R. J. Duff. 2009. New insights into morphology, anatomy and systematics of hornworts. Pp. 139-171. In: B. Goffinet and J. Shaw (Eds.) *Bryophyte Biology II*.

Schaefer, C.W. 2009. Prosorrhyncha (Heteroptera and Coleorrhyncha). pp. 839-855. In: V.H. Resh and R.T. Cardé (Eds.) *Encyclopedia of Insects*.

Turchin, P. 2009. Long-term population cycles in human societies. Pp. 1-17. In: R. S. Ostfeld and W. H. Schlesinger (Eds.) *The Year in Ecology and Conservation Biology, 2009*. Annals of the New York Academy of Science 1162.

Wagner, D. L. 2009. The immature stages: structure, function, behavior, and ecology. Pp. 31-53. In: W. E. Conner (Ed*.) Tiger Moths and Woolly Bears: Behavior, Ecology, and Evolution of the Arctiidae*. Oxford University Press.

Willig, M. R., S. J. Presley, C. P. Bloch, and H. H. Genoways. 2009. Macroecology of Caribbean bats: Effects of area, elevation, latitude, and hurricane-induced disturbance. Pp. 216-264. In: T. H. Fleming and P. A. Racey (Eds*.) Island Bats: Evolution, Ecology, and Conservation*. University of Chicago Press, Chicago, Illinois.

Willig, M. R., S. K. Lyons, and R. D. Stevens. 2009. Spatial methods for the macroecological study of bats. Pp. 216-245. In: T. H. Kunz and S. Parsons (Eds*.) Ecological and Behavioral Methods for the Study of Bats*. Johns Hopkins University Press, Baltimore, Maryland.

2008 (13)

Arroyo, J. P., M. Kalacska, R. L. Chazdon, D. Civco, G. Obando, and A. A. Sanchum. 2008. Assessing recovery following selective logging of lowland tropical forests based on Hyperspectral imagery. Pp 193-212 In: M. Kalacska and G. A. Sanchez-Azofeifa (Eds) *Hyperspectral remote sensing of tropical and sub-tropical forests*. Taylor and Francis Group - CRC Press, Boca Raton, FL.

Bush, A. M., and G. M. Daley. 2008. Comparative paleoecology of fossils and fossil assemblages. Pp. 289-317. In: P. H. Kelley and R. K. Bambach (Eds.) *From evolution to geobiology: research questions driving paleontology at the start of a new century*. Paleontological Society Paper 14:289-317.

Chazdon, R. L. 2008. Chance and determinism in tropical forest succession. Pp. 384-408. In: W. Carson and S. Schnitzer (Eds.) *Tropical forest community ecology*. Blackwell Publishing.

Eadie, J. M., C. S. Elphick, K. J. Reinecke, and M. R. Miller. 2008. Wildlife values of North American ricelands. Pp. 7-90. In: S. W. Manley (Ed.) *Conservation in Ricelands of North America*. The Rice Foundation.

Eisthen, H. and K. Schwenk. 2008. The chemical stimulus and its detection. Pp. 35-41. In: J. G. M. Thewissen and S. Nummela (Eds.) *Sensory Evolution on the Threshold. Adaptations in Secondarily Aquatic Vertebrates*. University of California Press, Berkeley.

Les, D. H. 2008. Ceratophyllaceae. Pp. 1908–1909. In: F. O. Zuloaga, O. Morrone, and M. J. Belgrano (Eds.) *Catálogo de las Plantas vasculares del Cono Sur* (*Catalogue of the vascular plants of the*

southern cone). *Monographs in Systematic Botany from the Missouri Botanical Garden 107*. Missouri Botanical Garden Press, St. Louis.

Les, D. H. 2008. Ceratophyllaceae. Pp. 322–323 In: O. Hokche, P. E. Berry and O. Huber (Eds.) *Nuevo Catálogo de la Flora vascular de Venezuela*. Fundación Instituto Botánico de Venezuela Dr. Tobías Lasser. Caracas, Venezuela.

Schlichting, C. D. 2008. Hidden reaction norms, cryptic genetic variation and evolvability. Pp. 187-203. In: C. D. Schlichting and T. A. Mousseau (Eds.) *The Year in Evolutionary Biology 2008*. Annals of the New York Academy of Science 1133.

Schwartz, M. D., C. W. Schaefer, and J. D. Lattin. 2008. The first *Chorosoma* (Hemiptera: Rhopalidae: Rhopalinae: Chorosomatini) from the New World: *Chorosoma josifovi* nov. sp. Adv. In: *Heteropteran Res.*, pp. 339-348.

Schwenk, K. 2008. Comparative anatomy and physiology of chemical senses in non-avian aquatic reptiles. Pp. 65-81. In: J. G. M. Thewissen and S. Nummela (Eds.) *Sensory Evolution on the Threshold. Adaptations in Secondarily Aquatic Vertebrates*. University of California Press, Berkeley.

Schwenk, K. and J. G. M. Thewissen. 2008. Aquatic and semi-aquatic reptiles. Pp. 7-23. In: J. G. M. Thewissen and S. Nummela (Eds.) *Sensory Evolution on the Threshold. Adaptations in Secondarily Aquatic Vertebrates*. University of California Press, Berkeley.

Turchin, P. 2008. Modeling periodic waves of integration in the Afro-Eurasian world-system. Pp. 163-191 In: G. Modelski, T. Devezas, and W. R. Thompson (Eds). *Globalization as Evolutionary Process: Modeling Global Change*. Routledge, NY.

Yarish, C. and Pereira, R. 2008. Mass production of Marine Macroalgae. pp. 2236-2247. In: S. E. Jørgensen and B. D. Fath (Eds.) *Encyclopedia of Ecology, Vol. 3 Ecological Engineering*. Elsevier, Oxford.

2007 (17)

Chase-Dunn, C., T. D. Hall, and P. Turchin. 2007. World-systems in the biogeosphere: urbanization, state formation and climate change since the Iron Age. Pp. 132-148. In: A. Hornborg and C. Crumley (Eds.) *The World System and the Earth System: Global socioenvironmental change and sustainability since the Neolithic*. Left Coast Press, Walnut Creek, California.

Chopin, T., C. Yarish, and G. Sharp. 2007. Beyond the monospecific approach to animal aquaculture – the light of integrated aquaculture. Pp. 447-458. In: T. Bert (Ed.) *Ecological and Genetic Implications of Aquaculture Activities.* Springer, Dordrecht.

Elphick, C. S., A. F. Zuur, and E. N. Ieno. 2007. Investigating the effects of rice farming on aquatic birds with mixed modelling. pp. 417-434. In: A. F. Zuur, E. N. Ieno, and G. M. Smith (Eds.) *Analysing Ecological Data*. Springer.

Elphick, C. S., and J. M. Reed, and D. J. Delehanty. 2007. Applications of reproductive biology to bird conservation and population management. Pp. 367-399. In: B. G. M. Jamieson (Ed.) *Reproductive Biology and Phylogeny of Birds*. Science Publishers.

Goffinet B. 2007. *Aphanorrhegma* Sull. *Physcomitrella* Bruch & Schimper, *Pyramidula* Bridel and *Rhachithecium* Le Jolis. In: Flora of North America Editorial Committee, eds. 1993+. *Flora of North America North of Mexico*. New York and Oxford. 27: 181-182, 194-195, 199 and 468-469, respectively.

Hall, T. D. and P. Turchin. 2007. Lessons from population ecology for world-systems analyses of long-distance synchrony. Pp. 74-90. In: A. Hornborg and C. Crumley (Eds.) The *World System and the Earth System: Global socioenvironmental change and sustainability since the Neolithic*. Left Coast Press, Walnut Creek, California.

Jordan, S., E. Barruet, M. Olaf, B. Parsons, and C. Simon. 2007. Blue *hawaiiense* and beyond: conservation genetics and comparative phylogeography of four Hawaiian *Megalagrion* damselfly

species (Odonata: Coenagrionidae). In: *Biology of Hawaiian Streams and Estuaries*. N.L. Evenuis & J.M. Fitzsimons (Eds.) Bishop Museum Bulletin in Cultural and Environmental Studies 3: 247-260.

Naeem, S., R. Colwell, S. Díaz, J. Hughes, C. Jouseau, S. Lavorel, P. Morin, O. Petchey, and J. Wright. 2007. Predicting the ecosystem consequences of biodiversity loss: the BioMERGE framework. Pp. 113-126. In: J. G. Canadell, D. E. Pataki, and L. Pitelka (Eds.) *Terrestrial Ecosystems in a Changing World.*

Prohens, J., G. J. Anderson , F. J. Herraiz, G. Bernardello, A. Santos-Guerra, D. Crawford and F. Nuez. 2007. AFLP Diversity Among and Within Populations of the Insular, Endemic and Endangered *Solanum vespertilio* and *S. lidii*. Pp. 311-318. Solanaceae VI: Genomics meets Biodiversity. Proceedings of the VIth International Solanaceae Conference (Wisconsin). *Acta Horticulturae* 745.

Redman, C. L., C. L. Crumley, F. A. Hassan, F. Hole, J. Morais, F. Riedel, V. L. Scarborough, J. A. Tainter, P. Turchin, and Y. Yasuda. 2007. Group report: Millennial perspectives on the dynamic interactions of climate, people, and resources. Pp 115-150. In: R. Costanza, L. J. Graumlich, and W. Steffen (Eds.) *Sustainability or Collapse? An Integrated History and Future of People on Earth*. MIT Press, Cambridge.

Reed, J. M., C. S. Elphick, A. F. Zuur, and E. N. Ieno. 2007. Time series analysis of Hawaiian waterbirds. Pp. 615-631. In: A. F. Zuur, E. N. Ieno, and G.M. Smith (Eds.) *Analysing Ecological Data*. Springer.

Turchin, P. V. 2007. General empirical patterns in dynamics, cliodynamics, and demographic-structural theory. Pp. 248-251. In: P. V. Turchin, L. E. Grinin, S. Y. Malkov, and A. V. Korotayev (Eds.) *History and Mathematics: Conceptual Landscape and Research Directions* (in Russian). URSS, Moscow.

Turchin, P. V. 2007. Perspective of mathematical history. Pp. 8-18 In: P. V. Turchin, L. E. Grinin, S. Y. Malkov, and A. V. Korotayev (Eds.) *History and Mathematics: Conceptual Landscape and Research Directions* (in Russian). URSS, Moscow

Wagner, D. L. 2007. Butterfly conservation. Pp. 289-309. In: J. E. O'Donnell, L. F. Gall, and D. L. Wagner (Eds*.) Connecticut Butterfly Atlas*. Connecticut Department of Environmental Protection, Hartford, Connecticut.

Wagner, D. L. and L. F. Gall. 2007. History of Butterfly Study in Connecticut. Pp. 12-22. In: J. E. O'Donnell, L. F. Gall, and D. L. Wagner (Eds*.) Connecticut Butterfly Atlas*. Connecticut Department of Environmental Protection, Hartford, Connecticut.

Wagner, D. L. and L. F. Gall. 2007. Studying butterflies. pp. 310-318. In: J.E. O'Donnell, L. F. Gall, and D. L. Wagner (eds.), *Connecticut Butterfly Atlas*. Connecticut Department of Environmental Protection, Hartford, CT.

Wells, K. D. and J. J. Schwartz. 2007. The behavioral ecology of anuran communication. Pp. 44-86. In: P. M. Narins, A. S. Feng, R. R. Fay, and A. N. Popper (Eds.) *Hearing and Sound Communication in Amphibians. Springer Handbook of Auditory Research*. Springer Verlag, New York.

2006 (16)

Crawford, D. J., E. Landolt, D. H. Les, and R. T. Kimball. 2006. Speciation in duckweeds (Lemnaceae): phylogenetic and ecological inferences. Pp. 231–242. In: J. T. Columbus, E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson (Eds.) *Monocots: comparative biology and evolution*, 2 vols. Rancho Santa Ana Botanic Garden, Claremont, California, USA. [*Aliso* 22: 231–242]

Gelfand, A. E., A. M. Latimer, S. Wu, and J. A. Silander. 2006. Building statistical models to analyze species distributions. In: J. S. Clark, and A.E. Gelfand (Eds.) *Hierarchical Modelling for the Environmental Sciences: Statistical Methods and Applications*. Oxford University Press, Oxford.

Goffinet B. 2006. Splachnaceae. Pp. 173-181. In: P. McCarthy (Ed.) *Flora of Australia Volume 51: Mosses 1*. Australian Biological Resources Study and CSIRO Publishing.

Goffinet B. 2006. Splachnobryaceae. Pp. 159-162. In: P. McCarthy (Ed.) *Flora of Australia Volume 51: Mosses 1*. Australian Biological Resources Study and CSIRO Publishing.

Greenberg, R., C. Elphick, J. C. Nordby, C. Gjerdrum, H. Spautz, G. Shriver, B. Schmeling, B. Olsen, P. Marra, N. Nur, and M. Winter. 2006. Flooding and predation: trade-offs in the nesting ecology of tidal-marsh sparrows. In: *Vertebrates of Tidal Marshes: Ecology, Evolution and Conservation* (R. Greenberg, S. Droege, J. Maldonado, and M. V. McDonald, eds.). *Studies in Avian Biology* 32:96-109.

Henry, C. S. 2006. Acoustic Communication in Neuropterid Insects. Pp. 153-166. In: S. Drosopoulos and M. Claridge (Eds.) *Insect Sounds and Communication: Physiology, Behaviour, Ecology and Evolution.* CRC Press (Taylor and Francis Group), Boca Raton, Florida.

Holsinger, K. E. 2006. Bayesian hierarchical models in geographical genetics. Pp. 25–37. In: J. S. Clark and A. E. Gelfand (Eds.) *Applications of computational statistics in the environmental sciences.* Oxford University Press, New York, New York.

Langan, R., D. Keeley, K. Leyden, G. Matlock, and C. Yarish. 2006. Guiding principles for an ecosystem-based approach to implementation. Ch. 9. Pp. 203-206. In: J. P. McVey, C.-S. Lee, and P. J. O'Bryen (Eds.) *Aquaculture and Ecosystems: An Integrated Coastal and Ocean Management Approach*. The World Aquaculture Society, Baton Rouge, Louisiana.

Langan, R., R.I . E. Newell, J. P. McVey, C. Newell, J. W. Sowles, J. E. Jack Rensel, and C. Yarish. 2006. Country scenarios for ecosystem approaches for aquaculture: The United States. Ch. 6. Pp. 109-140. In: J. P. McVey, C.-S. Lee, and P.J. O'Bryen (Eds.) *Aquaculture and Ecosystems: An Integrated Coastal and Ocean Management Approach*. The World Aquaculture Society, Baton Rouge, Louisiana.

Les, D. H., M. L. Moody and C. Soros. 2006. A reappraisal of phylogenetic relationships in the monocotyledon family Hydrocharitaceae. Pp. 211–230. In: J. T. Columbus, E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson (Eds.) *Monocots: comparative biology and evolution*, 2 vols. Rancho Santa Ana Botanic Garden, Claremont, California. [*Aliso* 22: 211–230]

Rensel, J. E., A. H. Buschmann, T. Chopin, I. K. Chung, J. Grant, C. E. Helsley, D. A. Kiefer, R. Langan, R. I. E. Newell, M. Rawson, J. W. Sowles, J. P. McVey, and C. Yarish. 2006. Ecosystem based management: Models and mariculture. J. Rensal (Ed.) Chapter 10. Pp. 207-220. In: J. P. McVey, C.-S. Lee, and P. J. O'Bryen (Eds.) *Aquaculture and Ecosystems: An Integrated Coastal and Ocean Management Approach.* The World Aquaculture Society, Baton Rouge, Louisiana.

Schultz, E. T., K. M. M. Lwiza, J. Young, K. J. Hartman, R. C. Tipton. 2006. The dynamics of bay anchovy in the Hudson River estuary: process-oriented studies and long-term changes. Pp 197-213. In: J. Waldman, K. Limburg, and D. Strayer (Eds.) *Hudson River fishes and their environment*. American Fisheries Society Symposium 51.

Turchin, P., A. Korotayev, and L. Grinin. 2006. Why do we need models of historical dynamics. Pp. 4-8. In: P. Turchin, L. Grinin, A. Korotayev, and V. C de Munck (Eds.) *History and Mathematics: Historical Dynamics and Development of Complex Societies*. URSS, Moscow.

Turchin, P. 2006. Scientific prediction in historical sociology: Ibn Khaldun meets Al Saud. Pp. 9-38. In: P. Turchin, L. Grinin, A. Korotayev, and V. C. de Munck (Eds.) *History and Mathematics: Historical Dynamics and Development of Complex Societies*. URSS, Moscow.

Vanderpoorten A., B. Goffinet, and D. Quandt. 2006. Utility of the internal transcribed spacers of the 18S-5.8S-26S nuclear ribosomal DNA in land plant systematics with special emphasis on Bryophytes. Pp. 385-407. In: A. K. Sharma and A. Sharma (Eds.) *Plant Genome: Biodiversity & Evolution. Volume 2B: Lower plants*. Science Publishers, Enfield NH.

Waycott, M., G. Procaccini, D. H. Les, and T. B. H. Reusch. 2006. Seagrass evolution, ecology and conservation: a genetic perspective. Pp. 25–50. In: A. W. D. Larkum, R. J. Orth, and C. M. Duarte (Eds.) *Seagrasses: Biology, ecology and conservation*. Springer-Verlag.

2005 (12)

Caira, J. N. and F. Reyda. 2005. Marine eucestodes. Pp. 92–104. In: K. Rohde (Ed.) *Marine Parasitology*. CSIRO Press.

Caira, J. N. and T. Bogea. 2005. Allocreadiidae Looss, 1902. Pp. 413–436. In: R. Bray, A. Jones, and D. Gibson (Eds.) *Keys to the Digenean Parasites of Vertebrates*. CABI International. London.

Chao, A., R. L. Chazdon, R. K. Colwell, and T.-J. Shen. 2005. Un nuevo método estadístico para la evaluación de la simultud en la composición de especies con datos de incidencia y abundancia. Pp. 85-96. In: G. Halffter, J. Soberón, P. Koleff, and A. Melic (Eds.) *Sobre diversidad biológica: el significado de la diversidades alfa, beta, y gamma*. m3m: Monografías Tercer Milenio, Zaragoza, Spain.

Colwell, R. K. 2005. Estimation of species richness at large spatial scales: Potential, procedures, pitfalls. Pp. 1-5. In: A. Bergamini (Ed.) *Landscape scale biodiversity assessment, the problem of scaling*. European Platform for Biodiversity Research Strategy (EPBRS), Budapest, Hungary (online E-conference).

Colwell, R. K., C. X. Mao, and J. Chang. 2005. Interpolando, extrapolando y comparando las curves de acumulación de especies basadas en su incidencia. Pp. 73-84. In: G. Halffter, J. Soberón, P. Koleff, and A. Melic (Eds.) *Sobre diversidad biológica: el significado de la diversidades alfa, beta, y gamma.* m3m: Monografías Tercer Milenio, Zaragoza, Spain.

Haynes, R. R. and D. H. Les. 2005. Alismatales. In: *Nature Encyclopedia of Life Sciences*. Nature Publishing Group, London. (published electronically).

Raman, A., C. W. Schaefer, and T. M. Withers. 2005. Galls and gall-inducing arthropods: an overview of their biology, ecology, and evolution. Pp. 1-33. In: *Biology, Ecology, and Evolution of Gall-inducing Arthropods*. Science Publishers, Inc., (2 volumes)

Schaefer, C. W. 2005. Gall-inducing heteropterans (Hemiptera). Pp. 231-238. In: A. Raman, C.W. Schaefer, & T.M. Withers (Eds*.) Biology, Ecology, and Evolution of Gall-inducing Arthropod.* Science Publishers, Inc.

Schaefer, C. W., A. Raman, and T. M. Withers. 2005. Galls and gall-inducing arthropods: ecological issues and evolutionary problems. Pp. 761-766 *in* ibidem. In: A. Raman, C.W. Schaefer, & T.M. Withers (Eds*.) Biology, Ecology, and Evolution of Gall-inducing Arthropod.* Science Publishers, Inc.

Schultz, E. T. and M. Ludwig. 2005. The Essentials on Estuarine Fish Habitat, its Evaluation and Protection by Federal Fisheries Law. Pp 148-167. In: G. Visgilio and D. M. Whitelaw (Eds.) *Our Changing Coast: Private Rights and Public Trust*. Edward Elgar Publishing, Inc.

Schwenk, K. and M. A. Rubega. 2005. Diversity of vertebrate feeding systems. Pp. 1-41. In: J. M. Starck and T. Wang (Eds.) *Physiological and Ecological Adaptations to Feeding in Vertebrates*. Science Publishing, Enfield, New Hampshire.

Schwenk, K. and P. M. Gignac. 2005. The anatomical basis of cranial kinesis in lizards*. J. Integr. Comp. Biol.* In Schwenk, K., and J. M. Starck (eds.) (2005) Integrative organismal biology: papers in honor of Professor Marvalee H. Wake. *Zoology* 108:261-356.

Appendix B1c: Publications in peer reviewed journals by EEB faculty (2005-2012)

In review (17)

Bainard, J. D., L. L. Forrest, B. Goffinet and S. G. Newmaster. Nuclear DNA content variation and evolution in liverworts. Submitted to *Molecular Phylogenetics and Evolution.*

Budke, J. M., B. Goffinet and C. S. Jones. Dehydration protection provided by a maternal cuticle improves offspring fitness in the moss *Funaria hygrometrica*. Submitted to *Annals of Botany*

Henry, C. S., S. J. Brooks, P. Duelli, J. B. Johnson, M. L. M. Wells, and A. Mochizuki. In review (second round). Obligatory duetting behavior in the Chrysoperla carnea-group of cryptic species (Neuroptera: Chrysopidae): its role in shaping evolutionary history. *Biological Reviews.*

Johnston, R. J., E. T. Schultz, K. Segerson, E. Y. Besedin and M. Ramachandran. In review. Stated preferences for intermediate versus final ecosystem services: disentangling willingness to pay for omitted outcomes. *Agricultural and Resource Economics Review* (special issue on ecosystem services). 25 manuscript pages, 4 tables, 1 figure.

Jones, C. S., H. I. Martinez-Cabrera, K. Mocco, A. Nicotra, S. Cunningham, E. Marais and C. Schlichting. Invited. Historical constraints explain clade differences in leaf trait integration and ecological stragtegies under common climate regime in *Pelargonium*. *American Journal of Botany Special Issue*.

Lafleur, N., T. Steeves, M. Rubega and J. Silander. The Role of Habitat in the Germination, Survival, and Growth of Celastrus orbiculatus (Oriental bittersweet) and Elaeagnus umbellata (autumn olive). *Journal of the Torrey Botanical Society.*

Liu, Y., L. L. Forrest, J. Bainard, J. M Budke, and B. Goffinet. 2012. Organellar genome, nuclear ribosomal DNA repeat unit and microsatellites isolated from a small scale of 454 GS FLX sequencing on two mosses. *Molecular Phylogenetics and Evolution* (Submitted July 3, 2012)

López-Vivas, J. M. Pacheco-Ruiz, I. R. Riosmena-Rodríguez, A. A. Jiménez-González de la Llave, and C. Yarish. Thermal tolerance limits of the conchocelis phase of *Porphyra hollenbergii* Dawson (Bangiales, Rhodophyta): acclimated before global warming? *Journal of Phycology*.

McKeon, S. N., C. D. Schlichting, M. M. Póvoa, and J. E. Conn. Submitted. Ecological suitability and spatial distribution of five *Anopheles* species in Amazonian Brazil. *American Journal of Tropical Medicine and Hygiene*.

Prates, M. O., D. K. Dey, M. R. Willig, and J. Yan. Transformed Gaussian Markov random fields and spatial modeling. *Biometrika*.

Presley, S. J., M. R. Willig, and J. K. Zimmerman. Forest metacommunity structure along a tropical environmental gradient. *PLoS ONE*.

Ryerson, W. G. and K. Schwenk. 2012. Why snakes flick their tongues: a fluid dynamics approach. *Integrative and Comparative Biology* 52:

Salk, C. F., R. L. Chazdon, and K. P. Andersson. Detecting landscape-level changes in tree biomass and biodiversity: Methodological constraints and challenges of plot-based approaches. *Ecosystems*.

Sharma, S. P., E. E. Schwager, G. Giribet, E. L. Jockusch, and C. G. Extavour. Distal-less and dachshund pattern both plesiomorphic and derived structures in chelicerates: RNAinterference in the harvestman Phalangium opilio (Opiliones). *Evolution and Development*.

Soto, T., S. Yamamoto, J.R. Cooley, K.R.B. Hill, C. Simon, and J. Yoshimura. Asynchronous parallel life-cycle divergence in periodical cicadas. *Nature Communications.*

Villarreal, J. C., L. L. Forrest, N. J. Wickett, and B. Goffinet. 2012. The plastid genome of the hornwort *Nothoceros aenigmaticus*: Phylogenetic signal in inverted repeat expansion, pseudogenization and intron gain. *American Journal of Botany* (submitted Aug. 5, 2012).

Zhao, M., R. J. Johnston, and E. T. Schultz. In review. What to Value and How? Ecological Indicator Choices in Stated Preference Valuation. *Environmental and Resource Economics*. 23 manuscript pages, 6 tables, 2 figures.

Published (or almost) (658)

In Press or accepted (26)

Benoit, L. K. and D. H. Les. Rapid identification and molecular characterization of phytoene desaturase mutations in fluridone-resistant hydrilla (*Hydrilla verticillata*). *Weed Science* 61.

Bloch, C. P., and M. R. Willig. In Press. Density compensation suggests interspecific competition is weak among terrestrial snails in tabonuco forest of Puerto Rico. *Caribbean Journal of Science*.

Caira, J. N., M. Pickering, A. D. Schulman, and N. Hanessian. Accepted. Two new species of *Echinobothrium* (Cestoda: Diphyllidea) from batoids off South Africa. *Comparative Parasitology*.

Carlson, J. E. and K. E. Holsinger. 2012. Developmental plasticity in *Protea* as an evolutionary response to environmental clines in the Cape Floristic Region. *PLoS One*.

Chan, C. X., N. A. Blouin, Y. Zhuang, S. Zäuner, S. E. Prochnik, E. Lindquist, S. Lin, C. Benning, M. Lohr, C. Yarish, E. Gantt, A. R. Grossman, S. Lu, K. Müller, J. Stiller, S. H. Brawley and D. Bhattacharya. *Porphyra* (Bangiophyceae) transcriptomes provide insights into red algal development and metabolic processes. *Journal of Phycology*.

Cooley, J. R., C. D. Marshall, C. Simon, M. L. Neckerman, and G. Bunker. In press. At the limits: Habitat suitability modeling of Northern 17-year periodical cicada extinctions (Hemiptera: *Magicicada* spp.). *Global Ecology and Biogeography*.

Evans, M. E. K., and K. Holsinger. In Press. Estimating covariation between vital rates: a simulation study of connected vs. separate generalized linear mixed models (GLMMs). *Theoretical Population Biology*.

Flechtner, V. R., N. Pietrasiak, and L. A. Lewis. In Press. Newly revealed diversity of eukaryotic algae from wilderness areas of Joshua Tree National Park (JTNP). *Western North American Naturalist*.

Fučíková, K., V. Flechtner and L. A. Lewis. In Press. Revision of the genus *Bracteacoccus* Tereg (Chlorophyceae, Chlorophyta) based on a phylogenetic approach. *Nova Hedwigia*.

González, G., R. B. Waide, and M. R. Willig. In Press. Ecological Gradient Analyses in Tropical Ecosystems. *Ecological Bulletins* 53.

Kim J. K., G. P. Kraemer and C. Yarish. In Press. Metabolic plasticity of nitrogen assimilation by *Porphyra umbilicalis*. Journal of Ocean University of China (Oceanic and Coastal Sea Research) (accepted Sept. 12, 2012).

Les, D. H., N. P. Tippery and H. Razifard. In Press. Noteworthy collections. California. *Najas minor*; Texas. *Najas minor*. *Madroño* 59.

Letcher, S. G. and R. L. Chazdon. 2012. Life history traits of lianas during tropical forest succession. *Biotropica*: on-line early, DOI: 10.1111/j.1744-7429.2012.00865.x

Lewis, L. A. and F. R. Trainor. In Press. Survival of Protosiphon botryoides (Chlorophyceae, Chlorophyta) from a Connecticut soil dried for 43 years. *Phycologia*.

López Peredo, E., D. H. Les, U. M. King, and L. K. Benoit. 2012. Extreme conservation of the *psaA*/*psaB* intercistronic spacer reveals a translational motif coincident with the evolution of land plants. *Journal of Molecular Evolution* (accepted: 29 August, 2012).

Martinez Cabrera, H. I., C. D. Schlichting, J. A. Silander, Jr., C. S. Jones. In Press. Low levels of climate niche conservatism may explain clade diversity patterns in the South African genus *Pelargonium* l'Her. (Geraniaceae). *American Journal of Botany*.

Medina, R., F. Lara, B. Goffinet, R. Garileti & V. Mazimpaka. In Press. Integrative taxonomy successfully resolves the pseudo-cryptic complex of the disjunct epiphytic moss *Orthotrichum consimile* (Orthotrichaceae). *Taxon*.

Meiman, S. and C. S. Elphick. Accepted. Evaluating habitat association models for Saltmarsh Sparrows. *Condor*.

O'Donnell, J. and C. W. Schaefer. In Press. Annotated checklist of the Pentatomidae (Heteroptera) of Connecticut. *Great Lakes Entomologist* [J.E. McPherson Festschrift]

Pereira, J. J., E. T. Schultz, and P. J. Auster. In Press. Geospatial analysis of habitat use in yellowtail flounder *Limanda ferrugina* on Georges Bank. *Marine Ecology Progress Series*. 25 manuscript pages, 5 tables, 6 figures.

Pichrtová, M., D. Remias, L. A. Lewis, and A. Holzinger. 2012. Changes in phenolic compounds and cellular ultrastructure of Arctic and Antarctic strains of *Zygnema* (Zygnematophyceae, Streptophyta) after exposure to experimentally enhanced UV to PAR ratio. *Microbial Ecology*. DOI 10.1007/s00248-012-0096-9

Presley, S. J., L. M. Cisneros, M. R. Willig, and B. D. Patterson. In Press. Vertebrate metacommunity structure along an extensive elevational gradient in the tropics: a comparison of bats, rats, and birds. *Global Ecology and Biogeography*.

Schaefer, C. W. and J. L. Stehlik. In Press. Caribbean Sea Pyrrhocoroidea (Pyrrhocoridae, Largidae: Hemiptera: Heteroptera). *Oriental Insects*.

Tippery, N. P. and D. H. Les. In Press. Hybridization and systematics of dioecious North American *Nymphoides* (*N. aquatica* and *N. cordata*; Menyanthaceae). *Aquatic Botany*.

Tippery, N. P., K. Fučíková, P. O. Lewis and L. A. Lewis. In Press. Probing the monophyly of the directly opposite flagellar apparatus group in Chlorophyceae using data from five genes. *Journal of Phycology*.

Turchin, P. In Press. Religion and Empire in the Axial Age. *Religion, Brain & Behavior*.

Published

2012 (57)

Angelini, D. R., F. W. Smith, and E. L. Jockusch. 2012. Extent with modification: Leg patterning in the beetle *Tribolium castaneum* and the evolution of serial homologs. *G3: Genes, Genomes, Genetics* 2: 235-248.

Angelini, D. R., F. W. Smith, A. C. Aspiras, M. Kikuchi, and E. L. Jockusch. 2012. Metamorphic patterning of mandibulate mouthparts in the red flour beetle, *Tribolium castaneum*. *Genetics* 190: 639-654.

Bayard, T. S. and C. S. Elphick. 2012. Testing for conspecific attraction in an obligate saltmarsh bird: Can behavior be used to aid marsh restoration? *Wetlands* 32: 521-529.

Browdy, C. L., G. Hulata, Z. Liu, G. L. Allan, C. Sommerville, T. Passos de Andrade, R. Pereira, C. Yarish, M. Shpigel, T. Chopin, S. Robinson, Y. Avnimelech, and A. Lovatelli. 2012. Novel and emerging technologies: can they contribute to improving aquaculture sustainability? Pp. 149–191. In: R. P. Subasinghe, J. R. Arthur, D. M. Bartley, S. S. De Silva, M. Halwart, N. Hishamunda, C. V. Mohan and P. Sorgeloos (Eds.) *Farming the Waters for People and Food. Proceedings of the Global Conference on Aquaculture 2010, Phuket, Thailand*. 22–25 September 2010. FAO, Rome and NACA, Bangkok.

Budke, J., B. Goffinet and C. S. Jones. 2012. The cuticle on the gametophyte calyptra matures before the sporophyte cuticle in the moss *Funaria hygrometrica*. *American Journal of Botany* 99: 14-22.

Bush, A. M. and P. M. Novack-Gottshall. 2012. Modelling the ecological-functional diversification of marine Metazoa on geological time scales. *Biology Letters* 8: 151-155.

Chan, C. X., S. Zauner, G. L. Wheeler, A. R. Grossman, S. Prochnik, N. Blouin, Y. Zhuang, C. Benning, G. M. Berg, C. Yarish, R. Eriksen, A. Klein, S. Lin, I. Levine, S. Brawley and D. Bhattacharya. 2012. Analysis of *Porphyra* membrane transporters demonstrates gene transfer among photosynthetic eukaryotes and numerous sodium-coupled transport systems. *Plant Physiology* 158: 2001-2012.

Christensen A. K., J. Hiroi, E. T. Schultz, and S. D. McCormick. 2012. Branchial ionocyte organization and ion transport protein expression in juvenile alewives acclimated to freshwater or seawater. *Journal of Experimental Biology* 215: 642-652.

Coe, F. G+., D. M. Parikh, C. A. Johnson, and G. J. Anderson. 2012. The good and the bad: Alkaloid screening and brine shrimp bioassays of aqueous extracts of 31 medicinal plants of eastern Nicaragua. *Pharmaceutical Biology* 50: 384-392.

Colwell, R. K., A. Chao, N. J. Gotelli, S.-Y. Lin, C. X. Mao, R. L. Chazdon, and J. T. Longino. 2012. Models and estimators linking individual-based and sample-based rarefaction, extrapolation, and comparison of assemblages. *Journal of Plant Ecology* 5: 3–21.

Dyer, L. A., D. L. Wagner, H. F. Greeney, A. M. Smilanich, T. J. Massad, M. Robinson, M. Fox, R. Hazen, A. Glassmire, N. Pardikes, K. Fredrickson, C. Pearson, G. Gentry, and J. O. Stireman III. 2012. Novel

insights into tritrophic interaction diversity and chemical ecology using 16 years of volunteer supported research. *American Entomologist* 58: 15-19.

Fučíková, K. and L.A. Lewis. 2012. Intersection of *Chlorella*, *Muriella*, and *Bracteacoccus*: Resurrecting the genus *Chromochloris* Kol & Chodat (Chlorophyceae, Chlorophyta). *Fottea* 12: 83–93.

Garcia, C., C. Sergio, J. C. Villarreal and F. Lara. 2012. The genera *Dendroceros* Nees and *Megaceros* Campb. in São Tomé e Príncipe (Africa, Gulf of Guinea) and description of a new species, *Dendroceros paivae*. *Cryptogamie, Bryologie et Lichénologie* 33: 3-21.

Gotelli, N. J., A. Chao, R. K. Colwell, W. H. Hwang, and G. R. Graves. 2012. Specimen-based modeling, stopping rules, and the extinction of the Ivory-billed Woodpecker. *Conservation Biology* 26: 47-56.

Grabowski, Z. J. and R. L. Chazdon. 2012. Beyond carbon: Redefining forests and people in the global ecosystem services market. S.A.P.I.E.N.S. *Surveys and Perspectives Integrating Environment and Society* 5: URL : http://sapiens.revues.org/1246.

Henry, C. S., S. J. Brooks, P. Duelli, J. B. Johnson, M. L. M. Wells, and A. Mochizuki. 2012. Parallel evolution in courtship songs of North American and European green lacewings (Neuroptera: Chrysopidae). *Biological Journal of the Linnaean Society* 105: 776-796.

Ivanov, V. A. and J. N. Caira. 2012. Description of 3 new species of *Echinobothrium* (Cestoda, Diphyllidea) from Indo–Pacific elasmobanchs of the genus *Glaucostegus* (Rajiformes, Rhinobatidae). *Journal of Parasitology* 98: 365–377.

Johnston, R. J., E. T. Schultz, K. Segerson, E. Y. Besedin and M. Ramachandran. 2012. Enhancing the content validity of stated preference valuation: the structure and function of ecological indicators. *Land Economics* 88: 102-120.

Kanno, Y., J. C. Vokoun, K. E. Holsinger, and B. H. Letcher. 2012. Estimating size-specific brook trout abundance in continuously sampled headwater streams using Bayesian mixed models with zero inflation and overdispersion. *Ecology of Freshwater Fish* 21: 404-419.

Kaplan, F., L. A. Lewis, J. Wastian, and A. Holzinger. 2012. Plasmolysis effects and osmotic potential of two *Klebsormidium* strains from alpine habitats. *Protoplasma* 249: 789–804.

Kendrick, G. A., M. Waycott, T. J. B. Carruthers, M. L. Cambridge, R. Hovey, S. L. Krauss, P. S. Lavery, D. H. Les, R. J. Lowe, O. Mascaró I Vidal, J. L. S. Ooi, R. J. Orth, D. O. Rivers, L. Ruiz-Montoya, E. A. Sinclair, J. Statton, J. K. van Dijk and J. J. Verduin. 2012. The central role of dispersal in the maintenance and persistence of seagrass populations. *BioScience* 62: 56–65. [featured cover article].

Koch, K., K. Jensen and J. N. Caira. 2012. Three new genera and six new species of lecanicephalideans (Cestoda) from eagle rays of the genus *Aetomylaeus* (Myliobatiformes: Myliobatidae) from Northern Australia and Borneo. *Journal of Parasitology* 98: 175–198.

Letcher, S. G., R. L. Chazdon, A. C. S. Andrade, F. Bongers, M. van Breugel, B. Finegan, S. G. Laurance, R. C. G. Mesquita, M. Martínez-Ramos, G. B. Williamson. 2012. Phylogenetic community structure during succession: evidence from three Neotropical forest sites. *Perspectives in Plant Ecology, Evolution and Systematics* 14: 79-87.

Letsch, M. R. and L. A. Lewis. 2012. Four gene arrangements within the chloroplast genome of a closely related group of green algae (Trebouxiophyceae, Chlorophyta). *Molecular Phylogenetics and Evolution* 64: 524–532.

Liu, Y., J. M. Budke, and B. Goffinet. 2012. Phylogenetic inference rejects sporophyte based classification of the Funariaceae (Bryophyta): rapid radiation suggests rampant homoplasy in sporophyte evolution. *Molecular Phylogenetics and Evolution* 62: 130–145.

Liu, Y., N. L. Moskwa, and B. Goffinet. 2012. Development of eight mitochondrial markers for Funariaceae (Musci) and the amplification success in other mosses. *American Journal of Botany:* e62–e65.

Magain, N., B. Goffinet, and E. Sérusiaux. 2012. Further photomorphs in the lichen family *Lobariaceae* from Reunion (Mascarene archipelago) with notes on the phylogeny of *Dendriscocaulon* cyanomorphs. *The Bryologist* 115: 243-254.

Marques, F., K. Jensen, and J. N. Caira. 2012. *Ahamulina* n. gen. (Cestoda: Diphyllidea) from the Polkadot catshark, *Scyliorhinus besnardi* (Carcharhiniformes: Scyliorhinidae), in Brazil. *Zootaxa* 3352: 51–59.

Marshall, D. C., K. B. R. Hill, K. A. Marske, C. Chambers, T. R. Buckley, and C. Simon. 2012. Limited, episodic diversification and contrasting phylogeography in a New Zealand cicada radiation. *BMC Evolutionary Biology* 2012 12:177.

Martinez Cabrera, H. I., C. D. Schlichting, J. A. Silander, C. S. Jones. 2012. Low levels of climate niche conservatism may explain clade diversity patterns in the South African genus *Pelargonium* L'Her. (Geraniaceae). *American Journal of Botany* 99: 954-960.

Martinez-Cabrera, H. I., C. D. Schlichting, J. Silander and C. S. Jones. 2012. Climate niche lability may explain high clade diversity in the South African genus *Pelargonium* L'Her. (Geraniaceae). *American Journal of Botany* 99: 954-960.

Martínez-Solano, I., A. Peralta-García, E. L. Jockusch, D. B. Wake, E. Vázquez-Domínguez, and G. Parra-Olea. 2012. Molecular systematics of *Batrachoseps* (Caudata, Plethodontidae) in southern California and Baja California: mitochondrial-nuclear DNA discordance and the evolutionary history of *B. major*. *Molecular Phylogenetics and Evolution* 63: 131-149.

McManus, H. A., P. Haugen, K. Fučíková and L. A. Lewis. 2012. Invasion of protein coding genes by green algal ribosomal group I introns. *Molecular Phylogenetics and Evolution* 62: 109–116.

Meiman, S., D. Civco, K. Holsinger, and C. S. Elphick. 2012. Comparing habitat models using ground-based and remote sensing data: saltmarsh sparrow presence versus nesting. *Wetlands* 32: 725-736.

Norden, N., S. G. Letcher, V. Boukili, N. G. Swenson, and R. L. Chazdon. 2012. Demographic drivers of successional changes in phylogenetic structure across life history stages in tropical plant communities. *Ecology* 93 (Supplement): S70-S82.

Norberg, J., M. C. Urban, M. Vellend, C. A. Klausmeier, & N. Loeuille. 2012. Eco-evolutionary responses of biodiversity to climate change. *Nature Climate Change* 2: 747-751.

Pickering, M. and J. N. Caira. 2012. A new hyperapolytic species, *Trilocularia eberti* sp. n. (Cestoda: Tetraphyllidea), from *Squalus* cf. *mitsukurii* (Squaliformes: Squalidae) off South Africa with comments on its development and fecundity. *Folia Parasitologica* 59: 107–114.

Pleurocarp Phylogeny Research Group (Huttunen, S., N. Bell, V. Buchbender, W. R. Buck, C. Cox, B. Goffinet, L. Hedenäs, B.-C. Ho, M. S.Ignatov, O. Kuznetova, A. Newton, S. Ollson, L. Pokorny, A. J. Shaw, M. Stech, A. Troitsky, A. Vanderpoorten, and D. Quandt). 2012. Disentangling knots of rapid evolution: origin and diversification of the moss order Hypnales. *Journal of Bryology* 34: 187–211.

Prunier, R., K. E. Holsinger, and J. E. Carlson. 2012. The effect of historical legacy on adaptation: do closely related species respond to the environment in the same way? *Journal of Evolutionary Biology* 25: 1636-1649.

Rico Guevara, A. and M. A. Rubega. 2012. Hummingbird feeding mechanics: comments on the capillarity model. *Proceedings of the National Academy of Sciences USA* 109: E867. (doi: 10.1073/pnas.1119750109)

Rodríguez-Salinas, E., H. Riveros-Rosas, Z. Li, K. Fučíková, J. J. Brand, L. A. Lewis, and D. González-Halphen. 2012. Lineage-specific fragmentation and nuclear relocation of the mitochondrial cox2 gene in chlorophycean green algae (Chlorophyta). *Molecular Phylogenetics and Evolution* 64: 166–176.

Ryerson, W. G. and K. Schwenk. 2012. A simple, inexpensive system for digital particle image velocimetry (DPIV) in biomechanics. *Journal of Experimental Zoology* 317A: 127-140.

Schultz, E. T., R. J. Johnston, K. Segerson, E. Y. Besedin. 2012. Integrating Ecology and Economics for Restoration: Using Ecological Indicators in Valuation of Ecosystem Services. *Restoration Ecology* 20: 304-310, 1 supplementary table.

Sierra, D., P. McCullough, N. Olgac, and E. Adams. 2012. Control of antagonistic swarm dynamics via Lyapunov's Method. *Asian Journal of Control* 14: 23-35.

Stefaniak, L., H. Zhang, A. Gittenberger, K. Smith, K. Holsinger, S. Lin, and R. B. Whitlatch. 2012. Determining the native region of the putatively invasive ascidian *Didemnum vexillum* Kott, 2002. *Journal of Experimental Marine Biology and Ecology* 422-423: 64-71.

Stiller, J. W., J. Perry, L. A. Rymarquis, M. Accerbi, P. J. Green, S. Prochnik, E. Lindquist, C. X. Chan, C. Yarish, S. Lin, Y. Zhuang, N. A. Blouin, and S. H. Brawley. 2012. Major developmental regulators and their expression in two closely related species of *Porphyra* (Rhodophyta). *Journal of Phycology* 48: 883-896.

Szabo, N. D., S. R. Colla, D. L. Wagner, L. F. Gall, and J. T. Kerr. 2012. Do pathogen spillover, pesticide use, or habitat loss explain recent North American bumblebee declines? *Conservation Letters* 5: 232-239.

Tippery, N. P., D. H. Les, and C. S. Jones. 2012. Evolution of inflorescence architecture in *Nymphoides* (Menyanthaceae). *Aquatic Botany* 99: 11–19.

Turchin, P. 2012. Dynamics of Political Instability in the United States, 1780–2009. *Journal of Peace Research* 4: 577-591.

Urban, M. C. 2012. A crucial step toward realism: responses to climate change from an evolving metacommunity perspective. *Evolutionary Applications* 5: 154-167.

Urban, M. C., J. J. Tewksbury, and K. S. Sheldon. 2012. On a collision course: competition and dispersal differences create no-analogue communities and cause extinctions during climate change. *Proceedings of the Royal Society B* 279: 2072-2080.

van den Berg, E., R. Chazdon, and B. S. Corrêa. 2012. Tree growth and death in a tropical gallery forest in Brazil: understanding the relationships among size, growth, and survivorship for understory and canopy dominant species. *Plant Ecology* 213: 1081-1092.

van Nieukerken, E. J., D. L. Wagner, M. Baldessari, L. Mazzon, G. Angeli, V. Girolami, C. Duso, and C. Doorenweerd. 2012. *Antispila oinophylla* new species (Lepidoptera, Heliozelidae): a new North American grapevine leafminer invading Italian vineyards: taxonomy, DNA barcodes and life cycle. *ZooKeys* 170: 29-77.

Villarreal A., J. C., L. V. Campos S., J. Uribe-M., and B. Goffinet. 2012. Parallel evolution of endospory within hornworts: *Nothoceros renzagliensis* (Dendrocerotaceae) *sp. nov*. *Systematic Botany* 37: 31–37.

Villarreal J. C., L. L. Forrest, K. D. McFarland, and B. Goffinet. 2012. Chloroplast, mitochondrial and nuclear microsatellites from the Southern Appalachian hornwort, *Nothoceros aenigmaticus*. *American Journal of Botany*: e88–e90.

Wynne M. A. and J. M. Budke. 2012. Examining the ability of calyptrae to produce protonema in *Funaria hygrometrica*. *Evansia* 29: 61-64.

Zarnetske[Δ], P. L., D. K. Skelly, and M. C. Urban. 2012. Biotic multipliers of climate change. *Science* 336: 1516-1518.

2011 (86)

Abreu, M. H., R. Pereira, I. Sousa-Pinto and C. Yarish. 2011. Ecophysiological studies of the non-indigenous species *Gracilaria vermiculophylla* (Rhodophyta) and its abundance patterns in Ria de Aveiro lagoon, Portugal. *European Journal of Phycology* 46: 453-464.

Abreu, M.H., R. Pereira, I. Sousa-Pinto, and C. Yarish. 2011. Nitrogen uptake response of *Gracilaria vermiculophylla* (Ohmi) Papenfuss under combined and single addition of nitrate and ammonium. *Journal of Experimental Marine Biology and Ecology* 407: 190-199.

Akiyama, H. and B. Goffinet. 2011. *Indopottia irienandoana* sp. nov. (Pottiaceae) from Doi Inthanon, Northern Thailand. *Journal of Bryology* 33: 122-129.

Antonarakis, A. S., S. S. Saatchi, R. L. Chazdon, and P. R. Moorcroft. 2011. Using Lidar and Radar measurements to constrain predictions of forest ecosystem structure and function. *Ecological Applications* 21: 1120-1137.

Ayres, D. L., A. Darling, D. J. Zwickl, P. Beerli, M. T. Holder, P. O. Lewis, J. P. Huelsenbeck, F. Ronquist, D. L. Swofford, M. P. Cummings, A. Rambaut and M. A. Suchard. 2011. BEAGLE: an application programming interface and high-performance computing library for statistical phylogenetics. *Systematic Biology* 61: 170–173.

Bartomeus, I, J. S. Ascher, D. L. Wagner, B. N. Danforth, S. R. Colla, S. Kornbluth, and R. Winfree. 2011. Climate-associated phenological advances in bee pollinators and bee-pollinated plants. *Proceedings of the National Academy of Science* DOI: 10.1073/pnas.1115559108.

Bayard, T. S. and C. S. Elphick. 2011. Planning for sea-level rise: Quantifying patterns of Saltmarsh Sparrow (*Ammodramus caudacutus*) nest flooding under current sea-level conditions. *Auk* 128: 393-403.

Bloch, C. P., R. D. Stevens, and M. R. Willig. 2011. Body size and resource competition in New World bats: A test of spatial scaling laws. *Ecography* 34: 1460-1468.

Bogner, J., M. Wilstermann-Hildebrand, and D. Les. 2011. Die Gattung *Vallisneria*. *Aqua-Planta* 1/2011: 4–15.

Bois, S. T., J. A. Silander Jr., and L. J. Mehrhoff. 2011. Invasive Plant Atlas of New England, the Role of Citizens in the Science of Invasive Alien Species Detection. *BioScience* 61: 763-770.

Bolnick, D. I., P. Amarasekare, M. S. Araujo, R. Burger, J. M. Levine, M. Novak, V. H. W. Rudolf, S. J. Schreiber, M. C. Urban, and D. A. Vasseur. 2011. Why intraspecific variation matters in community ecology. *Trends in Ecology & Evolution* 26: 183-192.

Budke, J. M., B. Goffinet, and C. S. Jones. 2011. A hundred year old question: is the moss calyptra covered by a cuticle? A case study in *Funaria hygrometrica* Hedw. *Annals of Botany* 107: 1279-1286.

Bush, A. M. and R. K. Bambach. 2011. Paleoecologic megatrends in marine metazoa. *Annual Review of Earth and Planetary Sciences* 39: 241-269.

Caira, J. N. 2011. Synergy advances parasite taxonomy and systematics: an example from elasmobranch tapeworms. *Parasitology* 138: 1675–1687. (invited)

Caira, J. N., M. Malek, and T. Ruhnke. 2011. A new genus of Phyllobothriidae (Cestoda: Tetraphyllidea) from carcharhiniform sharks from Iran and Australia. *Journal of Helminthology* 85: 40–50.

Carlson, J. E., K. E. Holsinger, and R. Prunier. 2011. Plant responses to climate in the Cape Floristic Region of South Africa: evidence for adaptive differentiation in the Proteaceae. *Evolution* 65: 108-124.

Chakraborty, A., A. E. Gelfand, A. M. Wilson, A. M. Latimer, and J. A. Silander, Jr. 2011. Point Pattern Modeling for Degraded Presence-Only Data over Large Regions. *Journal of the Royal Statistical Society, Section C Applied Statistics* 60: 757-776.

Chau, J. F., A. Bagtzoglou, and M. R. Willig. 2011. The effect of soil texture on richness and diversity of bacterial communities. *Journal of Environmental Forensics* 12: 333-341.

Chazdon, R. L., A. Chao, R. K. Colwell, S.-Y. Lin, N. Norden, S. G. Letcher, D. B. Clark, B. Finegan, and J. P. Arroyo. 2011. A novel statistical method for classifying habitat generalists and specialists. *Ecology* 92: 1332–1343.

Chazdon, R. L., A. Chao, R. K. Colwell, S.-Y. Lin, N. Norden, S. G. Letcher, D. B. Clark, B. Finegan, and J. P. Arroyo. 2011. A novel statistical method for classifying habitat generalists and specialists *Ecology* 92: 1332-1343.

Cooley, J. R., G. Kritsky, M. J. Edwards, J. D. Zyla, D. C. Marshall, K. B. R. Hill, G. Bunker, M. Neckermann, R. Troutman, J. Yoshimura, and C. Simon. 2011. Periodical cicadas (*Magicicada* spp.): A GIS-based map of Broods XIV in 2008 and "XV" in 2009. *American Entomologist* 57: 144-150. (Fall 2011)

Davis, D. R. and D. L. Wagner. 2011. Biology and systematics of the New World *Phyllocnistis* Zeller leafminers of the avocado genus *Persea* (Lepidoptera: Gracillariidae). *ZooKeys* 97: 37-93.

Desjardins, L. and J. N. Caira. 2011. Three new species of *Spiniloculus* (Cestoda: Tetraphyllidea) from *Chiloscyllium punctatum* (Elasmobranchii: Orectolobiformes) off Borneo with clarification of the identity of the type of the genus. *Folia Parasitologica* 58: 55–68.

Ellwood, E.R., J. M. Diez, I. Ibáñez, R. B. Primack, H. Kobori, H. Higuchi, J. A. Silander, Jr. 2011. Disentangling the paradox of insect phenology: are temporal trends reflecting the response to warming? *Oecologia* 168(4): 1161-1171.

Evans, M. E. K., D. J. Hearn, K. E. Theiss, K. Cranston, K. E. Holsinger, and M. J. Donoghue. 2011. Extreme environments select for reproductive assurance: evidence from evening primroses (*Oenothera*). *New Phytologist* 191: 555-563.

Fan, Y., R. Wu, M.-H. Chen, L. Kuo and P. O. Lewis. 2011. Choosing among partition models in Bayesian phylogenetics. *Molecular Biology and Evolution* 28: 523-532.

Forrest, L. L., N. Wickett, C. J. Cox, and B. Goffinet. 2011. Deep sequencing of *Ptilidium* (Ptilidaceae) suggests evolutionary stasis in liverwort plastid genome structure. *Plant Ecology and Evolution* 144: 29–43.

Fu, R., D. K. Dey, and K. E. Holsinger. 2011. A beta mixture model for assessing genetic population structure. *Biometrics* 67: 1073-1082.

Fučíková, K., J. C. Rada and L. A. Lewis. 2011. The tangled taxonomic history of *Dictyococcus*, *Bracteacoccus* and *Pseudomuriella* (Chlorophyceae, Chlorophyta) and their distinction based on a phylogenetic perspective. *Phycologia* 50: 422–429.

Fučíková, K., J. C. Rada, A. Lukešová and L. A. Lewis. 2011. Cryptic Diversity within the Genus Pseudomuriella Hanagata (Chlorophyta, Chlorophyceae, Sphaeropleales) Assessed Using Four Barcode Markers. *Nova Hedwigia* 93: 29–46.

Getty, P. R. and A. M. Bush. 2011. Sand pseudomorphs of dinosaur bones: Implications for (non-) preservation of tetrapod skeletal material in the Hartford Basin, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology* 302: 407–414.

Goffinet, B. and W. R. Buck. 2011. *Physcomitridium readeri* is the correct name for *Physcomitrella readeri*. *The Bryologist* 114: 545–546.

Goffinet, B., J. M. Budke, and L. Newman. 2011. Micromitriaceae, a new family of highly reduced mosses. *Taxon* 60: 1245–1254.

Haska, C. L., C. Yarish, G. P. Kraemer, N. Blaschik, R. Whitlatch, H. Zhang, and S. Lin. 2011. Assessing Bait Worm Packaging as a Potential Vector of Invasive Species into Long Island Sound, U.S.A. *Biological Invasions* 14: 481-493.

Henry, C. S., S. J. Brooks, J. B. Johnson, M. L. M. Wells, and P. Duelli. 2011. Song analysis reveals a permanent population of the Mediterranean green lacewing *Chrysoperla agilis* Henry et al. (Neuroptera: Chrysopidae) living in Central Alaska. *Annals of the Entomological Society of America* 104: 649-657.

Hill, J. M., and C. S. Elphick. 2011. Are grassland passerines especially susceptible to negative transmitter impacts? *Wildlife Society Bulletin* 35: 362-367.

Jensen, K., P. Nikolov, and J. N. Caira. 2011. A new genus and two new species of Anteroporidae (Lecanicephalidea, Cestoda) from the Darkspotted numbfish (*Narcine maculata*, Narcinidae, Torpediniformes) in Malaysian Borneo. *Folia Parasitologica* 58: 95–107.

Jockusch, E. L., I. Martínez-Solano, R. W. Hansen, and D.B. Wake. 2011. Morphological and molecular diversification of slender salamanders (Caudata: Plethodontidae: *Batrachoseps*) in the southern Sierra Nevada of California with descriptions of two new species. *Zootaxa* 3190: 1-30.

Jofre J., B. Goffinet, P. Marino, R. Raguso, F. Massardo, and R. Rozzi. 2011. Evidence of fly-mediated spore dispersal in the moss *Tayloria dubyi* in the Patagonian peatlands of the Reserva de Biosfera Cabo de Hornos, Chile. *Nova Hedwigia* 92: 317–326.

Johnston, R. J., K. Segerson, E. T. Schultz, E. Y. Besedin, and M. Ramachandran. 2011. Indices of biotic integrity in stated preference valuation of aquatic ecosystem services. *Ecological Economics* 70: 1946-1956.

Kawahara, A. Y., I. Ohshima, A. Kawakita, J. C. Regier, C. Mitter, M. P. Cummings, D. R. Davis, D. L. Wagner, J. De Prins, and C. Lopez-Vaamonde. 2011. Increased gene sampling provides stronger support for higher-level groups within gracillariid leaf mining moths and relatives (Lepidoptera: Gracillariidae). *BMC Evolutionary Biology*. 11: 182.

Les, D. H. 2011. Surrey W. L. Jacobs (1946-2009) and aquatic plant research in Australia. *Telopea* 13: 23–35.

Longino, J. T. and R. K. Colwell. 2011. Density compensation, species composition, and richness of ants on a neotropical elevational gradient. *Ecosphere* 2(3): art29. doi:10.1890/ES10-00200.1

López-Vivas, J. M. Pacheco-Ruiz, I. R. Riosmena-Rodríguez and C. Yarish. 2011. Life history of *Porphyra hollenbergii* Dawson (Bangiales, Rhodophyta) from the Gulf of California, México. *Phycologia* 50(5): 520-529.

Marshall, D. C., K. B. R. Hill, C. Simon, and J. Cooley. 2011. Hybridization, Mitochondrial DNA Phylogeography, and the Prediction of Early Stages of Reproductive Isolation: Lessons from New Zealand cicadas of the Genus *Kikihia*. *Systematic Biology* 60(4): 482-502.

Martine, C. T., E. M. Lavoie, N. P. Tippery, F. D. Vogt, and D. H. Les. 2011. DNA analysis identifies *Solanum* from Litchfield National Park as a lineage of *S. dioicum*. *Northern Territory Naturalist* 23: 29–38.

Martinez-Cabrera, H. I., H. J. Schenk, S. R. S. Cevallos-Ferriz and C. S. Jones. 2011. Integration of vessel traits, wood density and height in angiosperm shrubs and trees. *American Journal of Botany* 98: 915-922.

McCain, C. and R. K. Colwell. 2011. Assessing the threat to montane biodiversity from discordant shifts in temperature and precipitation in a changing climate. *Ecology Letters* 14: 1236-1245.

McManus, H. A. and L. A. Lewis. 2011. Molecular phylogenetic relationships in the freshwater family *Hydrodictyaceae* (Sphaeropleales, Chlorophyceae), with an emphasis on Pediastrum duplex. *Journal of Phycology* 47: 152–163.

McManus, H. A., L. A. Lewis, and E. T. Schultz. 2011. Distinguishing multiple lineages of *Pediastrum duplex* Meyen 1829 with morphometrics and a proposal for *Lacunastrum* gen. nov. *Journal of Phycology* 47: 123–130.

Merow, C., A. M. Latimer, and J. A. Silander, Jr. 2011. Can Entropy Maximization Use Functional Traits To Explain Species Abundances? A Comprehensive Evaluation. *Ecology* 92: 1523-1537.

Merow, C., N. Lafleur, J. Silander, A. Wilson, and M. A. Rubega. 2011. Predicting bird-mediated spread of invasive plants across northeastern North America. *American Naturalist* 178: 30-43.

Nicotra, A., A. Leigh, K. Boyce, C. Jones, K. Niklas, D. Royer, and H. Tsukaya. 2011. The evolution and functional significance of leaf shape in the angiosperms. *Functional Plant Biology* 38: 535-552.

Norden, N., R. C. G. Mesquita, T. V. Bentos, R. L. Chazdon, and G. B. Williamson. 2011. Contrasting com-munity compensatory trends in alternative successional pathways in Central America. *Oikos* 120: 143-151.

O'Donnell, J. and C. W. Schaefer 2011. *Lilliputocoris* (Hemiptera: Heteroptera: Rhyparochromidae: Rhyparochrominae) now known from Madagascar. *Heteropterus Revista de Entomología* 11: 311-316 [Jordi Ribes Festschrift]

Presley, S. J., M. R. Willig, C. P. Bloch, I. Castro-Arellano, C. Higgins, and B. T. Klingbeil. 2011. A complex metacommunity structure for gastropods along an elevational gradient. *Biotropica* 43: 480-488.

Rahbek, C. and R. K. Colwell. 2011. News and Views: Species loss revisted. *Nature* 473: 288-289.

Reed, J. M., C. S. Elphick, E. N. Ieno, and A. F. Zuur. 2011. Long-term population trends of endangered Hawaiian waterbirds. *Population Ecology* 53: 473-481.

Richmond, J. Q., E. L. Jockusch, and A. M. Latimer. 2011. Mechanical reproductive isolation facilitates parallel speciation in western North American scincid lizards. *American Naturalist* 178: 320-332.

Rico Guevara, A. and M. A. Rubega. 2011. The hummingbird tongue is a fluid trap, not a capillary tube. *Proceedings of the National Academy of Sciences* 108: 9356-9360

Rodriguez, N., M. Pickering, and J. N. Caira. 2011. *Echinobothrium joshuai* n. sp. (Cestoda: Diphyllidea) from the roughnose skate, *Cruriraja hulleyi*, (Rajiformes: Rajidae) off South Africa. *Comparative Parasitology* 78: 306–311.

Ryerson, W. G. and K. Schwenk. 2011. Kinematics of tongue-flicking in garter snakes (*Thamnophis sirtalis*). *Integrative and Comparative Biology* 51:

Saatchi, S., M. Marlier, R. Chazdon, D. Clark, and A. Russell. 2011. Impact of spatial variability of tropical forest structure on radar estimation of aboveground biomass. *Remote Sensing of Environment* 115: 2836-2849.

Scheiner, S. M., A. Chiarucci, G. A. Fox, M. R. Helmus, D. J. McGlinn, and M. R. Willig. 2011. The underpinnings of the relationship of species richness with space and time. *Ecological Monographs* 81: 195-213.

Sierra, D., P. McCullough, N. Olgac, and E. Adams. 2011. Swarm coordination under conflict and use of enhanced Lyapunov control. *ASME Journal of Dynamic Systems, Measurement, and Control* 133: 021004-1 - 021004-8.

Skogen, K. A., K. E. Holsinger, and Z. G. Cardon. 2011. Nitrogen deposition, competition, and the decline of a regionally threatened legume, *Desmodium cuspidatum*. *Oecologia* 165: 261-269.

Song, S., D. K. Dey, and K. E. Holsinger. 2011. Genetic diversity of microsatellite loci in hierarchically structured populations. *Theoretical Population Biology* 80: 29–37.

Spribille T., B. Goffinet, B. Klug, L. Muggia, W. Obermayer, and H. Mayrhofer¨ . 2011. Molecular support for the recognition of the *Mycoblastus fucatus* group as the new genus *Violella* (Tephromelataceae, Lecanorales). *The Lichenologist* 43: 455–466.

Leicht-Young, S. A., A. M. Latimer, and J. A. Silander, Jr. 2011. Lianas escape self-thinning: experimental evidence of positive density dependence in temperate lianas *Celastrus orbiculatus* and *C. scandens. Perspectives in Plant Ecology, Evolution and Systematics* 13: 163-172.

Sundberg, M. D., P. DeAngelis, K. Havens, K. Holsinger, K. Kennedy, A. T. Kramer, R. Muir, P. Olwell, K. Schierenbeck, L. Stritch, and B. Zorn-Arnold. 2011. Perceptions of strengths and deficiencies: disconnects between graduate students and prospective employers. *BioScience* 61: 133-138.

Tippery, N. P. and D. H. Les. 2011. Evidence for the hybrid origin of *Nymphoides montana* Aston (Menyanthaceae). *Telopea* 13: 285–294.

Tippery, N. P. and D. H. Les. 2011. Phylogenetic relationships and morphological evolution in *Nymphoides* (Menyanthaceae). *Systematic Botany* 36: 1101–1113.

Tippery, N. P., C. T. Philbrick, C. P. Bove and D. H. Les. 2011. Systematics and phylogeny of Neotropical riverweeds (Podostemaceae: Podostemoideae). *Systematic Botany* 36: 105–118.

Tippery, N. P., D. H. Les, and C. R. Williams. 2011. *Nymphoides humboldtiana* (Menyanthaceae) in Uvalde County, Texas - a new record for the U.S.A. *Journal of the Botanical Research Institute of Texas* 5: 889–890.

Turchin P. 2011. Strange Parallels: Patterns in Eurasian Social Evolution. *Journal of World Systems Research* 17: 538-552.

Turchin P. 2011. Toward Cliodynamics – an Analytical, Predictive Science of History. *Cliodynamics* 2: 167-186.

Turchin, P. 2011. Warfare and the Evolution of Social Complexity: a Multilevel Selection Approach. *Structure and Dynamics* 4 Article 2: 1-37.

Urban, M. C. 2011. The evolution of species interactions across natural landscapes. *Ecology Letters* 14: 723-732.

Urban, M. C., S. E. Gilman, J. Tewksbury, and R. D. Holt. 2011. Heating up relations between cold fish : competition modifies responses to climate change. *Journal of Animal Ecology* 80: 505-507.

Wagner, D. L. and T. L. McCabe. 2011. A new *Zanclognatha* from eastern North America and preliminary key to the larvae of the genus (Lepidoptera: Noctuidae: Herminiinae). *ZooKeys* 49: 89-101.

Wickett, N., L. L. Forrest, J. M. Budke, B. Shaw, and B. Goffinet. 2011. Frequent pseudogenization and loss of the plastid-encoded, sulfate transport gene *cys*A throughout the evolution of liverworts. *American Journal of Botany* 98: 1263-1275.

Willig, M. R. 2011. Biodiversity and Productivity. *Science* 333: 1709-1710.

Willig, M. R., S. J. Presley, and C. P. Bloch. 2011. Long-term dynamics of tropical walking sticks in response to multiple large-scale and intense disturbances. *Oecologia* 165: 357-368.

Willig, M. R., S. J. Presley, C. P. Bloch, I. Castro-Arellano, L. M. Cisneros, C. Higgins, and B. T. Klingbeil. 2011. Tropical metacommunities and elevational gradients: Disentangling effects of forest type from other elevational factors. *Oikos* 120: 1497-1508.

Xie, W., P. O. Lewis, Y. Fan, L. Kuo, and M.-H. Chen. 2011. Improving marginal likelihood estimation for Bayesian phylogenetic model selection. *Systematic Biology* 60: 150-160.

Zschoche, M.•ª, J. N. Caira, and C. A. Fyler. 2011. A new species of *Acanthobothrium* van Beneden, 1850 (Tetraphyllidea: Onchobothriidae) from *Pastinachus atrus* (Macleay) (Batoidea: Dasyatidae) in Australian waters, with reassessment of host associations of *Acanthobothrium* parasitizing *Pastinachus* spp. *Systematic Parasitology* 78: 109–116.

2010 (85)

Abreu, M. H., R. Pereira, C. Yarish, A. H. Buschmann and I. Sousa-Pinto 2011. IMTA with *Gracilaria vermiculophylla*: Productivity and Nutrient Removal Performance of the Seaweed in a Land-Based Pilot Scale System. *Aquaculture* 312: 77-87.

Bayard, T. S. and C. S. Elphick. 2010. How area sensitivity in birds is studied. *Conservation Biology* 24: 938-947.

Bayard, T. S., and C. S. Elphick. 2010. Using spatial point pattern assessment to understand the social and environmental mechanisms driving avian habitat selection. *Auk* 127: 485-494.

Buck, W. R. and B. Goffinet. 2010. Preliminary key to the mosses of Isla Navarino, Chile (Prov. Antártica Chilena). *Beihefte zur Nova Hedwigia* 138: 215–229.

Buckley, L. B., M. C. Urban, M. J. Angilletta, L. Crozier, L. J. Rissler, and M. W. Sears. 2010. Contrasting correlative and mechanistic models of species ranges: putting concepts into practice. *Ecology Letters* 13: 1041-1054.

Bush, A. M. and R. I. Brame. 2010. Multiple paleoecological controls on the composition of marine fossil assemblages from the Frasnian (Late Devonian) of Virginia, with a comparison of ordination methods. *Paleobiology* 36: 573–591.

Caira, J. N., R. Kuchta, and L. Desjardins. 2010. A new genus and two new species of Aporhynchidae (Cestoda: Trypanorhyncha) from catsharks (Carcharhiniforms: Scyliorhinidae) off Taiwan. *Journal of Parasitology* 96: 1185–1190.

Capers, R. S. and D. H. Les. 2010. Web site promotes plant data as a novel educational resource. *Connecticut Journal of Science Education* 47: 35–38.

Carlson, J. E., and K. E.Holsinger. 2010. Natural selection on inflorescence color polymorphisms in wild *Protea* populations: the role of pollinators, seed predators, and intertrait correlations. *American Journal of Botany* 97: 934–944.

Castro-Arellano, I., T. E. Lacher, Jr., M. R. Willig, and T. F. L. V. B. Rangel. 2010. Assessment of assemblage-wide temporal niche segregation using null models. *Methods in Ecology and Evolution* 1:

311-318.

Chakraborty, A., A. E. Gelfand, A. M. Wilson, A. M. Latimer and J. A. Silander, Jr. 2010. Modeling large scale species abundance with latent spatial processes. *Annals of Applied Statistics* 4: 1403–1429

Chazdon, R. L., B. Finegan, R. S. Capers, B. Salgado-Negret, F. Casanoves. V. Boukili, and N. Norden. 2010. Composition and dynamics of functional groups of trees during tropical forest succession. *Biotropica* 42: 31-40.

Coe, F. G., D. M. Parikh, and C. A. Johnson. 2010. Alkaloid presence and brine shrimp (*Artemia salina*) bioassay of medicinal species of eastern Nicaragua. *Pharmaceutical Biology* 48: 439-445.

Colwell, R. K. and T. F. Rangel. 2010. A stochastic, evolutionary model for range shifts and richness on tropical elevational gradients under Quaternary glacial cycles. *Philosophical Transactions of the Royal Society B* 365: 3695–3707.

Cox, C. J., B. Goffinet, A. J. Shaw, N. J. Wickett, and S. B. Boles. 2010. Moss diversity: A molecular phylogenetic analysis of genera. *Phytotaxa* 9: 175–195.

Crespo A., F. Kauff, P. K. Divakar, R. del Prado, S. Pérez-Ortega, G. Amo de Paz, Z. Ferencova, O. Blanco, B. Roca-Valiente, J. Núñez-Zapata, P. Cubas, A. Argüello, J. A. Elix, T. L. Esslinger, D. L. Hawksworth, A. Millanes, C. Molina, M. Wedin, T. Ahti, A. Aptroot, E. Barreno, F. Bungartz, S. Calvelo, M. Candan, M. Cole, D. Ertz, B. Goffinet, L. Lindblom , R. Lücking, F. Lutzoni, J.-E. Mattsson, M. I. Messuti, J. Miadlikowska, M. Piercey-Normore, V. J. Rico, H. J. M. Sipman, I. Schmitt, T. Spribille, A. Thell, G. Thor, D. K. Upreti & H. T. Lumbsch. 2010. Phylogenetic generic classification of parmelioid lichens (*Parmeliaceae, Ascomycota*) based on molecular, morphological and chemical evidence. *Taxon* 59: 1735–1753.

DeClerck, F. A. J., R. L. Chazdon, K. D. Holl, J. C. Milder, B. Finegan, A. Martinez-Salinas, P. Imbach, L. Canet, and R. Zayra. 2010. Biodiversity conservation in human-modified landscapes of Mesoamerica: Past, present, and future. Special Issue: *Biodiversity Conservation* 143: 2301-2313.

Dubayah, R. O., S. L. Sheldon, D. B. Clark, M. A. Hofton, J. B. Blair, G. C. Hurtt, and R. L. Chazdon. 2010. Estimation of tropical forest height and biomass dynamics using lidar remote sensing at La Selva, Costa Rica. *Journal of Geophysical Research* 115: 1-17.

Elphick, C. S. 2010. Why study birds in rice fields? *Waterbirds* 33 (Special Publication 1): 1-7.

Elphick, C. S., O. Taft, and P. Lourenço. 2010. Management of rice fields for birds during the non-growing season. *Waterbirds* 33 (Special Publication 1): 181-192.

Elphick, C. S., D. L. Roberts, and J. M. Reed. 2010. Estimated dates of recent extinctions for North American and Hawaiian birds. *Biological Conservation* 143: 617-624.

Elphick, C. S., P. Baicich, K. C. Parsons, M. Fasola, and L. Mugica. 2010. The future for research on waterbirds in rice fields. *Waterbirds* 33 (Special Publication 1): 231-245.

Evans, M. E. K., K. E. Holsinger, and E. S. Menges. 2010. Fire, vital rates, and population viability: a hierarchical Bayesian analysis of the endangered Florida scrub mint. *Ecological Monographs* 80: 627-649.

Ferketic, J. S., A. M. Latimer, and J. A. Silander Jr. 2010. Conservation justice in metropolitan Cape Town: A study at the Macassar Dunes Conservation Area. *Biological Conservation* 143: 1168-1174.

Flores-Villela, O., C. A. Ríos-Muñoz, K. Schwenk, G. Zamudio-Varela and G. Magaña-Cota. 2010. An unpublished manuscript of Alfredo Dugès related to the classification of lizards according to tongue morphology, c. 1898-1899. *Archives of Natural History* 37: 246-254.

Fyler, C. A. and J. N. Caira. 2010. Phylogenetic status of four new species of *Acanthobothrium* (Cestoda: Tetraphyllidea) parasitic on the wedgefish *Rhynchobatus laevis* (Elasmobranchii: Rhynchobatidae): implications for interpreting host associations. *Invertebrate Systematics* 24: 419–433.

Gahagan, B. I., K. E. Gherard and E. T. Schultz. 2010. Environmental and endogenous factors influencing emigration in juvenile anadromous alewives. *Transactions of the American Fisheries Society* 139: 1069–1082.

Gavrilets, S., D. Anderson, P. Turchin. 2010. Cycling in the Complexity of Early Societies. *Cliodynamics* 1: 58-80.

Gilman, S. E., M. C. Urban, J. Tewksbury, G. W. Gilchrist, and R. D. Holt. 2010. A framework for community interactions under climate change. *Trends in Ecology & Evolution* 25: 325-331.

Hall, J. D., K. Fučíková, C. Lo, L. A. Lewis and K.G. Karol. 2010. An assessment of proposed DNA barcodes in freshwater green algae. *Cryptogamie, Algologie* 31: 529–555.

Henry, C. S. and M. L. M. Wells. 2010. Acoustic niche partitioning in two cryptic, sibling species of *Chrysoperla* green lacewings that must duet before mating. *Animal Behaviour* 80: 991-1003.

Henry, C. S., S. J. Brooks, J. B. Johnson, T. Venkatesan, and P. Duelli. 2010. The most important lacewing species in Indian agricultural crops, *Chrysoperla sillemi* (Esben-Petersen), is a subspecies of *Chrysoperla zastrowi* (Esben-Petersen) (Neuroptera: Chrysopidae). *Journal of Natural History* 44: 2543-2555.

Herron, P. M., D. J. Gage, and Z. G. Cardon. 2010. Micro-scale water potential gradients visualized in soil around plant root tips using microbiosensors. *Plant, Cell, and Environment* 33: 199-210.

Hill, C. E., C. Gjerdrum, and C. S. Elphick. 2010. Extreme levels of multiple mating characterize the mating system of the Saltmarsh Sparrow *Ammodramus caudacutus*. *Auk* 127: 300-307.

Holder, M. T., P. O. Lewis, and D. L. Swofford. 2010. The AIC will not choose the No Common Mechanism model. *Systematic Biology* 59:477-485.

Holsinger, K. E. 2010. Next generation population genetics and phylogeography. *Molecular Ecology* 19: 2361–2363.

Ibáñez, I., R. B. Primack, A. J. Miller-Rushing, E. Ellwood, H. Higuchi, S. D. Lee, H. Kobori, and J. A. Silander, Jr. 2010. Forecasting phenology under global warming. *Philosophical Transactions of the Royal Society (B): Biological Sciences* 365: 3247-3260

Jacobs, S. W. L. and D. H. Les. 2010. New combinations in *Zostera* (Zosteraceae). *Telopea* 12: 419–423.

Jofre J., F. Massardo, R. Rozzi, B. Goffinet, P. Marino, R. Raguso and N. P. Navarro. 2010. Fenología reproductiva del musgo *Tayloria dubyi* en las turberas de la Reserva de Biosfera Cabo de Hornos: Un caso de Interacción entre musgo, dípteros y aves. *Revista Chilena de Historia Natural* 83: 195–206.

Kim J. K. and C. Yarish. 2010. Development of a Tide-Simulating Apparatus for Macroalgal Blades. *Algae* 25: 37-44.

King, S., C. S. Elphick, D. Guadagnin, O. Taft, and T. Amano. 2010. Effects of landscape features on waterbird use of rice fields. *Waterbirds* 33 (Special Publication 1): 151-159.

Klingbeil, B. T. and M. R. Willig. 2010. Seasonal differences in population-, ensemble- and community-level responses of bats to landscape structure in Amazonia. *Oikos* 119: 1654-1664.

Kuchta, R. and J. N. Caira. 2010. Three new species of *Echinobothrium* (Cestoda: Diphyllidea) from Indo–Pacific stingrays of the genus *Pastinachus* (Rajiformes: Dasyatidae). *Folia Parasitologica* 57: 185–196.

Lambert, S., C. S. Jones and H. J. Schenk. 2010. Distribution of axis-splitting in Mojave Desert shrub species along an elevation gradient. *Journal of Arid Environments* 75: 106-111.

Les, D. H., S. P. Sheldon and N. P. Tippery. 2010. Hybridization in hydrophiles: natural interspecific hybrids in *Najas* L. (Hydrocharitaceae). *Systematic Botany* 35: 736–744.

Lu, S. and C. Yarish. 2011. Photoperiod and temperature interact on conchocelis development of *Porphyra purpurea* (Rhodophyta: Bangiales). *Journal of Applied Phycology* 23: 89-96.

Lubertazzi, D. and E. S. Adams. 2010. Bayesian analysis of split sex ratios: methods and application to the ant *Aphaenogaster rudis*. *Evolutionary Ecology Research* 12: 169-188.

Magain, N., L. F. Forrest, E. Sérusiaux, and B. Goffinet. 2010. Microsatellite primers in the *Peltigera dolichorhiza* complex (lichenized ascomycete, Peltigerales). *American Journal of Botany*: e102–e104.

Malek, M., J. N. Caira, and M. Haseli. 2010. Two new species of *Paraorygmatobothrium* (Cestoda: Tetraphyllidea) from the carcharhinid shark *Carcahrhinus* cf. *dussumieri* in the Persian Gulf. *Systematic Parasitology* 76: 59–68.

Noever, C., J. N. Caira, R. Kuchta, and L. Desjardins. 2010. Two new species of *Aporhynchus* (Cestoda: Trypanorhyncha) from deep water lanternsharks (Squaliformes: Etmopteridae) in the Azores, Portugal. *Journal of Parasitology* 96: 1176–1184.

Noh, S. and C. S. Henry. 2010. Sexually monomorphic mating preferences contribute to premating isolation based on song in European green lacewings. *Evolution* 64: 261-270.

O'Donnell, B.C. and E. L. Jockusch. 2010. The expression of wingless and Engrailed in developing embryos of the mayfly *Ephoron leukon* (Ephemeroptera: Polymitarcyidae). *Development, Genes and Evolution* 220: 11-24.

Olson, P. D., J. N. Caira, K. Jensen, R. M. Overstreet, H. W. Palm, and I. Beveridge. 2010. Evolution of the trypanorhynch tapeworms: parasite phylogeny supports independent lineages of sharks and rays. *International Journal for Parasitology* 40: 223–242.

Pfennig, D. W., M. A. Wund, E. C. Snell-Rood, T. Cruickshank, C. D. Schlichting, and A.P. Moczek. 2010. Phenotypic plasticity's impacts on diversification and speciation. *Trends in Ecology & Evolution* 25(8): 459-467.

Pickersgill, B. and G. J. Anderson 2010. Travels with Charley – sunflowers and beyond: an appreciation of the life and work of Charles B. Heiser, Jr. (1920-2010). *Economic Botany* 64: 281-286.

Prates, M. O., D. K. Dey, M. R. Willig, and J. Yan. 2010. Intervention analysis of hurricane effects on snail abundance in a tropical forest using long-term spatio-temporal data. *Journal of Agricultural, Biological, and Environmental Statistics* 16: 142-156.

Presley, S. J., and M. R. Willig. 2010. Bat metacommunity structure on Caribbean islands and the role of endemics. *Global Ecology and Biogeography* 19: 185-199.

Presley, S. J., C. L. Higgins, and M. R. Willig. 2010. A comprehensive framework for the evaluation of metacommunity structure. *Oikos* 119: 908-917.

Prunier, R. and A. Latimer. 2010. Microsatellite primers in the white proteas (*Protea* section *Exsertae*, Proteaceae), a rapidly radiating lineage. *American Journal of Botany* 97: e1-e3.

Prunier, R., and K. E. Holsinger. 2010. Was it an explosion? Using population genetics to explore the dynamics of a recent radiation within *Protea* (Proteaceae L.). *Molecular Ecology* 19: 3968-3980.

Roberts, D. L., C. S. Elphick, and J.M. Reed. 2010. Identifying anomalous reports of putatively extinct species and why it matters. *Conservation Biology* 24: 189-196.

Rozzi, R., F. Massardo, Y. Medina, K. Moses, P. Caballero, E. Camelio, V. Morales, L. Lewis, B. Goffinet, M. Mendez, L. Cavieres, and S. Russell. 2010. Ecoturismo con lupa: integración de las ciencias ecológicas y la ética ambiental. *Revista Ambiente y Desarrollo* 24: 30–37.

Schaefer, C. W. and R. S. Zack. 2010. Taxonomic notes on the Alydidae from Guam (Hemiptera: Heteroptera). *Annals of the Entomological Society of America* 103: 706-710.

Schwenk, K. 2010. Implementing the organismal agenda. *BioScience* 60: 673–674 (invited).

Schwenk, K. and G. P. Wagner. 2010. EDITORIAL: Visualizing vertebrates: new methods in functional morphology. *Journal of Experimental Zoology* 313A: 241-243.

Sérusiaux, E., J. C. Villarreal, T. Wheeler, and B. Goffinet. 2010. Recent origin, active speciation and dispersal for the lichen genus *Nephroma* (Peltigerales) in Macaronesia. *Journal of Biogeography* 38: 1138–1151.

Skogen, K. A., L. Senack, and K. E. Holsinger. 2010. Dormancy, small seed size, and low germination rates contribute to low recruitment in *Desmodium cuspidatum* (Fabaceae). *Bulletin of the Torrey Botanical Club* 137: 355-365.

Smith C. F., G. W. Schuett and K. Schwenk. 2010. Relationship of plasma sex steroids to the mating season of copperheads at the north-eastern extreme of their range. *Journal of Zoology* 280: 362-

370.

Smith C. F., G. W. Schuett, R. L. Earley, and K. Schwenk. 2010. The spatial and reproductive ecology of copperheads, *Agkistrodon contortrix* (Serpentes: Viperidae), at the northeastern extreme of their range. *Herpetological Monographs* 23: 43-73.

Sudo, Y. S.Yamada, C. Yarish and M. Notoya. 2010. The effects of temperature, light, salinity and nutrient concentration on the early stage of erect thalli of *Cladosiphon okamuranus* Tokida in laboratory culture. *Algal Resources* 3: 225-230 (in Japanese).

Theiss, K. E., K. E. Holsinger, and M. E. K. Evans. 2010. Breeding system variation in ten evening primroses (*Oenothera* sections *Anogra* and *Kleinia*, Onagraceae*). American Journal of Botany* 97: 1031–1039.

Turchin, P., I. Peiros, and M. Gell-Mann. 2010. Analyzing Genetic Connections between Languages by Matching Consonant Classes. *Journal of Language Relationship* 3: 117-126.

Urban, M.C. 2010. Microgeographic adaptation of larval salamander morphological defenses in response to a predaceous salamander and beetle. *Oikos* 119: 646-658.

Uriarte, M., N. Swenson, R. Chazdon, L. Comita, W. John Kress, D. Erickson, J. Forero Montaña, J. Zimmerman, and J. Thompson. 2010. Trait similarity, shared ancestry and the structure of neighbourhood interactions in a subtropical wet forest: implications for community assembly. *Ecology Letters* 13: 1503-1514.

Van Driesche, R. G., R. I. Carruthers, T. Center, M. S. Hoddle, J. Hough-Goldstein, L. Morin, L., L. Smith, D. L. Wagner, et al. 2010. Classical biological control for the protection of natural ecosystems: past achievements and current efforts. *Biological Control Supplement* 1: S2-S33.

Vance-Chalcraft, H. D., M. R. Willig, S. B. Cox, A. E. Lugo, and F. N. Scatena. 2010. Relationship between aboveground biomass and multiple measures of biodiversity in subtropical forest of Puerto Rico. *Biotropica* 42: 290-299.

Villarreal J. C., B. Goffinet, R. J. Duff, and D. C. Cargill. 2010. Phylogenetic delineation of *Nothoceros* and *Megaceros* (Anthocerophyta: Dendrocerotaceae). *The Bryologist* 113: 106-113.

Villarreal, J. C., D. C. Cargill, and B. Goffinet. 2010. *Phaeomegaceros squamuligerus* subspecies *hasselii* (Dendrocerotaceae), a new taxon from the Southern Hemisphere. *Beihefte zur Nova Hedwigia* 91: 349–360.

Villarreal, J. C., D. C. Cargill, A. Hagborg, L. Söderström, and K. S. Renzaglia. 2010. Hornwort diversity: Patterns, causes and future work. *Phytotaxa* 9: 150-166.

Wagner, D. L. and R. G. Van Driesche. 2010. Threats posed to rare or endangered Insects by invasions of non-Native species. *Annual Review of Entomology* 55: 547-568.

Wagner, D. L. and S. Binns. 2010. Larva and pupa of *Amyna axis* (Guenée, 1852) and affirmation of its placement in Bagisarinae (Lepidoptera: Noctuidae). *ZooKeys* 37: 107-116.

Wilson A. M., J. A. Silander, Jr., A. E. Gelfand, and J. H. Glenn. 2011. Scaling up: linking field data and remote sensing with a hierarchical model (Special Issue paper: Spatial Ecology). *International Journal of Geographical Information Science* 25: 509-521

Wilson, A. M., A. M Latimer, J. A. Silander, Jr., A. E. Gelfand, and H. de Klerk. 2010. A Hierarchical Bayesian model of wildfire in a Mediterranean biodiversity hotspot: implications of weather variability and global circulation. *Ecological Modelling* 221: 106-112.

Yang, Y. and C. Yarish. 2011. *Gracilaria* cultivation can provide bioremediation In Chinese mariculture mussel culture in. *Global Aquaculture Advocate* 14: 50-51.

Zuur, A. F., E. N. Ieno, and C. S. Elphick. 2010. A protocol for data exploration to avoid common statistical problems. *Methods in Ecology and Evolution* 1: 3-14.

2009 (92)

Abreu, M. H., D.A. Varela, L. Henríquez, A. Villarroel, C. Yarish, I. Sousa-Pinto and A. H. Buschmann. 2009. Traditional *vs*. Integrated Multi-Trophic Aquaculture of *Gracilaria chilensis* C. J. Bird, J. McLachlan & E. C. Oliveira: *Productivity and Physiological Performance Aquaculture* 293: 211-220.

Anderson, G. J. and C. Stoel. 2009. Globalizing Graduate Education and Research: Report on NSF/CGS Workshop. *Council of Graduate Schools Communicator* June 42: 1-3.

Angelini, D. R., M. Kikuchi, and E. L. Jockusch. 2009. Genetic patterning in the adult capitate antenna of the beetle, *Tribolium castaneum*. *Developmental Biology* 327: 240-51.

Arroyo-Mora, J. P., M. Kalacska, and R. Chazdon. 2009. Spectral unmixing of forest recovery in selectively logged units in a tropical lowland forest, Costa Rica. 2009. *Anais XIV Simpósio Brasileiro de Sensoriamento Remoto, Natal, Brasil*, 25-30 abril 2009, INPE: 2539-2546.

Bini, L. M., J. A. Diniz-Filho, T. F. L. V. B. Rangel, T. S. B. Akre, R. G. Albaladejo, F. S. Albuquerque, A. Aparicio, M. B. Araújo, A. Baselga, J. Beck, M. I. Bellocq, K. Böhning-Gaese, P. A. V. Borges, I. Castro-Parga, V. K. Chey, S. L. Chown, P. de Marco Jr., D. S. Dobkin, D. Ferrer-Castán, R. Field, J. Filloy, E. Fleishman, J. F. Gómez, J. Hortal, J. B. Iverson, J. T. Kerr, D. W. Kissling, I. J. Kitching, J. L. León-Cortés, J. M. Lobo, D. Montoya, I. Morales-Castilla, J. C. Moreno, T. Oberdorff, M. Á. Olalla-Tárraga, J. G. Pausas, H. Qian, C. Rahbek, M. Á. Rodríguez, and M. Rueda. 2009. Coefficient shifts in geographical ecology: an empirical evaluation of spatial and non-spatial regression. *Ecography* 32: 193-204.

Bloch, C. P. and M. R. Willig. 2009. Effects of competition on size and growth rates of *Caracolus caracolla* (L.) in Puerto Rico. *Journal of Molluscan Studies* 75: 133-138.

Caira, J. N. and K. Jensen. 2009. Erection of a new onchobothriid genus (Cestoda: Tetraphyllidea) and the description of five new species from whaler sharks (Carcharhinidae). *Journal of Parasitology* 95: 924–940.

Carranza, A., O. Defeo, J. C. Castilla, and T. F. L. V. B. Rangel. 2009. Latitudinal gradients in species richness for South American mytilidae and ostreidae: can alternative hypotheses be evaluated by a correlative approach? *Marine Biology* (Berlin) 156: 1917-1928.

Castro-Arellano, I., S. J. Presley, M. R. Willig, J. M. Wunderle, and L. N. Saldanha. 2009. Reduced-impact logging and temporal activity of understorey bats in lowland Amazonia. *Biological Conservation* 142: 2131-2139.

Chalcraft, D. R., B. J. Wilsey, C. Bowles, and M. R. Willig. 2009. The relationship between productivity and multiple aspects of biodiversity in six grassland communities. *Biodiversity and Conservation* 18: 91-104.

Chao, A., R. K. Colwell, C.-W. Lin, and N. Gotelli. 2009. Sufficient sampling for asymptotic minimum species richness estimators. *Ecology* 90: 1125–1133.

Chazdon, R. L., C. A. Peres, D. Dent, D. Sheil, A. E. Lugo, D. Lamb, N. E. Stork and S. Miller. 2009. The potential for species conservation in tropical secondary forests. *Conservation Biology* 23: 1406-1417.

Chazdon, R. L., C. Harvey, O. Komar, D. Griffith, B. Ferguson, M. Martínez-Ramos, H. Morales, R. Nigh, L.Soto-Pinto, M. van Breugel, and S. Philpott. 2009. Beyond reserves: A research agenda for conserving biodiversity in tropical human-modified landscapes. *Biotropica* 41: 142-153.

Chervy, L. 2009. Unified terminology for cestode microtriches: a proposal from the participants of the International Cestode Workshops in 2002–2008. *Folia Parastiologica* 56: 199–230.

Coe, F. G. 2009. Etnobotanica de los Ramas del sureste Nicaragüense y comparaciones con el saber Miskitu. *Wani* 55: 24-45.

Coe, F. G. and A. Bornstein. 2009. A new species of *Piper* (Piperaceae) from Cordillera Nombre de Dios, Honduras. *Systematic Botany* 34: 492-495.

Colwell, R. K. and T. F. Rangel. 2009. Hutchinson's duality: the once and future niche. *Proceedings of the National Academy of Sciences, USA* 106: 19651-19658.

Colwell, R. K., N. J. Gotelli, C. Rahbek, G. L. Entsminger, C. Farrell, and G. R. Graves. 2009. Peaks, plateaus, canyons, and craters: The complex geometry of simple mid-domain effect models. *Evolutionary Ecology Research* 11: 355-370.

Cooley, J. R., G. Kritsky, J. D. Zyla, M. J. Edwards, D. C. Marshall, K. B. R. Hill, R. Krauss, and C. Simon. 2009. The distribution of Periodical Cicada Brood X. *American Entomologist* 55: 106-112.

Davis, J. P. and E. T. Schultz. 2009. Temporal shifts in demography and life history of an anadromous alewife population in Connecticut. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* 1: 90–106.

de Oliveira, G., J. A. F. Diniz-Filho, L. M. Bini, T. F. L. V. B. Rangel. 2009. Conservation biogeography of mammals in the Cerrado biome under the unified theory of macroecology. *Acta Oecologica* 35: 630-638.

Diniz-Filho, J. A. F., L. M. Bini, G. de Oliveira, B. S. Barreto, M. M. F. P. Silva, L. C. Terribile, T. F. L. V. B. Rangel, M. P. Pinto, N. P. R. Sousa, L. C. G. Vieira, A. S. Melo, P. de Marco Jr., C. M. Vieira, D. Blamires, R. P. Bastos, P. Carvalho, L. G. Ferreira, M. P. C. Telles, F. M. Rodrigues, D. M. Silva, N. J. Silva Jr., and T. N. Soares. 2009. Macroecologia, biogeografia e áreas prioritárias para conservação no cerrado. *Oecologia Brasiliensis* 13: 470-497.

Diniz-Filho, J. A. F., L. M. Bini, T. F. L. V. B. Rangel, R. D. Loyola, C. Hof, D. Nogués-Bravo, and M. B. Araújo. 2009. Partitioning and mapping uncertainties in ensembles of forecasts of species turnover under climate change. *Ecography* 32: 897-906.

Diniz-Filho, J. A. F., G. de Oliveira, L. M. Bini, R. D. Loyola, J. C. Nabout, and T. F. L. V. B. Rangel. 2009. Conservation biogeography and climate change in the Brazilian Cerrado. *Natureza & Conservação* 7: 100-112.

Diniz-Filho, J. A. F., G. Oliveira, F. Lobo, L. G. Ferreira, L. M. Bini, and T. F. L. V. B. Rangel. 2009. Agriculture, habitat loss and spatial patterns of human occupation in a biodiversity hotspot. *Scientia Agrícola* 66: 764-771.

Dunn, R. R., N. C. Harris, R. K. Colwell, L. P. Koh, and N. S. Sodhi. 2009. The sixth mass coextinction: are most endangered species parasites and mutualists? *Proceedings of the Royal Society B: Biological Sciences* 276: 3037-3045.

Filoramo, N. I., K. Schwenk, and N. Kley. 2009. Cilia and goblet cells in the mouths of snakes—a derived condition within squamates. *Integrative and Comparative Biology* 49:

Filoramo, N. and K. Schwenk. 2009. The mechanism of chemical delivery to the vomeronasal organs in squamate reptiles: a comparative morphological approach. *Journal of Experimental Zoology* 311A: 20-34.

Fyler, C. A., J. N. Caira, and K. Jensen. 2009. Five new species of *Acanthobothrium* (Cestoda: Tetraphyllidea) from an unusual species of *Himantura* (Rajiformes: Dasyatidae) from northern Australia. *Folia Parasitologica* 56: 107–128.

Gardner, T., J. Barlow, R. L. Chazdon, R. Ewers, C. A. Harvey, and N. S. Sodhi. 2009. Prospects for tropical forest biodiversity in a human-modified world. *Ecology Letters* 12: 561-582.

Goffinet, B., W. R. Buck, and A. J. Shaw. 2009. Addenda to the classification of mosses. I. Andreaeophytina and Andreaeobryophytina stat. nov. *The Bryologist* 112: 856-857.

Gotelli, N. J., M. J. Anderson, H. T. Arita, A. Chao, R. K. Colwell, S. R. Connolly, D. J. Currie, R. R. Dunn, G. R. Graves, J. L. Green, J. A. Grytnes, Y. H. Jiang, W. Jetz, S. K. Lyons, C. M. McCain, A. E. Magurran, C. Rahbek, T. F. L. V. B. Rangel, J. Soberón, C. O. Webb, and M. R. Willig. 2009. Patterns and causes of species richness: A general simulation model for macroecology. *Ecology Letters* 12: 873-886.

Guo, F., D. K. Dey, and K. E. Holsinger. 2009. A Bayesian hierarchical model for analysis of SNP diversity in multilocus, multipopulation models. *Journal of the American Statistical Association* 104: 142–154.3

Healy, C. J., J. N. Caira, K. Jensen, B. L. Webster, and T. J. Littlewood. 2009. Proposal for a new tapeworm order, Rhinebothriidea. *International Journal for Parasitology* 39: 497–511.

Henry, C. S. and Wells, M. L. M. 2009. Sexually dimorphic intrasexual duetting in an otherwise monomorphic green lacewing (Neuroptera, Chrysopidae, *Chrysoperla plorabunda*): Sexual selection or sex recognition? *Journal of Insect Behavior* 22: 289-312.

Henry, C. S., A. Mochizuki, K. Nakahira, N. Haruyama, and M. Nomura. 2009. Courtship songs of *Chrysoperla nipponensis* (Neuroptera: Chrysopidae) delineate two distinct biological species in eastern Asia. *Annals of the Entomological Society of America* 102: 747-758.

Herron, P. M., J. M. Stark, C. Holt, T. Hooker, and Z. G. Cardon. 2009. Microbial growth efficiencies across a soil moisture gradient assessed using 13C-acetic acid vapor and 15N-ammonia gas. *Soil Biology and Biochemistry* 41: 1262-1269.

Hill, K. B. R., C. Simon, D. C. Marshall, and G. K. Chambers. 2009. Surviving Glacial Ages within the Biotic Gap: Phylogeography of the New Zealand cicada *Maoricicada campbelli. Journal of Biogeography* 36: 675-692.

Holsinger, K. E. and B. S. Weir. 2009. Genetics in geographically structured populations: defining, estimating, and interpreting *FST*. *Nature Reviews Genetics* 10: 639–650.

Ibáñez, I., J. A. Silander, A. M. Wilson, N. LaFleur, N. Tanaka, and Ikutaro Tsuyama. 2009. Multi-variate forecasts of potential distributions of invasive plant species. *Ecological Applications* 19: 359–375.

Ibáñez, I., J. A. Silander Jr., J. M. Allen, S. A. Treanor, and A. M. Wilson. 2009. Identifying hotspots for plant invasions and forecasting focal points of further spread. *Journal of Applied Ecology* 46: 1219–1228

Ippi, S., C. B. Anderson, R. Rozzi, and C. S. Elphick. 2009. Annual variation of abundance and composition in forest bird assemblages on Navarino Island, Cape Horn Biosphere Reserve, Chile. *Ornitologia Neotropical* 20: 231-245.

Jones, C. S., F. T. Bakker, C. D. Schlichting, and A. B. Nicotra. 2009. Leaf shape evolution in the South African genus *Pelargonium* L' Hér. (Geraniaceae). *Evolution* 63: 479-497.

Jones, G., D. S. Jacobs, T. H. Kunz, M. R. Willig, and P. A. Racey. 2009. Carpe noctem: The importance of bats as bioindicators. *Endangered Species Research* 8: 93-115.

Kim J. K., G. P. Kraemer and C. Yarish. 2009. A Comparison of Growth and Nitrate Uptake by New England *Porphyra* Species from Different Tidal Elevations in Relation to Desiccation. *Phycological Research* 57: 152-157.

Klingbeil, B. T. and M. R. Willig. 2009. Guild-specific responses of bats to landscape composition and configuration in fragmented Amazonian rainforest. *Journal of Applied Ecology* 46: 203-213.

Kumar, A., J. T. Longino, R. K. Colwell, and S. O'Donnell. 2009. Elevational patterns of diversity and abundance of eusocial paper wasps (Vespidae) in Costa Rica. *Biotropica* 41: 338-346.

LaFleur, N., M. A. Rubega, and J. Parent. 2009. Does frugivory by European starlings (Sturnus vulgaris) facilitate the spread of fleshy-fruited invasive plants? *Journal of the Torrey Botanical Society* 136: 332-341.

Larrain, J., F. Herrera, J. M. Budke, and B. Goffinet. 2009. Phylogenetic affinities and conservation status of the Chilean endemic *Costesia spongiosa* (Gigaspermaceae). *The Bryologist* 112: 278-286.

Latimer, A. M., J. A. Silander, Jr., A. G. Rebelo, and G. F. Midgley. 2009. Experimental biogeography: the role of environmental gradients in high geographic diversity in Cape Proteaceae. *Oecologia* 160: 151–162

Latimer, A. M., S. Banerjee, H. Sang, E. S. Mosher and J. A. Silander, Jr. 2009. Hierarchical models facilitate spatial analysis of large data sets: a case study on invasive plant species in the northeastern United States. *Ecology Letters* 12: 144–154.

Leicht-Young, S. A., H. O'Donnell, A. M. Latimer, and J. A. Silander, Jr. 2009. Effects of an invasive plant species, Celastrus orbiculatus, on soil composition and processes. *American Midland Naturalist* 161: 219-231.

Les, D. H. , N. M. Murray, and N. Tippery. 2009. Taxonomic studies of pondweeds (Potamogetonaceae) with an emphasis on *Potamogeton vaseyi* and *P. gemmiparus*, two imperiled aquatic plants. *Systematic Botany* 34: 643–651.

Letcher, S. G. and R. L. Chazdon. 2009. Lianas and self-supporting plants during tropical forest succession. *Forest Ecology and Manage*ment 257: 2150-2156.

Letcher, S. G. and R. L. Chazdon. 2009. Rapid recovery of woody biomass, species richness, and species composition in a forest chronosequence in northeastern Costa Rica. *Biotropica* 41: 608-617.

Letsch, M.R., G. Muller-Parker, T. Friedl and L.A. Lewis. 2009. *Elliptochloris marina* n. sp. (Trebouxiophyceae, Chlorophyta), green symbiont of *Anthopleura xanthogrammica* and *A. elegantissima* (Anthozoa, Cnidaria). *Journal of Phycology* 45: 1127–1135.

Lubell, J. D., M. H. Brand, J. M. Lehrer, and K. E. Holsinger. 2009. AFLP and parentage analysis of a feral barberry (*Berberis thunbergii* DC.) population to determine the contribution of an ornamental landscape genotype. *HortScience* 44: 392–395.

Marino, P., R. Raguso, and B. Goffinet. 2009. The ecology and evolution of fly-dispersed dung mosses (Splachnaceae): manipulating insect behavior through odour and visual cues. *Symbiosis* 47: 61-76.

Marshall, D. C., K. B. R. Hill, K. Fontaine, T. Buckley, and C. Simon. 2009. Glacial refugia in a maritime temperate climate: Cicada (*Kikihia subalpina* complex) mtDNA phylogeography in New Zealand. *Molecular Ecology* 18: 1995-2009.

Martine, C. T., G. J. Anderson, and D. H. Les. 2009. Gender-bending aubergines: Molecular phylogenetics of cryptically dioecious *Solanum* in Australia. *Australian Systematic Botany* 22: 107–120.

Martinez-Cabrera, H. I., C. S. Jones, S. Espino, and H. J. Schenk. 2009. Wood anatomy and wood density in shrubs: Responses to varying aridity along transcontinental transects. *American Journal of Botany* 96: 1-11.

Melo, F., B. Rodriguez-Herrera, R. L. Chazdon, G. Ceballos, and R. Medellin. 2009. Small tent-roosting bats promote dispersal of large-seeded plants in a Neotropical forest. *Biotropica* 41: 737-743.

Moody, M. L. and D. H. Les. 2009. Systematics of the aquatic angiosperm genus *Myriophyllum* (Haloragaceae). *Systematic Botany* 35: 121–139.

Mosher, E. S., J. A. Silander, Jr., and A. M. Latimer. 2009. The role of land-use history in major invasions by woody plant species in the northeastern North American Landscape. *Biological Invasions* 11: 2317-2328

Norden, N., R. L. Chazdon, A. Chao, Y.-H. Jiang, and B. Vilchez Alvarado. 2009. Resilience of tropical rain forests: Tree community reassembly in secondary forests. *Ecology Letters* 12: 385-394.

Presley, S. J., M. R. Willig, I. Castro-Arellano, and S. C. Weaver. 2009. Effects of habitat conversion on temporal activity patterns of phyllostomid bats in lowland Amazonian rainforest. *Journal of Mammalogy* 90: 210-221.

Presley, S. J., M. R. Willig, L. N. Saldanha, J. M. Wunderle, and I. Castro-Arellano. 2009. Reduced-impact logging has little effect on temporal activity of frugivorous bats (Chiroptera) in lowland Amazonia. *Biotropica* 41: 369-378.

Primack, R. B., I. Ibáñez, H. Higuchi, S. D. Lee, A. J. Miller-Rushing, A. Wilson and J. A. Silander, Jr. 2009. Spatio-temporal mismatches in species responses to climate change. *Biological Conservation* 142: 2569–2577.

Rocha, D. S., J. Jurberg, J. A. da Rosa, C. W. Schaefer, and C. Galvão. 2009. Description of eggs and nymphal instars of *Triatoma baratai* Carcavallo & Jurberg, 2000 based on optical and scanning election microscopy (Hemiptera: Reduviidae: Triatominae). *Zootaxa* 2064: 1-20.

Schaefer, C. W. and R. W. Sites. 2009. *Leptocoris rufomarginatus* (Fabricius) (Hemiptera: Rhopalidae) in Vietnam, with a note on *Leptocoris vicinus* (Dallas) in Guam. *Oriental Insects* 43: 15-16.

Schwenk, K., D. Padilla, G. Bakken, and R. Full. 2009. Grand challenges in organismal biology. *Integrative and Comparative Biology* 49: 7-14. (authorship equally shared) (invited)

Sérusiaux E., B. Goffinet, J. Miadlikowska, and O. Vitikainen. 2009. The lichen-forming fungal genus *Peltigera* in Papua New Guinea: inferences from morphology and DNA sequences. *Fungal Diversity* 38: 185-224.

Sezen, U. U., R. L. Chazdon, and K. E. Holsinger. 2009. Proximity is not a proxy for parentage in an animal-dispersed Neotropical canopy palm. *Proceedings of the Royal Society of London, Series B* 276: 2037–2044.

Simon, C. 2009. Using NZ examples to teach Darwin's "Origin of Species:" Lessons from Molecular Phylogenetic Studies of Cicadas. *New Zealand Science Review* 66: 102-112.

Stork, N. E., J. A. Coddington, R. K. Colwell, R. L. Chazdon, C. W. Dick, C. A. Peres, S. Sloan, and K. Willis. 2009. Vulnerability and resilience of tropical forest species to land-use change: an historical and multi-taxon synthesis. *Conservation Biology* 23: 1438-1447.

Tanaka, Y., J. Yoshimura, C. Simon, J. R. Cooley, and K.-i. Tainaka. 2009. Allee effect in the selection for prime-numbered cycles in periodical cicadas. *Proceeding of the National Academy of Sciences* USA 106: 8975-8979.

Terribile, L. C., J. A. F. Diniz-Filho, M. Á. Rodríguez, T. F. L. V. B. Rangel. 2009. Richness patterns, species distributions and the principle of extreme deconstruction. *Global Ecology and Biogeography* 18: 123-136.

Tippery, N. and D. H. Les. 2009. A new genus and new combinations for *Villarsia* (Menyanthaceae) taxa in Australia. *Novon* 19: 404–411.

Tippery, N. P., D. H. Les, J. C. Regalado, Jr., L. V. Averyanov, V. N. Long and P. H. Raven. 2009. Transfer of *Villarsia cambodiana* to *Nymphoides* (Menyanthaceae). *Systematic Botany* 34: 818–823.

Trumbo, S.T. 2009. Age-related reproductive performance in the parental burying beetle, *Nicrophorus orbicollis*. *Behavioral Ecology* 20: 951-956.

Turchin, P. and S. Gavrilets. 2009. Evolution of Complex Hierarchical Societies. *Social Evolution and History* 8: 167-198.

Turchin, P. and W. Scheidel. 2009. Coin Hoards Speak of Population Declines in Ancient Rome. *Proceedings of the National Academy of Sciences, USA* 106: 17276-17279.

Turchin, P. 2009. A Theory for Formation of Large Empires. *Journal of Global History* 4: 191-207.

Urban, M.C. and L. De Meester. 2009. Community monopolization: local adaptation enhances priority effects in an evolving metacommunity. *Proceedings of the Royal Society B* 276: 4129-4138.

Vilchez Alvarado, B., R. Chazdon, and W. Alvarado. 2009. Reproductive phenology of canopy trees in secondary and mature forests of the Huetar Norte region of Costa Rica and their influence on vegetation regeneration. Kurú: *Revista Forestal* (Costa Rica) 5(15). [on-line only]

Vilchez Alvarado, B., R. L. Chazdon, and V. Milla Quesada. 2009. Dinámica de la regeneración en cuatro bosques secundarios tropicales de la región Huetar Norte, Costa Rica: Su valor para la conservación o uso commercial. *Recursos Naturales y Ambiente* 55: 118-128.

Vogel, R. M., J. R. M. Hosking, C. S. Elphick, D. L. Roberts, and J. M. Reed. 2009. Goodness of fit of probability distributions for sightings as species approach extinction. *Bulletin of Mathematical Biology* 71: 701-719.

Wagner, D. L. 2009. Ode to *Alabama*: The meteoric fall of a once extraordinarily abundant moth. *American Entomologist* 55: 152-155.

Wagner, D. L. and B. Connolly. 2009. Pithing and mining by a Punkie: The unusual feeding strategy of *Nola cilicoides* (Grote, 1873) (Noctuidae: Nolinae). *Journal of the Lepidopterists' Society* 63: 48-51.

Wolf, M., J. Frair, E. Merrill, and P. Turchin. 2009. The attraction of the known: the importance of spatial familiarity in habitat selection in wapiti *Cervus elaphus*. *Ecography* 32: 401-410.

Wood, T. E., D. Lawrence, D. A. Clark, and R. L. Chazdon. 2009. The effect of large-scale litter manipulation on rain forest nutrient cycling and productivity. *Ecology* 90: 109-121.

Yoshimura, J., T. Hayashi, Y. Tanaka, K.-i. Tainaka, and C. Simon. 2009. Selection for prime-number intervals in a numerical model of periodical cicada evolution. *Evolution* 63: 288–294.

2008 (82)

Adams, E. S. and L. Atkinson. 2008. Queen fecundity and reproductive skew in the termite *Nasutitermes corniger*. *Insectes Sociaux* 55:28-36.

Anderson, G. J. and M. Boylan. 2008. A View from the CGS/NSF Dean in Residence Program: Good Opportunities for Graduate Deans in "Bad" Times. *Council of Graduate Schools Communicator*; Dec. 2008, pp. 3, 6-7.

Angelini, D. and E. L. Jockusch. 2008. Relationships among pest flour beetles of the genus *Tribolium* (Tenebrionidae) inferred from multiple molecular markers. *Molecular Phylogenetics and Evolution* 46: 127-141.

Atkinson, L., G. Teschendorf, and E. S. Adams. 2008. Lack of evidence for nepotism by workers tending queens of the polygynous termite *Nasutitermes corniger*. *Behavioral Ecology and Sociobiology* 62: 805-812.

Bond, W., J. A. Silander, Jr., J. Ranaivonasy, and J. Ratsirarson. 2008. The antiquity of Madagascar's grasslands and the rise of C_4 grassy biomes. *Journal of Biogeography* 35: 1743-1748 (with editorial commentary on the article).

Cardon, Z.G., D.W. Gray, and L. A. Lewis. 2008. The green algal underground – evolutionary secrets of desert cells. *BioScience* 58: 114–122.

Carranza, A., R. K. Colwell, and T. F. L. V. B. Rangel. 2008. Distribution of megabenthic gastropods along environmental gradients: the mid-domain effect and beyond. *Marine Ecology Progress Series* 367: 193-202.

Chao, A., L. Jost, S. C. Chiang, Y.-H. Jian, and R. L. Chazdon. 2008 A two-stage probabilistic approach to multiple-community similarity indices. *Biometrics* 64: 1178-1186.

Chazdon, R. L. 2008. Beyond deforestation: Restoring forests and ecosystem services on degraded lands. *Science* 320: 1458-1460.

Coe, F. G. 2008. Estudio Etnobotánico de los Garífunas de Nicaragua Oriental. Parte II: listado de plantas usadas, usos y aplicaciones médicas. *Wani* 53: 52-70.

Coe, F. G. 2008. Estudio Etnobotánico de los Garífunas de Nicaragua Oriental. Parte I. *Wani* 52: 34-60.

Coe, F. G. 2008. Ethnobotany of the Rama of southeastern Nicaragua and Comparisons with Miskitu Plant Lore. *Economic Botany* 62: 40-59.

Coe, F. G. 2008. Ethnomedicine of the Rama of southeastern Nicaragua. *Journal of Ethnobiology* 28: 1-38.

Coe, F. G. 2008. Rama Midwifery in eastern Nicaragua. *Journal of Ethnopharmacology* 117: 136-157.

Colwell, R. K. 2008. RangeModel: Tools for exploring and assessing geometric constraints on species richness (the mid-domain effect) along transects. *Ecography* 31: 4-7.

Colwell, R. K., G. Brehm, C. Cardelús, A. C. Gilman, and J. T. Longino. 2008. Global warming, elevational range shifts, and lowland biotic attrition in the wet tropics. *Science* 322: 258-261.

Dupuy, J. M. and R. L. Chazdon. 2008. Interacting effects of canopy gap, understory vegetation and leaf litter on tree seedling recruitment and composition in tropical secondary forests. *Forest Ecology and Management* 255: 3716-3725.

Elphick, C. S. 2008. How you count counts: the importance of methods research in applied ecology. *Journal of Applied Ecology* 45: 1313-1320. (Invited editorial for Special Profile.)

Elphick, C. S. 2008. Landscape effects on waterbird densities in California rice fields: taxonomic differences, scale-dependence, and conservation implications. *Waterbirds* 31: 62-69.

Evans, M. E. K., K. E. Holsinger, and E. S. Menges. 2008. Modeling the effect of fire on the demography of *Dicerandra frutescens* ssp. *frutescens* (Lamiaceae), an endangered plant endemic to Florida scrub. *Population Ecology* 50: 53–62.

Gage, D. J., P. M. Herron, C. Arango Pinedo, and Z. G. Cardon. 2008. Live reports from the soil grain – the promise and challenge of microbiosensors. *Functional Ecology* 22: 983-989.

Gjerdrum, C., C. S. Elphick, and M. Rubega. 2008. How well can we model numbers and productivity of Saltmarsh Sharp-tailed Sparrows (*Ammodramus caudacutus*) using habitat features? *Auk* 125: 608-617.

Gjerdrum, C., K. Sullivan-Wiley, E. King, M. A. Rubega, and C. S. Elphick. 2008. Egg and chick fates during tidal flooding of Saltmarsh Sharp-tailed Sparrow nests. *Condor* 110: 579-584.

Gjerdrum, C., K. Sullivan-Wiley, E. King, M. A. Rubega, and C. S. Elphick. 2008. Egg and chick fates during tidal flooding of saltmarsh sharp-tailed sparrow nests. *Condor* 110: 579-584

Gjerdrum, C., C. S. Elphick, and M. A. Rubega. 2008. How well can we model saltmarsh sharp-tailed sparrow numbers and productivity of using habitat features? *Auk* 125: 608-617.

Guo, F., D. K. Dey, and K. E. Holsinger. 2008. A hierarchical Bayesian approach for estimating origin of a mixed population. *IMS Collections* 3: 237–250.

Harvey, C. A., O. Komar, R. Chazdon, B. G. Ferguson, B. Finegan, D. M. Griffith, M. Martinez-Ramos, H. Morales, R. Nigh, L. Soto-Pinto, M. van Breugel, and M. Wishnie. 2008. Integrating agricultural landscapes with biodiversity conservation in the Mesoamerican Hotspot. *Conservation Biology* 22: 8-15.

He, P, S. Xu, H. Zhang, S. Wen, Y. Dai, S. Lin, C. Yarish. 2008. Bioremediation efficiency in removal of dissolved nutrients by the red seaweed *Porphyra yezoensis* cultivated in open sea. *Water Research* 42: 1281-1289.

Henriques, L. M. P., J. M. Wunderle, Jr., D. C. Oren, and M. R. Willig. 2008. Efeitos da exploração madeireira de baixo impacto sobre uma comunidade de aves de sub-bosque na Floresta Nacional do Tapajós, Pará, Brasil [Effects of low impact selective logging on an understory bird community in the Tapajós National Forest, Pará, Bazil]. *Acta Amazonica* 38: 267-290.

Holder, M. T., J. Sukumaran, and P. O. Lewis. 2008. A justification for reporting the majority-rule consensus tree in Bayesian phylogenetics. *Systematic Biology* 57: 814–821.

Jensen, K. and J. N. Caira. 2008. A revision of *Uncibilocularis* Southwell, 1925 (Tetraphyllidea; Onchobothriidae) with the description of four new species. *Comparative Parasitology* 75: 157–173.

Kim J. K., G. P. Kraemer and C. Yarish. 2008. Physiological Activity of *Porphyra* in Relation to Zonation. *Journal of Experimental Marine Biology and Ecology* 365: 75-85.

Huang, L., M.-H. Chen, P. R. Neal, and G. J. Anderson. 2008. On Modeling Repeated Binary Responses and Time-Dependent Missing Covariates. *Journal of Agricultural, Biological and Environmental Statistics* 34: 270-293.

Les, D. H., S. W. L. Jacobs, N. Tippery, L. Chen, M. L. Moody, and M. Wilstermann. 2008. Systematics of *Vallisneria* L. (Hydrocharitaceae Juss.). *Systematic Botany* 33: 49–65.

Lubell, J. D., M. H. Brand, J. M. Lehrer, and K. E. Holsinger. 2008. Detecting the influence of ornamental *Berberis thunbergii* var. *atropurpurea* in invasive populations of *Berberis thunbergii* DC. (Berberidaceae) using AFLP. *American Journal of Botany* 95: 700–705.

Marshall, D. C., K. Slon, J. R. Cooley, K. B. R. Hill, and C. Simon. 2008. Steady Plio-Pleistocene diversification and a 2-million-year sympatry threshold in a New Zealand cicada radiation. *Molecular Phylogenetics and Evolution* 48: 1054-1066.

Moody, M. L., D. H. Les and J. M. DiTomaso. 2008. The role of plant systematics in invasive aquatic plant management. *Journal of Aquatic Plant Management* 46: 7–15.

Morales, M. A., J. L. Barone, and C. S. Henry. 2008. Acoustic alarm signalling facilitates predator protection of treehoppers by mutualist ant bodyguards. *Proceedings of the Royal Society B - Biological Sciences* 275: 1935-1941

Neefus, C., A. C. Mathieson, T. L. Bray and C. Yarish. 2008. The occurrence of three introduced Asiatic species of *Porphyra* (Bangiales, Rhodophyta) in the northwestern Atlantic. *Journal of Phycology* 44: 1399–1414.

Nicotra, A. B., M. J. Cosgrove, A. Cowling, C. S. Jones, and C. D. Schlichting. 2008. Leaf shape linked to photosynthetic rates and temperature optima in South African *Pelargonium* species. *Oecologia* 154: 625-635.

O'Donnell, B. C. and E. L. Jockusch. 2008. Phylogenetic relationships of leptophlebiid mayflies as inferred by histone H3 and 28S ribosomal DNA. *Systematic Entomology* 33: 651-667.

Palm, H. W. and J. N. Caira. 2008. Host specificity of adult versus larval cestodes of the elasmobranch tapeworm order Trypanorhyncha. *International Journal for Parasitology* 38: 381–388.

Pedersen A., G. Kraemer and C. Yarish. 2008. Seaweed of the littoral zone at Cove Island in Long Island Sound: annual variation and impact of environmental factors. *Journal of Applied Phycology* 20: 869-882.

Pereira, R., G. P. Kraemer, C. Yarish and I. Sousa-Pinto. 2008. Nitrogen uptake by gametophytes of *Porphyra dioica* (Bangiales, Rhodophyta) under controlled culture conditions. *European Journal of Phycology* 43: 107-118.

Pickering, M. and J. N. Caira. 2008. *Calliobothrium schneiderae* n. sp. (Cestoda: Tetraphyllidea) from the Spotted Estuary Smooth–hound shark, *Mustelus lenticulatus*, from New Zealand. *Comparative Parasitology* 75: 174–181.

Presley, S. J. and M. R. Willig. 2008. Composition and structure of Caribbean bat (Chiroptera) assemblages: Effects of inter-island distance, area, elevation and hurricane-induced disturbance. *Global Ecology and Biogeography* 17: 747-757.

Presley, S. J. and M. R. Willig. 2008. Intraspecific patterns of ectoparasite abundances on Paraguayan bats: Effects of host sex and body size. *Journal of Tropical Ecology* 24: 75-83.

Presley, S. J., M. R. Willig, J. M. Wunderle, and L. N. Saldanha. 2008. Effects of reduced-impact logging and forest physiognomy on bat populations of lowland Amazonian forest. *Journal of Applied Ecology* 45: 14-25.

Rota, J. and D. L. Wagner. 2008. Wormholes, sensory nets and hypertrophied tactile setae: the extraordinary defence strategies of *Brenthia* caterpillars. *Animal Behaviour* 76: 1709-1713.

Rozzi R., J. Armesto, B. Goffinet, W. R. Buck, F. Massardo, J. Silander, Jr., M. Kalin-Arroyo, S. Russell, C. Anderson, L. Cavieres, B. Callicott. 2008. Changing biodiversity conservation lenses: Insights from the Subantarctic non-vascular flora of southern South America. *Frontiers in Ecology and the Environment* 6: 131-137.

Ruhnke, T. R. and J. N. Caira 2008. Two new species of *Anthobothrium* (Tetraphyllidea: Phyllobtohriidae) from carcharhinid sharks, with a redescription of *Anthobothrium laciniatum*. *Systematic Parasitology* 72: 217–227.

Schaefer, C. W. 2008. Pavel Štys: half a century of friendship. *Acta* Entomologica Musei Nationalis *Pragae* 48: 210-2l2.

Schaefer, C. W. and I. Ahmad. 2008. A revision of *Neomegalotomus* (Hemiptera: Alydidae). *Neotropical Entomology* 37: 30-44.

Schaefer, C. W., R. J. Packauskas, and K. Bu. 2008. A new species of *Leptoglossus* (Hemiptera: Coreidae: Coreinae:Anisoscelini) from Brazil. *Proceedings of the Entomological Society of Washington* 110: 61-66. [named for Katie Bu]

Schaefer, C. W. and J. E. O'Donnell. 2008. A new species of the African genus *Nemausus* Stãl 1866 (Hemiptera: Alydidae: Alydinae). *Proceedings of the Entomological Society of Washington* 110: 1059-1067.

Scheiner, S. M. and M. R. Willig. 2008. A general theory of ecology. *Theoretical Ecology* 1: 21-28.

Schenk, H. J., S. Espino, C. Goedhart, M. Nordenstahl, H. Martinez-Cabrera, and C. S. Jones. 2008. Hydraulic integration and shrub growth form linked across continental aridity gradients. *Proceedings of the National Academy of Sciences* 105: 11248-11253.

Schultz, E. T. 2008. A sex difference in seasonal timing of birth in a livebearing fish. *Copeia* 2008: 674-680.

Shaw A. J., I. Holz, C. J. Cox, and B. Goffinet. 2008. Phylogeny, character evolution, and biogeography of the Gondwanic moss family *Hypopterygiaceae* (Bryophyta). *Systematic Botany*: 33: 21-30.

Sherbrooke, W. C. and K. Schwenk. 2008. Horned lizards (*Phrynosoma*) incapacitate dangerous ant prey with mucus. *Journal of Experimental Zoology* 309A: 447-459.

Sikes, D. S., S. M. Vamosi, S. T. Trumbo, M. Ricketts, and C. Venables. 2008. Molecular systematics and biogeography of *Nicrophorus* in part - the *investigator* species group (Coleoptera: Silphidae) using mixture model MCMC. *Molecular Phylogenetics and Evolution* 48: 646-666.

Smith, C. F., K. Schwenk, R. L. Earley and G. W. Schuett. 2008. Sexual size dimorphism of the tongue in a North American pitviper. *Journal of Zoology* 274: 367-374.

Sodhi, N. S., L. P. Koh, K. S.-H. Peh, H. T. W. Tan, R. L. Chazdon, R. T. Corlett, T. Lee, M., R. K. Colwell, B. W. Brook, C. H. Sekercioglu, and C. J. A. Bradshaw. 2008. Correlates of extinction proneness in tropical angiosperms. *Diversity and Distributions* 14:1-10.

Tippery, N. and D. H. Les. 2008. Phylogenetic analysis of the internal transcribed spacer (ITS) region in Menyanthaceae using predicted secondary structure. *Molecular Phylogenetics & Evolution* 49: 526–537.

Tippery, N., D. H. Les, D. J. Padgett, and S. W. L. Jacobs. 2008. Generic circumscription in Menyanthaceae: a phylogenetic approach. *Systematic Botany* 33: 598–612.

Trumbo, S. T. and G. E. Robinson. 2008. Social and nonsocial stimuli and juvenile hormone titer in a male burying beetle, *Nicrophorus orbicollis*. *Journal of Insect Physiology* 54: 630-635.

Turchin, P. 2008. Arise 'cliodynamics'. *Nature* 454: 34-35.

Turchin, P. 2008. Building nations after conflict (a book review). *Nature* 453: 986-987.

Turchin, P. 2008. Theories and models in empirical investigation of historical dynamics (in Russian). *Istoriya i sovremennost* 2008: 10-33.

Twohig, M. E., J. N. Caira, and C. A. Fyler. 2008. Two new cestode species from the Dwarf whipray, *Himantura walga* (Batoidea: Dasyatidae), from Borneo with comments on site and mode of attachment. *Journal of Parasitology* 94: 1118–1127.

Urban, M. C. 2008. Salamander evolution across a cline in gape-limited predation risk. *Oikos* 117: 1037-1049.

Urban, M. C. 2008. The evolution of prey body size reaction norms in diverse communities. *Journal of Animal Ecology* 77: 346-355.

Urban, M. C., B. L. Phillips, D. K. Skelly, and R. Shine. 2008. The toad more traveled: the heterogeneous invasion dynamics of cane toads in Australia. *American Naturalist* 171: E134-E148.

Urban, M. C., et al. 2008. The evolutionary ecology of metacommunities. *Trends in Ecology and Evolution* 23: 311-317.

Vaca-Rodríguez, J. G., J. A. Zertuche-González, R. del Moral Simanek, O. Sosa-Nishizaki, B. A. Costa-Pierce and C. Yarish. 2008. Tuna Ranching in Baja California, Mexico Ranchers Work Together to Promote Industry, Solve Problems. *Global Aquaculture Advocate* (July-August): 54-56.

Vanderpoorten A., N. Devos, B. Goffinet, O. Hardy, and A. J. Shaw. 2008. The barriers to oceanic island radiation in bryophytes: insights from a phylogeography of the moss *Grimmia montana*. *Journal of Biogeography* 33: 654-663.

Wagner, D. L., J. R. Rota, and T. L. McCabe. 2008. Larva of *Ablemma* Nye (Lepidoptera: Noctuidae: Hypenodinae) with notes on lichenivory and algivory in Macrolepidoptera. *Annals of the Entomological Society of America* 101: 40-52.

Wagner, D. L., N. McFarland, J. D. Lafontaine, and B. Connolly. 2008. Early stages of *Miracavira brillians* (Barnes) and reassignment of the genus to the Amphipyrinae: Psaphidini: Feraliiina (Noctuidae). *Journal of the Lepidopterists' Society* 62: 121-132.

Wang, S. C. and A. M. Bush. 2008. Adjusting global extinction rates to account for taxonomic susceptibility. *Paleobiology* 34: 434–455.

Wickett N. and B. Goffinet. 2008. The origin and relationships of the myco-heterotrophic liverwort *Cryptothallus mirabilis* Malmb. (Metzgeriales, Marchantiophyta). *Botanical Journal of the Linnean Society* 156: 1-12.

Wickett N. J., Y. Zhang, S. K. Hansen, J. M. Roper, J. V. Kuehl, S. A. Plock, P. G. Wolf, C. W. dePamphilis, J. L. Boore, and B. Goffinet. 2008. Functional gene losses occur with minimal size reduction in the plastid genome of the parasitic liverwort *Aneura mirabilis*. *Molecular Biology and Evolution* 25: 393-401.

Wickett, N. J., Y. Fan, P. O. Lewis and B. Goffinet. 2008. Distribution and evolution of pseudogenes, gene losses and a gene rearrangement in the non-photosynthetic liverwort, *Aneura mirabilis* (Metzgeriales, Jungermanniopsida). *Journal of Molecular Evolution* 67: 111-122.

2007 (76)

Adams, E. S., L. Atkinson, and M. S. Bulmer. 2007. Relatedness, recognition errors, and colony fusion in the termite *Nasutitermes corniger*. *Behavioral Ecology and Sociobiology* 61: 1195-1201.

Atkinson, L., E. S. Adams, and R. H. Crozier. 2007. Microsatellite markers for the polygamous termite *Nasutitermes corniger* (Isoptera: Termitidae). *Molecular Ecology Notes* 7: 299-301.

Bambach, R. K., A. M. Bush, and D. H. Erwin. 2007. Autecology and the filling of ecospace: key metazoan radiations. *Palaeontology* 50: 1–22.

Bhattacharya, S., A. E. Gelfand, and K. E. Holsinger. 2007. Model fitting and inference under latent equilibrium processes. *Statistics and Computing* 17: 193–208.

Blanca, J. M., J. Prohens, G. J. Anderson, E. Zuriaga, J. Canizares, and F. Nuez. 2007. AFLP and DNA Sequence Variation in an Andean Domesticate, Pepino (*Solanum muricatum,* Solanaceae): Implications for Evolution and Domestication. *American Journal of Botany* 94: 1219-1229.

Bloch, C. P., C. L. Higgins, and M. R. Willig. 2007. Effects of large-scale disturbance on metacommunity structure of terrestrial gastropods: Temporal trends in nestedness. *Oikos* 116: 395-406.

Blouin, N., X. G. Fei, J. Peng, C. Yarish, and S. H. Brawley. 2007. Seeding nets with neutral spores of the red alga *Porphyra umbilicalis* (L.) Kützing for use in integrated multi-trophic aquaculture (IMTA). *Aquaculture* 270: 77-91.

Bond, W. and J. A. Silander, Jr. 2007. Springs and wire plants: anachronistic defenses against Madagascar's extinct elephant birds. *Proceedings of the Royal Society B: Biological Sciences* 274:1 985-1992.

Bornstein, A. and F. G. Coe. 2007. The genus *Piper* (Piperaceae) in Honduras. *Novon* 17: 11-19.

Brehm, G., R. K. Colwell, and J. Kluge. 2007. The role of environment and mid-domain effect on moth species richness along a tropical elevational gradient. *Global Ecology & Biogeography* 16: 205-219.

Buckley, T. R. and C. Simon. 2007. Evolutionary radiation of the cicada genus Maoricicada and the origins of the New Zealand alpine biota. *Biological Journal of the Linnean Society* 91: 419-435.

Budke, J. M., C. S. Jones, and B. Goffinet. 2007. A developmental study of the peristome-forming region of *Timmia megapolitana* (Bryophyta: Timmiaceae). *American Journal of Botany* 94: 460-467.

Bush, A. M., M. Kowalewski, A. Hoffmeister, R. K. Bambach, and G. M. Daley. 2007. Potential paleoecologic biases from size-filtering of fossils. *Palaios* 22: 612–622.

Bush, A. M., R. K. Bambach, and G. M. Daley. 2007. Changes in theoretical ecospace utilization in marine fossil assemblages between the mid-Paleozoic and late Cenozoic. *Paleobiology* 33: 76–97.

Caira, J. N., F. B. Reyda, and J. D. Mega. 2007. A revision of *Megalonchos* (Tetraphyllidea: Onchobothriidae) with description of two new species and transfer of two species to *Biloculuncus*. *Systematic Parasitology* 67: 211–223.

Caira, J. N., K. Jensen, and C. Rajan. 2007. Seven new *Yorkeria* species (Cestoda: Tetraphyllidea) from Borneo and Australia and their implications for *Chiloscyllium* (Elasmobranchii: Orectolobiformes) identification. *Journal of Parasitology* 93: 357–376

Castro-Arellano, I., S. J. Presley, L. N. Saldanha, M. R. Willig, and J. M. Wunderle. 2007. Effects of reduced impact logging on bat biodiversity in *terra firme* forest of lowland Amazonia. *Biological Conservation* 138: 269-285.

Chazdon, R. L., S. G. Letcher, M. van Breugel, M. Martínez-Ramos, F. Bongers, and B. Finegan. 2007. Rates of change in tree communities of secondary tropical forests following major disturbances. *Philosophical Transactions of the Royal Society B: Biological Sciences* 362: 273-289.

de Gouvenain, R. C., R. K. Kobe, and J. A. Silander, Jr. 2007. Partitioning of understory light and dry-season soil moisture gradients among seedlings of four rain-forest tree species in Madagascar. *Journal of Tropical Ecology* 23(5): 569-579.

Duff, R. J., J. C. Villarreal, D. C. Cargill, and K. S. Renzaglia. 2007. Progress and challenges in developing a phylogeny and classification of the hornworts. *The Bryologist* 110: 214-243.

Dyer, L. A., M. S. Singer, J. T. Lill, J. O. Stireman III, G. L. Gentry, R. J. Marquis, R. E. Ricklefs, H. F. Greeney, D. L. Wagner, H. C. Morais, I. R. Diniz, T. A. Kursar, and P. D. Coley. 2007. Host specificity of Lepidoptera in tropical and temperate forests. *Nature* 448: 696-699.

Ellis, M. M., and C. S. Elphick. 2007. Using a stochastic model to examine the ecological, economic and ethical consequences of population control in a charismatic invasive species: mute swans in North America. *Journal of Applied Ecology* 44: 312-322.

Fontaine, K. M., J. R. Cooley and C. Simon. 2007. Evidence for paternal leakage in hybrid periodical cicadas (Hemiptera:Magicicada spp.) *PLoS ONE* 2(9): e892. doi:10.1371/journal.pone.0000892

Gavin, M. C+. and G. Anderson. 2007. Socioeconomic predictors of forest use values in the Peruvian Amazon: a potential tool for biodiversity conservation. *Ecological Economics* 60: 752-762.

Goffinet B., W. R. Buck, and M. A. Wall. 2007. *Orthotrichum freyanum* (Orthotrichaceae, Bryophyta), a new epiphytic species from Chile. *Nova Hedwigia, Beiheft* 131: 1-11.

Goffinet, B., N. Wickett, O. Werner, R. M. Ros, A. J. Shaw, and C. J. Cox. 2007. Distribution and phylogenetic significance of a 71 kb inversion in the chloroplast genome of the Funariidae (Bryophyta). *Annals of Botany* 99: 747-753.

Grace, J. B., T. M. Anderson, M. D. Smith, E. Seabloom, S. J. Andelman, G. Meche, E. Weiher, L. K. Allain, H. Jutila, M. Sankaran, J. Knops, M. Ritchie, and M. R. Willig. 2007. Does species diversity limit productivity in natural grassland communities? *Ecology Letters* 10: 680-689.

Gray, D. W., L. A. Lewis, and Z. G. Cardon. 2007. Photosynthetic recovery following desiccation of desert green algae (Chlorophyta) and their aquatic relatives. *Plant, Cell, and Environment* 30: 1240-1255.

Haugen, P., D. Bhattacharya, J. D. Palmer, S. Turner, L. A. Lewis, and K. M. Pryer. 2007. Cyanobacterial ribosomal RNA genes with multiple, endonuclease-encoding group I introns. *BMC Evolutionary Biology* 7: 159.

Henry, C. S. and M. L. M. Wells. 2007. Can what we don't know about lacewing systematics hurt us? A cautionary tale about mass rearing and release of "*Chrysoperla carnea*" (Neuroptera: Chrysopidae).

American Entomologist 53: 42-47.

Horner-Devine, M. C., J. M. Silver, L. M. A, B. J. M. Bohannan, R. K. Colwell, J. A. Fuhrman, J. L. Green, C. R. Kuske, J. B. H. Martiny, L. Øvreås, A.-L. Reysenbach, and G. Muyzer. 2007. A comparison of taxon co-occurrence patterns for macro- and microorganisms. *Ecology* 88: 1345-1353.

Humphreys, S., C. S. Elphick, C. Gjerdrum, M. A. Rubega. 2007. *T*esting the function of nest domes in Saltmarsh Sharp-tailed Sparrows. *Journal of Field Ornithology* 78: 152-158.

Kim, J. K., G. P. Kraemer, C. D. Neefus, I. K. Chung, and C. Yarish. 2007. Effects of temperature and ammonium on growth, pigment production and nitrogen uptake by four species of *Porphyra* (Bangiales, Rhodophyta) native to the New England coast. *Journal of Applied Phycology* 19: 431-440.

LaFleur, N., M. Rubega, and C. S. Elphick. 2007. Invasive fruits, novel foods, and choice: an investigation of European starling and American robin frugivory. *Wilson Journal of Ornithology* 119: 429-438.

LaPlante, L. H. and E. T. Schultz. 2007. Annual fecundity of tautog in Long Island Sound: Size effects and long-term changes in a harvested population. *Transactions of the American Fisheries Society* 136: 1520–1533.

Lapp, H., S. Bala, J. P. Balhoff, A. Bouck, N. Goto, M. Holder, R. Holland, A. Holloway, T. Katayama, P. O. Lewis, A. J. Mackey, B. I. Osborne, W. H. Piel, S. L. Kosakovsky Pond, A. F. Y. Poon, W.-G. Qiu, J. E. Stajich, A. Stoltzfus, T. Thierer, A. J. Vilella, R. A. Vos, C. M. Zmasek, D. J. Zwickl, and T. J Vision. 2007. The 2006 NESCent Phyloinformatics Hackathon: A Field Report. *Evolutionary Bioinformatics* 3: 357-366.

Lees, D. C. and R. K. Colwell. 2007. A strong Madagascan rainforest MDE and no equatorward increase in species richness: Re-analysis of "The missing Madagascan mid-domain effect," by Kerr J.T., Perring M. & Currie D.J (*Ecology Letters* 9:149-159, 2006). *Ecology Letters* 10: E4-E8.

Leicht-Young, S. A., J. A. Silander Jr., and A. M. Latimer. 2007. Comparative performance of invasive and native *Celastrus* species in heterogeneous environments. *Oecologia* 154(2): 273-282.

Martine, C+. and G. J. Anderson. 2007. Dioecy, Pollination, and Seed Dispersal in Australian Spiny *Solanum*. Pp. 269-283. Solanaceae VI: Genomics meets Biodiversity. Proceedings of the VIth International Solanaceae Conference (Wisconsin). *Acta Horticulturae* 745.

Martínez-Solano I., E. L. Jockusch, and D.B. Wake. 2007. Extreme population subdivision throughout a continuous range: phylogeography of *Batrachoseps attenuatus* (Caudata, Plethodontidae) in western North America. *Molecular Ecology* 16: 4335-4355.

Moody, M. L. and D. H. Les. 2007. Geographic distribution and genotypic composition of invasive hybrid watermilfoil (*Myriophyllum spicatum* □ *M. sibiricum*) populations in North America. *Biological Invasions* 9: 559–570.

Moody, M. L. and D. H. Les. 2007. Phylogenetic systematics and character evolution in the angiosperm family Haloragaceae. *American Journal of Botany* 94: 2005–2025.

Neori, A., M. Troell, T. Chopin, C. Yarish, A. Critchley, and A. H. Buschmann. 2007. The Need for Ecological Balance in "Blue Revolution" Aquaculture. *Environment* 49(3): 36-42.

Nicotra, A. B., J. P. Hermes, C. S. Jones, and C. D. Schlichting. 2007. Geographic variation and plasticity to water and nutrients in *Pelargonium australe*. *New Phytologist* 176: 136-149.

Prohens J., G. J. Anderson, J. Herraiz, G. Bernardello, A. Santos Guerra, D. Crawford and F. Nuez. 2007. Genetic diversity and conservation of two endangered eggplant relatives (*Solanum vespertilio* Aiton and *S. lidii* Sunding) endemic to the Canary Islands. *Genetic Resources and Crop Evolution* 54: 451-464.

Qi, B.-Y., C. W. Schaefer, and X.-H. Li 2007. Additions to the mirid (Hemiptera: Heteroptera) fauna of China, 2000-2006. *Zootaxa* 1604: 21-35.

Rahbek, C., N. Gotelli, R. K. Colwell, G. L. Entsminger, T. F. L. V. B. Rangel, and G. R. Graves. 2007. Predicting continental-scale patterns of bird species richness with spatially explicit models. *Proceedings of the Royal Society of London Series B* 274: 165-174.

Rangel, T. F. L. V. B., J. A. F. Diniz-Filho, and R. K. Colwell. 2007. Species richness and evolutionary niche dynamics: a spatial pattern-oriented simulation experiment. *American Naturalist* 274: 165-174.

Rawson, M., C. Chen, D. R. Wang, C. Yarish, J. Sullivan, L. Wang and M. Y. Zhu. 2007. Ecosystem-based management & models in sustainable management of coastal aquaculture. *Bulletin Fisheries Research Agency* 19: 97-111.

Richmond, J. Q. and E. L. Jockusch. 2007. Body size evolution simultaneously creates and collapses species boundaries in a clade of scincid lizards. *Proceedings of the Royal Society B* 274: 1701-1708.

Schaefer C. W. and Y. Kikihura. 2007. *Parastrachia nagaenesis* (Distant) (Hemiptera: Parastrachiidae) from Laos. *Oriental Insects* 41: 459-462.

Schaefer, C. W. and H. Zettel. 2007. A review of *Helcomeria* Stål, 1873 (Insecta: Heteroptera: Coreidae), with the description of a new species from Vietnam. *Naturhistorisches Museum Wien* 108B: 67-75.

Schaefer, C. W. and I. Ahmad. 2007. A revisioon of *Burtinus* (Hemiptera: Alydidae). *Annals of the Entomological Society of America* 100: 830-838.

Schaefer, C. W. 2007. The correct name of the neotropical soybean bug (Hemiptera: Alydidae). *Neotropical Entomology* 36: 320-32l.

Scholtens, B. and D. L Wagner. 2007. Lepidopteran fauna of the GSMNP. *Southeastern Naturalist Special Issue* 1: 193-206.

Sezen, U. U., R. L. Chazdon, and K. E. Holsinger. 2007. Multigenerational genetic analyses of tropical secondary regeneration in a canopy palm. *Ecology* 88: 3065-3075.

Shannon, R. K., and K. E.Holsinger. 2007. The genetics of sex determination in stinging nettle (*Urtica dioica*). *Sexual Plant Reproduction* 20: 35–43.

Silander Jr., J. A., I. Ibanez, and L. J. Mehrhoff. 2007. The Biology and Ecology of Invasive Species – the Importance of International Collaboration in Predicting the Spread of Invasive Species. *Proceedings of the NIAES International Symposium* (Tsukuba, Japan): 8-17.

Smith, G., S. T. Trumbo, D. S. Sikes, M. P. Scott, and R. L. Smith. 2007. Host shift by the burying beetle, *Nicrophorus pustulatus*: a parasitoid of snake eggs. *Journal of Evolutionary Biology* 20: 2389-2399.

Sodhi, N. S., L. P. Koh, K. S.-H. Peh, H. T. W. Tan, R. L. Chazdon, R. T. Corlett, T. M. Lee, R. K. Colwell, B. W. Brook, C. H. Sekercioglu, and C. J. A. Bradshaw. 2007. Correlates of extinction proneness in tropical angiosperms. *Diversity and Distributions* 14: 1-10.

Sueur, J., D. Vanderpool, C. Simon, D. Ouvrard, and T. Bourgoin. 2007. Molecular phylogeny of the genus *Tibicina* (Hemiptera, Cicadidae): rapid radiation and acoustic behaviour. *Biological Journal of the Linnean Society* 91: 611-626.

Trumbo, S. T. and R. C. Valletta. 2007. The costs of confronting infanticidal intruders in a burying beetle. *Ethology* 113: 386-393.

Trumbo, S.T. 2007. Can the "challenge hypothesis" be applied to insects? *Hormones and Behavior* 51: 281-285.

Trumbo, S.T. 2007. Defending young biparentally: female risk-taking with and without a male in the burying beetle, *Nicrophorus pustulatus*. *Behavioral Ecology and Sociobiology* 61: 1717-1723.

Urban, M. C. 2007. Predator size and phenology shape prey survival in temporary ponds. *Oecologia* 154: 571-580.

Urban, M. C. 2007. Risky prey behavior evolves in risky habitats. *Proceedings of the National Academy of Sciences of the USA* 104(36): 14377-14382.

Urban, M. C. 2007. The growth-predation risk tradeoff under a growing gape-limited predation threat. *Ecology* 88: 2587-2597.

Urban, M. C., B. L. Phillips, D. K. Skelly, and R. Shine. 2007. The cane toad's (*Chaunus* [*Bufo*] *marinus*) increasing ability to invade Australia is revealed by a dynamically updated range model. *Proceedings of the Royal Society B* 274: 1413-1419.

Vilchez, B., R. L. Chazdon, and W. Alvarado. 2007. Fenología reproductive de las especies del dosel

superior en seis sitios de la region Huetar Norte de Costa Rica. Kuru: *Revista Forestal* Costa Rica 4 (10).

Villarreal, J. C., G. Hässel de Menéndez, and N. Salazar Allen. 2007. *Nothoceros superbus* (Dendrocerotaceae), a new species of hornwort from the Neotropics. *The Bryologist* 110: 279-285.

Wagner, D. L. 2007. The larva of *Cerma* Hübner and its enigmatic linkages to the Acronictinae (Lepidoptera: Noctuidae). *Proceedings of the Entomological Society of Washington* 109: 198-207.

Wagner, D. L. 2007. Barking up a new tree: Ancient pupation behavior suggests *Cerma* Hübner is an acronictine noctuid (Lepidoptera). *Systematic Entomology* 32: 407-419.

Werner, O., R. M. Ros, and B. Goffinet. 2007. A reconsideration of the systematic position of the genus *Goniomitrium* (Funariaceae) based on chloroplast sequence markers. *The Bryologist* 110: 108-114.

Willig, M. R., C. P. Bloch, N. Brokaw, C. Higgins, J. Thompson, and C. R. Zimmermann. 2007. Cross-scale responses of biodiversity to hurricane and anthropogenic disturbance in a tropical forest. *Ecosystems* 10: 824-838.

Willig, M. R., S. J. Presley, C. P. Bloch, C. L. Hice, S. P. Yanoviak, M. M. Diaz, L. A. Chauca, V. Pacheco, and S. C. Weaver. 2007. Phyllostomid bats of lowland Amazonia: Effects of habitat alteration on abundance. *Biotropica* 39: 737-746.

Yee, D. A. and M. R. Willig. 2007. Colonisation of *Heliconia caribaea* by aquatic invertebrates: Resource and microsite characteristics. *Ecological Entomology* 32: 603-612.

2006 (81)

Adams, E. S. 2006. Review of "The Fire Ants" by Walter R. Tschinkel. *Quarterly Review of Biology* 81: 408-409.

Anderson G. J., G. Bernardello, M. Opel, A. Santos Guerra, and M. Anderson. 2006. Reproductive biology of the dioecious Canary Islands endemic *Withania aristata* (Solanaceae). *American Journal of Botany* 93: 1295-1305.

Anderson, G. J., J. Prohens, F. Nuez, and C. Martine+. 2006. *Solanum perlongistylum* and *S. catilliflorum*, New Endemic Peruvian Species of *Solanum*, Section *Basarthrum*, are Close Relatives of the Domesticated Pepino, *S. muricatum*. *Novon* 16: 161-167.

Anderson, G. J., G. Bernardello, L. Bohs, T. Weese and A. Santos Guerra. 2006. Phylogeny and Biogeography of the Canarian *Solanum vespertilio* and *S. lidii* (Solanaceae). *Anales del Jardin Botánico de Madrid* 63: 159 - 167.

Barber, J. J., A. E. Gelfand, and J. A. Silander. 2006. Modeling map position error to infer about true feature location. *Canadian Journal of Statistics* 34: 1–18.

Bernardello G., G. J. Anderson, T. F. Stuessy, and D. J. Crawford. 2006. The angiosperm flora of the Archipelago Juan Fernandez (Chile): Origin and dispersal. *Canadian Journal of Botany* 84: 1266 - 1281.

Bloch, C. P., and M. R. Willig. 2006. Context-dependence of long-term responses of terrestrial gastropod populations to large-scale disturbance. *Journal of Tropical Ecology* 22: 111-122.

Borucinska, J. D. and J. N. Caira. 2006. Mode of attachment and lesions associated with trypanorhynch cestodes in the gastrointestinal tracts of two species of sharks collected from coastal waters of Borneo. *Journal of Fish Diseases* 29: 395–407.

Buckley, T. R., M. Cordeiro, D. C. Marshall, and C. Simon. 2006. Differentiating between hypotheses of lineage sorting and introgression in New Zealand alpine cicadas (*Maoricicada* Dugdale). *Systematic Biology* 55: 411-425.

Budke, J. M. and B. Goffinet. 2006. Phylogenetic analyses of the Timmiaceae (Bryophyta: Musci) based on nuclear and chloroplast sequence data. *Systematic Botany* 31: 633-641.

Burtsev, M. and P. Turchin. 2006. Evolution of cooperative strategies from first principles. *Nature* 440: 1041-4.

Caira, J. N. and S. M. Durkin. 2006. A new genus and species of tetraphyllidean cestode from the Spadenose shark, *Scoliodon laticaudus*, in Malaysian Borneo. *Comparative Parasitology* 43: 42–48.

Caira, J. N., T. Scholz, and B. B. Georgiev. 2006. Cestode systematics and phylogeny move forward. *Systematic Parasitology* 65: 171–174.

Cardelús, C., R. K. Colwell, and J. E. Watkins, Jr. 2006. Vascular epiphyte distribution patterns: explaining the mid-elevation richness peak. *Journal of Ecology* 94: 144-156.

Cardon, Z. G. and D. J. Gage. 2006. Resource exchange in the rhizosphere – molecular tools and the microbial perspective. *Annual Review of Ecology, Evolution, and Systematics* 37: 459-88.

Carmona, R., G. P. Kraemer, and C. Yarish. 2006. Exploring Northeast American and Asian species of *Porphyra* for use in an Integrated Finfish-Algal Aquaculture System. *Aquaculture* 252: 54-65.

Chao, A., R. L. Chazdon, R. K. Colwell, and T.-J. Shen. 2006. Abundance-based similarity indices and their estimation when there are unseen species in samples. *Biometrics* 62: 361-371.

Chen, L., D. H. Les, L. Xu, X. Yao, M. Kang and H. Huang. 2006. Isolation and characterization of a set of microsatellite loci in the submerged macrophyte, *Vallisneria spinulosa* Yan (Hydrocharitaceae). *Molecular Ecology Notes* 6: 1243–1245.

Chiarini F., G. Bernardello, G. J. Anderson, and A. Santos Guerra. 2006. Chromosomal Differentiation of *Solanum vespertilio* and *S. lidii* (Solanaceae), Rare, Endemic Species of the Canary Islands (Spain). *Caryologia* 59: 277-283.

Cooley, J. R., D. Marshall, K. B. R. Hill, and C. Simon. 2006. Reconstructing asymmetrical reproductive character displacement in a periodical cicada contact zone. *Journal of Evolutionary Biology* 19: 855-868.

Dauphin, G., T. Pócs, J. C. Villarreal, and N. Salazar Allen. 2006. Nuevos Registros de Hepáticas y Anthocerotófitas para Panamá. *Tropical Bryology* 27: 73-85.

Dunn, R. R., R. K. Colwell, and C. Nilsson. 2006. The river domain: why are there more species halfway up the river? *Ecography* 29: 251-259.

Dupuy, J. M. and R. L. Chazdon. 2006. Effects of vegetation cover on seedling and sapling dynamics in secondary tropical wet forests in Costa Rica. *Journal of Tropical Ecology* 22: 65-76.

Etienne R. S., A. M. Latimer, J. A. Silander, Jr., and R. M. Cowling. 2006. Comment on "Neutral ecological theory reveals isolation and rapid speciation in a biodiversity hotspot." *Science* 311: 610b.

Filoramo, N. I. and K. Schwenk. 2006. Hydraulic delivery of chemicals to the vomeronasal organs in squamate reptiles: a comparative morphological study. *J. Integr. Comp. Biol.* 46:e42.

Fyler, C. and J. N. Caira. 2006. Five new species of *Acanthobothrium* (Tetraphyllidea: Onchobothriidae) from the freshwater stingray *Himantura chaophraya* (Batoidea: Dasyatidae) in Malaysian Borneo. *Journal of Parasitology* 92: 105–125.

Gartner, T. L. and Z. G. Cardon. 2006. Site of leaf origin affects how mixed litter decomposes. *Soil Biology and Biochemistry* 38: 2307-2317.

Gelfand, A. E., J. A. Silander Jr., S. Wu, A. Latimer, P. O. Lewis, A. G. Rebelo and M. Holder. 2006. Explaining species distribution patterns through hierarchical modeling. *Bayesian Analysis* 1: 41-92.

Gray, D. W., Z. G. Cardon, and L. A. Lewis. 2006. Simultaneous collection of rapid chlorophyll fluorescence induction kinetics, fluorescence quenching parameters, and environmental data using an automated PAM-2000/CR10X data logging system. *Photosynthesis Research* 87: 295-301.

He, P. and C. Yarish. 2006. The developmental regulation of mass cultures of free-living conchocelis for commercial net seeding of *Porphyra leucosticta* from Northeast America. *Aquaculture* 257: 373-381.

Henry, C. S. and M. L. M. Wells. 2006. Testing the ability of males and females to respond to altered songs in the dueting green lacewing, *Chrysoperla plorabunda* (Neuroptera: Chrysopidae). *Behavioral Ecology and Sociobiology* 61: 39-51.

Henry, C. S., S. J. Brooks, P. Duelli, and J. B. Johnson. 2006. Courtship song of the South African lacewing *Chrysoperla zastrowi* (Esben-Petersen) (Neuroptera: Chrysopidae): evidence for a trans-equatorial

geographic range? *Journal of Natural History* 40: 2173-2195.
Higgins, C. L., M. R. Willig, and R. E. Strauss. 2006. The role of stochastic processes in producing nested patterns of species distributions. *Oikos* 114: 159-167.
Holsinger, K. E. 2006. A new era for the public understanding of science. *BioScience* 56: 955.
Holsinger, K. E. 2006. Responding to challenges for biological research and education. *BioScience* 56: 3.
Holsinger, K. E. 2006. Similar strokes for different folks. *Heredity* 96: 203.
Jacobs, S. W. L., D. H. Les, M. L. Moody, and C. Barre Hellquist. 2006. Two new species of *Aponogeton* (Aponogetonaceae) and a key to species from Australia. *Telopea* 11: 129–134.
Jacobs, S. W. L., D. H. Les, and M. L. Moody. 2006. New combinations in Australasian *Zostera* (Zosteraceae). *Telopea* 11: 127–128.
Jensen, K. and J. N. Caira. 2006. The status of *Rhoptrobothrium* Shipley et Hornell, 1906 (Cestoda: Tetraphylidea), with redescription of the type species, *R. myliobatidis*, and description of three new species from eagle rays in the genus *Aetomylaeus* from Malaysian Borneo. *Folia Parasitologia* 53: 189–207.
Latimer, A. M., S. Wu, A. E. Gelfand and J. A. Silander, Jr. 2006. Building statistical models to analyze species distributions. Ecological Applications 16(1): 33-50; plus Appendices: *Ecological Archives*: A016-003-A1 and A016-003-S1
Leicht, S. A. and J. A. Silander Jr. 2006. Differential Responses of Invasive *Celastrus orbiculatus* (Celastraceae) and Native *C. scandens* to Changes in Light Quality. *American Journal of Botany* 93: 972-977.
Les, D. H., R. S. Capers and N. Tippery. 2006. Introduction of *Glossostigma* (Phrymaceae) to North America: a taxonomic and ecological overview. *American Journal of Botany* 93: 927–939.
Lusk, C. H., Chazdon, R. L., and G. Hofmann. 2006. A bounded null model explains juvenile tree community structure along light availability gradients in an old-growth temperate rain forest. *Oikos* 112: 131-137.
Marshall, D. C., C. Simon, and T. R. Buckley. 2006. Accurate Branch Length Estimation in Partitioned Bayesian Analyses Requires Accommodation of Among-Partition Rate Variation and Attention to Branch Length Priors. *Systematic Biology* 55: 993-1003.
Martine, C. T., D. Vanderpool, G. J. Anderson and D. H. Les. 2006. Phylogenetic relationships of the andromonoecious and dioecious species of Australian *Solanum* subgenus *Leptostemonum* section *Melongena*: inferences from ITS sequence data. *Systematic Botany* 31: 410–420.
Martiny, J., B. Bohannan, J. Brown, R. Colwell, J. Fuhrman, J. Green, M. Horner-Devine, M. Kane, J. Krumins, and C. Kuske. 2006. Microbial biogeography: putting microorganisms on the map. *Nature Reviews: Microbiology* 4: 102-112.
Moline, P., D. Les, C. T. Philbrick, A. Novelo. R., E. Pfeifer and R. Ruthishauser. 2006. Comparative morphology and molecular systematics of *Podostemum* (including *Crenias*) — American river-weeds (Podostemaceae). *Botanische Jahrbücher für Systematik* 126: 427–476.
Ober, K. A. and E. L. Jockusch. 2006. The roles of *wingless* and *decapentaplegic* in axis and appendage development in the red flour beetle, *Tribolium castaneum*. *Developmental Biology* 294: 391-405.
Owen, P. C. and J. K. Tucker. 2006. Courtship calls in two species of chorus frogs, genus *Pseudacris* (Anura: Hylidae). *Copeia* 2006: 137-144.
Palomaki, M. B., Chazdon, R. L., J. P. Arroyo, and S. G. Letcher. 2006. Juvenile tree growth in relation to light availability in second-growth tropical rain forests. *Journal of Tropical Ecology* 22: 223-226.
Pereira, R., C. Yarish, and I. Sousa-Pinto. 2006. The influence of stocking density, light and temperature on the growth, production and nutrient removal capacity of *Porphyra dioica* (Bangiales, Rhodophyta) from Portugal. *Aquaculture* 252: 66-78.
Piercey-Normore M. D., D. Coxson, T. Goward, and B. Goffinet. 2006. Phylogenetic position of the Pacific Northwest endemic cyanolichen, *Nephroma occultum. Lichenologist* 38: 441-456.

Pigliucci, M., C. J. Murren, and C. D. Schlichting. 2006. Phenotypic plasticity and evolution by genetic assimilation. *Journal of Experimental Biology* 209: 2362-2367.

Póvoa, M. M., R. T. L. de Souza, R. N. L. Lacerda, E. Santa Rosa, D. Galiza, J. R. de Souza, R. A. Wirtz, C. D. Schlichting and J. E. Conn. 2006. The importance of *Anopheles albitarsis* E and *An. darlingi* in human malaria transmission in Boa Vista, state of Roraima, Amazonian Brazil. *Memórias do Instituto Oswaldo Cruz* 101: 163-168.

Prohens, J., G. J. Anderson, J. M. Blanca, J. Canizares, E. Zuriaga and F. Nuez. 2006. The Implications of AFLP Data for the Systematics of the Wild Species of *Solanum* section *Basarthrum*. *Systematic Botany* 31: 208 - 216.

Reyda, F. and J. N. Caira. 2006. Five new species of *Acanthobothrium* (Cestoda: Tetraphyllidea) from *Himantura uarnacoides* (Rajiformes: Dasyatidae) in Malaysian Borneo. *Comparative Parasitology* 43: 49–71.

Reznick, D. N., E. T. Schultz, S. Morey, and D. Roff. 2006. On the virtue of being the first born: the influence of date of birth on fitness in the mosquitofish, *Gambusia affinis*. *Oikos* 114: 135-147.

Rota, J. R. and D. L. Wagner. 2006. Predator mimicry: metalmark moths mimic their jumping spider predators. *PLoS ONE* 1: e45.

Rozzi R., F. Massardo, C. Anderson, K. Heidinger, and J. Silander Jr. 2006. Ten Criteria for Biocultural Conservation at the Southern Tip of the Americas: The Approach of the Omora Ethnobotanical Park. *Ecology and Society* 11(1) (on-line publication).

Ruhnke, T. R., J. N. Caira, and S. D. Carpenter. 2006. *Orectolobicestus* n. g. (Cestoda: Tetraphyllidea), with description of five new species, and transfer of *Phyllobothrium chiloscyllii* to the new genus. *Systematic Parasitology* 65: 215–233.

Schaefer, C. W. 2006. The genital capsule of some *Aradidae* (Hemiptera, Heteroptera). *Kat. OŐ. Landesmus* (n.s.) 50: 215-224. (Invited Paper)

Sibley, D. A., L. R. Bevier, M. A. Patten, and C. S. Elphick. 2006. Comment on "Ivory-billed woodpecker (*Campephilus principalis*) persists in continental North America". *Science* 311: 1555.

Sikes, D. S., R. B. Madge, and S. T. Trumbo. 2006. Revision of *Nicrophorus* in part: new species and inferred phylogeny of the nepalensis-group based on evidence from morphology and mitochondrial DNA (Coleoptera: Silphidae: Nicrophorinae). *Invertebrate Systematics* 20: 305-366.

Simon, C., T. R. Buckley, F. Frati, J. Stewart, and A. Beckenbach. 2006. Incorporating molecular evolution into phylogenetic analysis, and a new compilation of conserved polymerase chain reaction primers for animal mitochondrial DNA. *Annual Review of Ecology, Evolution, and Systematics* 37: 545-579 + 45 pages of on-line supplement.

Song, S., D. K. Dey, and K. E.Holsinger. 2006. Hierarchical models with migration, mutation, and drift: implications for genetic inference. *Evolution* 60: 1-12.

Stevens, R. D., M. R. Willig, and R. E. Strauss. 2006. Latitudinal gradients in the phenetic diversity of New World bat communities. *Oikos* 112: 41-50.

Thompson, L. G., E. Mosley-Thompson, H. Brecher, M. Davis, B. León, D. Les, P.-N. Lin, T. Mashiotta, and K. Mountain. 2006. Abrupt tropical climate change: past and present. *Proceedings of the National Academy of Sciences, USA* 103: 10536–10543. [inaugural article for L. G. Thompson]

Trumbo, S. T. 2006. Infanticide, sexual selection and task specialization in a biparental burying beetle. *Animal Behaviour* 72: 1159-1167.

Turchin, P., J. M. Adams, and T. D. Hall. 2006. East-West Orientation of Historical Empires and Modern States. *Journal of World-Systems Research* 12: 219-229.

Turchin, P. and A. Korotayev. 2006. Population Dynamics and Internal Warfare: a reconsideration. *Social Evolution and History* 5: 121-158.

Urban, M. C. 2006. Maladaptation and mass-effects in a metacommunity: consequences for species coexistence. *American Naturalist* 168: 28-40.

Urban, M. C. and D. K. Skelly. 2006. Evolving metacommunities: Toward an evolutionary perspective on metacommunities. *Ecology* 87: 1616-1626.

Vanderpoorten A. and B. Goffinet. 2006. Mapping uncertainty and phylogenetic uncertainty in ancestral character state reconstruction: an example in the moss genus *Brachytheciastrum*. *Systematic Biology* 55: 957-971.

Villarreal, J. C. and K. S. Renzaglia. 2006. Sporophyte structure in the Neotropical hornwort *Phaeomegaceros fimbriatus*: implications for phylogeny, taxonomy and character evolution. *International Journal of Plant Sciences* 167: 413-427.

Villarreal, J. C. and K. S. Renzaglia. 2006. Structure and development of *Nostoc* strands in *Leiosporoceros dussii* (Anthocerotophyta): a novel symbiosis in land plants. *American Journal of Botany* 93: 693-705.

Wagner, D. L., E. W. Hossler, and F. E. Hossler. 2006. Not a tiger but a dagger: The larva of *Comachara cadburyi* and reassignment of the genus to the *Acronictinae* (Lepidoptera: Noctuidae). *Annals of the Entomological Society of America* 99: 638–647.

Watkins, J. E., Jr., C. Cardelús, R. C. Moran, and R. K. Colwell. 2006. Diversity and distribution of ferns along an elevational gradient in Costa Rica. *American Journal of Botany* 93: 73-83.

Willig, M. R. and C. P. Bloch. 2006. Latitudinal gradients of species richness: A test of the geographic area hypothesis at two ecological scales. *Oikos* 112: 163-173.

Wunderle, J. M., L. M. P. Henriques, and M. R. Willig. 2006. Short-term responses of birds to forest gaps and understory: An assessment of reduced-impact logging in a lowland Amazon forest. *Biotropica* 38: 235-255.

Wunderle, J. M., L. M. P. Henriques, and M. R. Willig. 2006. Short-term responses of birds to reduced-impact logging in a lowland Amazon forest: Can reduced-impact methods help to retain avian biodiversity in tropical timber production forests? *Journal of Ornithology* 147: 114-115.

Zanne, A. E., S. S. Lower, Z. G. Cardon, and C. M. Orians. 2006. N15 fertilization of tomatoes: vascular constraints vs. tissue demand. *Functional Plant Biology* 33: 457-64.

2005 (73)

Adams, E. S. 2005. Bayesian analysis of linear dominance hierarchies. *Animal Behaviour* 69: 1191-1201.

Adl, S. M., A. G. B. Simpson, M. A. Farmer, R. A. Andersen, R. A. Anderson, J. Barta, S. Bowser, G. Brugerolle, R. Fensome, S. Fredericq, T. Y. James, S. Karpov, P. Kugrens, J. Krug, C. Lane, L. A. Lewis, J. Lodge, D. H. Lynn, D. Mann, R. M. McCourt, L. Mendoza, Ø. Moestrup, S. E. Mozeley-Standridge, T. A. Nerad, C. Shearer, F. Spiegel, and M. F. J. R. Taylor. 2005. A new higher level classification of eukaryotes and taxonomy of protists. *Journal of Eukaryotic Microbiology* 52: 399–432.

Agarwal, D. K., J. A. Silander, Jr., A. E. Gelfand, R. E. Dewar, and J. G. Mickelson, Jr. 2005. Tropical Deforestation in Madagascar: Analyses using hierarchical, spatially explicit, Bayesian regression models. *Ecological Modelling* 185: 105-131.

Blockeel T. L., A. Vanderpoorten, B. Goffinet, and A. Sotiaux. 2005. The status of the mid-western European endemic moss, *Brachythecium appleyardiae*. *Journal of Bryology* 27: 137-141.

Buck, W. R., C. J. Cox, A. J. Shaw, and B. Goffinet. 2004. Ordinal relationships of pleurocarpous mosses, with special emphasis on the Hookeriales. *Systematics and Biodiversity* 2: 121-145.

Bunker, D. E., F. DeClerck, J. C. Bradford, R. K. Colwell, I. Perfecto, O. L. Phillips, M. Sankaran, and S. Naeem. 2005. Species loss and aboveground carbon storage in a tropical forest. *Science* (Express Reports) 10.1126/science.1117682:1-5.

Caira, J. N., C. Richmond, and J. Swanson. 2005. A revision of *Phoreiobothrium* (Tetraphyllidea: Onchobothriidae) with descriptions of five new species. *Journal of Parasitology* 91: 1153–1174.

Caira, J. N., J. Mega, and T. R. Ruhnke. 2005. An unusual blood sequestering tapeworm (*Sanguilevator yearsleyi* n. gen., n. sp.) from Borneo with description of *Cathetocephalus resendezi* n. sp. from

Mexico and molecular support for the recognition of the order *Cathetocephalidea* (Platyhelminthes: Eucestoda). *International Journal for Parasitology* 35: 1135–1152.

Capers, R. S. and D. H. Les. 2005. Plant community structure in a freshwater tidal wetland. *Rhodora* 107: 386–407.

Capers, R. S., R. L. Chazdon, A. Redondo Brenes, and B. Vilchez Alvarado. 2005. Successional dynamics of woody seedling communities in wet tropical secondary forests. *Journal of Ecology* 93: 1071-1084.

Cardelus, C. L. and R. L. Chazdon. 2005. Inner-crown microenvironments of two emergent tree species in a lowland wet forest. *Biotropica* 37: 238-244.

Cargill, D. C., R. J. Duff, J. C. Villarreal, and K. S. Renzaglia. 2005. Generic concepts in hornworts: historical review, contemporary insights and future directions. *Australian Systematic Botany* 18: 7-16.

Chao, A., R. L. Chazdon, R. K. Colwell, and T.-J. Shen. 2005. A new statistical approach for assessing similarity of species composition with incidence and abundance data. *Ecology Letters* 8: 148-159.

Chazdon, R. L., A. Redondo Brenez, and B. Vilchez Alvarado. 2005. Effects of climate and stand age on annual tree dynamics in tropical second-growth rain forests. *Ecology* 86: 1808-1815.

Coe, Felix+ and G. J. Anderson. 2005. Snakebite ethnopharmacopoeia of eastern Nicaragua. *Journal of Ethnopharmacology* 96: 303-323.

Colwell, R. K., C. Rahbek, and N. Gotelli. 2005. The mid-domain effect: there's a baby in the bathwater. *American Naturalist* 166: E149–E154.

Cramer, M. J. and M. R. Willig. 2005. Habitat heterogeneity, species diversity, and null models. *Oikos* 108: 209-218.

Crawford, D. J., E. Landolt, D. H. Les, R. T. Kimball and J. K. Archibald. 2005. Allozyme variation within and divergence between *Lemna gibba* and *L. disperma* (Lemnaceae): systematic and biogeographic implications. *Aquatic Botany* 83: 119–128.

Davis, D. R. and D. L. Wagner. 2005. Biology and systematics of the neotropical leaf-mining genus *Eucosmophora* (Lepidoptera: Gracillariidae). *Tropical Lepidoptera* 13: 1-40.

Diaz, M. M. and M. R. Willig. 2005. Nuevos registros de *Glironia venusta* y *Didelphis albiventris* (Didelphimorphia) para Peru [New records of *Glironia venusta* y *Didephis albiventris* (Didelphimorphia) from Peru]. *Mastozoologia Neotropical* 11: 185-192.

Duran, K. L., T. K. Lowrey, R. R. Parmenter, and P. O. Lewis. 2005. Genetic diversity in Chihuahuan desert populations of creosotebush (Zygophyllaceae: Larrea tridentata). *American Journal of Botany* 92: 722-729.

Ellner, S. P. and P. Turchin. 2005. When can noise induce chaos and why does it matter: a critique. *Oikos* 111: 620-631.

Engelmann, K. E. and C. D. Schlichting. 2005. Coarse- versus fine-grained water stress in *Arabidopsis thaliana* (Brassicaceae). *American Journal of Botany* 92: 101-106.

Fu, R., D. K. Dey, and K. E. Holsinger. 2005. Bayesian models for analysis of genetic structure when populations are correlated. *Bioinformatics* 21: 1516–1529.

Galvão, C., M. McAloon, D. S. Rocha, C. W. Schaefer, J. Patterson, and J. Jurberg. 2005. Description of eggs and nymphs of *Linshcosteus karupus* Galvao, Patterson, Rocha, & Jurberg, 2002 (Hemiptera: Reduviidae: Triatominae). *Annals of the Entomological Society of America* 98: 861-872.

Gavin, M. C.+ and G. J. Anderson. 2005. Testing a Rapid Quantitative Ethnobiological Technique: First Steps Toward Developing A Critical Conservation Tool. *Economic Botany* 59: 112-121.

Gelfand, A. E., A. M. Schmidt, S. Wu, J. A. Silander, Jr., A. Latimer and A. G. Rebelo. 2005. Modelling species diversity through species level hierarchical modeling. Journal of the Royal Statistical Society, Section C: *Applied Statistics* 54: 1-20 (plus appendices)

Gelfand, A. E., J. A. Silander, Jr., S. Wu, A. Latimer, P. Lewis, A. G. Rebelo, and M. Holder. 2006. Explaining species distribution patterns through hierarchical modeling. *Bayesian Analysis* 1: 42-92 (plus comments and rejoinders pp 93-104)

Gjerdrum, C., C. S. Elphick, and M. Rubega. 2005. Nest site selection and nesting success in saltmarsh breeding sparrows: the importance of nest habitat, timing and study site differences. *Condor* 107: 849-862.

Goffinet B., N. J. Wickett, A. J. Shaw, and C. J. Cox. 2005. Phylogenetic significance of the *rpo*A loss in the chloroplast genome of mosses. *Taxon* 54: 353-360.

Gorresen, P. M., M. R. Willig, and R. E. Strauss. 2005. Multivariate analysis of scale-dependent associations between bats and landscape structure. *Ecological Applications* 15: 2126-2136.

Heiser, C. B., J. Soria, C. Miller, and G. J. Anderson. 2005. A New Synthetic Allopolyploid Naranjilla, *Solanum indianense* (Solanacae). *Novon* 15: 290-292.

Hoffmeister, T. S., L. E. M. Vet, A. Biere, K. Holsinger, and J. Filser. 2005. Ecological and evolutionary consequences of biological invasion and habitat fragmentation. *Ecosystems* 8: 657–667.

Holder, M. T., P. O. Lewis, D. L. Swofford, and B. Larget. 2005. Hastings ratio of the LOCAL proposal used in Bayesian phylogenetics. *Systematic Biology* 54: 961-965.

Hooker, B. A., T. F. Morris, R. Peters, and Z. G. Cardon. 2005. Long-term effects of tillage and corn stalk return on soil carbon dynamics. *Soil Science Society of America Journal* 69: 188-196.

Iriarte, S. B. B. and R. L. Chazdon. 2005. Light-dependent seedling survival and growth of four tree species in Costa Rican second-growth rain forests. *Journal of Tropical Ecology* 21: 383-395.

Jordan, S., C. Simon, D. Foote, and R. A. Englund. 2005. Phylogeographic patterns of Hawaiian *Megalagrion* damselflies (Odonata: Coenagrionidae) correlate with Pleistocene island boundaries. *Molecular Ecology* 14: 3457-3470.

Kendall, B. E., S. P. Ellner, E. McCauley, S. N. Wood, C. J. Briggs, W. W. Murdoch, and P. Turchin. 2005. Population cycles in pine looper moth (*Bupalus piniarius*): dynamical tests of mechanistic hypotheses. *Ecological Monographs* 75: 259-276.

Latimer, A. M., J. A. Silander, Jr., and R. M Cowling. 2005. Neutral theory reveals isolation and rapid speciation in a biodiversity hotspot. *Science* 309: 1722-1725 (plus appendices).

Leicht, S. A., J. A. Silander, Jr. and K. E. Lerose. 2005. Assessing the competitive ability of Japanese stilt grass, *Microstegium vimineum* (Trin.) A. Camus. *Journal of the Torrey Botanical Society* 132: 573-580.

Les, D. H., M. L. Moody, and S. W. L. Jacobs. 2005 Phylogeny and systematics of *Aponogeton* (Aponogetonaceae): the Australian species. *Systematic Botany* 30: 503–519.

Lewis, L. A. and P. O. Lewis. 2005. Unearthing the molecular phylodiversity of desert soil green algae (Chlorophyta). *Systematic Biology* 54: 936-947.

Lewis, P. O., M. T. Holder, and K. E. Holsinger. 2005. Polytomies and Bayesian phylogenetic inference. *Systematic Biology* 54: 241-253.

Lis, J. and C. W. Schaefer. 2005. Tibial combs in *Cydnidae* (Hemiptera: Heteroptera) and their functional, taxonomic, and evolutionary significance. *Journal of Zoological Systematics and Evolutionary Research* 43: 277-283.

Lüth M. and B. Goffinet. 2005. *Splachnum pensylvanicum* (Bryophyta: Splachnaceae) is newly recorded from the Southern Hemisphere. *Bryologist* 108: 415-419.

Madden, J.I., C. S. Jones, and C. Auer. 2005. Modes of regeneration in Pelargonium X hortorum (Geraniaceae) and three closely related species. In vitro Cell and Developmental Biology - *Plant* 41: 37-46.

Mao, C. X. and R. K. Colwell. 2005. Estimation of species richness: mixture models, the role of rare species, and inferential challenges. *Ecology* 86: 1143-1153.

Mao, C. X., R. K. Colwell, and J. Chang. 2005. Estimating species accumulation curves using mixtures. *Biometrics* 61: 433–441.

Matthias, M. A., M. M. Diaz, K. J. Campos, M. Calderon, M. R. Willig, V. Pacheco, E. Gotuzzo, R. H. Gilman, and J. M. Vinetz. 2005. Diversity of bat-associated *Leptospira* in the Peruvian Amazon inferred by Bayesian phylogenetic analysis of 16S ribosomal DNA sequences. *American Journal of*

Tropical Medicine and Hygiene 73: 964-974.

McManus, H.A. and L.A. Lewis. 2005. Systematics, morphological variation and implications for colony-form evolution in the family *Hydrodictyaceae* (Sphaeropleales, Chlorophyta). *Phycologia* 44: 582–595.

Neal, P. R. and G. J. Anderson. 2005. Are 'Mating Systems' 'Breeding Systems' of Inconsistent and Confusing Terminology in Plant Reproductive Biology?: Or Is It the Other Way Around? *Plant Systematics and Evolution 250*: 173-185.

Núñez-Farfán, J. and C. D. Schlichting. 2005. Natural selection in *Potentilla glandulosa* revisited. *Evolutionary Ecology Research* 7: 105-119.

Owen, P. C. and N. M. Gordon. 2005. The effect of perceived intruder proximity and resident body size on the aggressive responses of male green frogs, *Rana clamitans* (Anura: Ranidae). *Behavioral Ecology and Sociobiology* 58: 446-455.

Panizzi, A. R. and C. W. Schaefer. 2005. Biology and descriptions of nymphal and adult *Jadera choprai* (Hemiptera: Rhopalidae). *Annals of the Entomology Society of America* 98: 315-326.

Romdal, T. S., R. K. Colwell, and C. Rahbek. 2005. The influence of band sum area, domain extent and range sizes on the latitudinal mid-domain effect. *Ecology* 86: 235-244.

Ruiz, J., M. C. Fandiño, and R. L. Chazdon. 2005. Vegetation structure, composition, and species richness across a 56-year chronosequence of dry tropical forest on Providencia Island, Colombia. *Biotropica* 37: 520-530.

Sahoo, D. and C. Yarish. 2005. Ch. 15. Mariculture of seaweeds. Pp. 219-237. In: R. Andersen (Ed.) *Phycological Methods: Algal Culturing Techniques.* Academic Press, Elsevier Publishing.

Schaefer, C. W. 2005. Why are the subfamily relationships of *Triatominae* (Hemiptera: Reduviidae) important? *Entomologia y Vectores* 12: 19-35.

Schaefer, C. W., A. R. Panizzi, and M. C. Coscarón. 2005. New records of plants fed upon by the uncommon heteropterans *Cyrtocoris egeri* Packauskas & Schaefer and *C. trigonus* (Germar) (Hemiptera: Cyrtocoridae) in South America. *Neotropical Entomology* 34: 127-129.

Scheiner, S. M. and M. R. Willig. 2005. Developing unified theories in ecology as exemplified with diversity gradients. *American Naturalist* 166: 458-469.

Schulp, A. S., E. W. A. Mulder, and K. Schwenk. 2005. Did mosasaurs have forked tongues? Netherlands *Journal of Geosciences* 84: 359-371.

Schultz, E. T., J. Young, J. M. Martin, and K. M. M. Lwiza. 2005. Tracking cohorts: analysis of migration in the early life stages of an estuarine fish. *Estuaries* 28: 394-405.

Schultz, E. T., M. Topper, D. C. Heins. 2006. Decreased reproductive investment of female threespine stickleback *Gasterosteus aculeatus* infected with the cestode *Schistocephalus solidus*: parasite adaptation, host adaptation, or side effect? *Oikos* 114: 303-310.

Sezen, U. U., R. L. Chazdon, and K. E. Holsinger. 2005. Genetic consequences of tropical second-growth forest regeneration. *Science* 307: 891.

Shaw, A. J., C. J. Cox, and B. Goffinet. 2005. Global patterns of moss diversity: taxonomic and molecular inferences. *Taxon* 54: 337-352.

Suzuki, S., M. Nagano, and S. T. Trumbo. 2005. Intrasexual competition and mating behavior in *Ptomascopus morio* (Coleoptera: Silphidae: Nicrophorinae). *Journal of Insect Behavior* 18: 233-242.

Turchin P. 2005. A Primer on Statistical Analysis of Dynamical Systems in Historical Social Sciences (with a Particular Emphasis on Secular Cycles). *Structure and Dynamics* 1: Article 4.

Turchin P. 2005. Dynamical Feedbacks between Population Growth and Sociopolitical Instability in Agrarian States. *Structure and Dynamics* 1: Article 3.

Turchin P. 2005. Response to Oscillations in Population Sizes – From Ecology to History. *Structure and Dynamics* 1: Article 11.

Vanderpoorten A., M. S. Ignatov, S. Huttunen, and B. Goffinet. 2005. A molecular and morphological recircumscription of *Brachytheciastrum* (Brachytheciaceae, Bryopsida). *Taxon* 54: 369-376.

Venterea, R. T., D. E. Rolston, and Z. G. Cardon. 2005. Effects of soil moisture, physical, and chemical characteristics on abiotic nitric oxide production. *Nutrient Cycling in Agroecosystems* 72: 27-40.

Wilsey, B. J., D. R. Chalcraft, C. M. Bowles, and M. R. Willig. 2005. Relationships among indices suggest that richness is an incomplete surrogate for grassland biodiversity. *Ecology* 86: 1178-1184.

Wunderle, J. M., M. R. Willig, and L. M. P. Henriques. 2005. Avian distribution in treefall gaps and understorey of *terra firme* forest in the lowland Amazon. *Ibis* 147: 109-129.

Yee, S. H., M. R. Willig, and D. L. Moorhead. 2005. Tadpole shrimp structure macroinvertebrate communities in playa lake microcosms. *Hydrobiologia* 541: 139-148.

Appendix B1d: Software developed by EEB faculty (2005 and 2012).

Colwell

2012	Biota 3: The biodiversity database manager. Open access and open sources update of Biota 2. (Software and 880 p. Manual.)
1999-2009.	RangeModel 5: Published as freeware at http://viceroy.eeb.uconn.edu/rangemodel.
1997-2010.	EstimateS Ver. 8.2: Statistical estimation of species richness and shared species from samples. (Statistical estimation software with 20 p. Manual). Freeware published at http://viceroy.eeb.uconn.edu/EstimateS.

Lewis, P.

2011	MCMCRobot ver. 1.0 (app for iPad/iPhone), https://itunes.apple.com/us/app/mcmc-robot/id454055791?mt=8
2010	Phycas ver. 1.2, http://www.phycas.org/ (co-authors Mark T. Holder and David L. Swofford)

Appendix B2: Number of publications per faculty 2005-2012; distribution of citations, life time citations, citations since 2007, h- and i 10-index and h- and i 10-index since 2007. Number of publications is derived from Appendix B1; citation and index data retrieved from Google Scholar Sept. 2012. (E=Emeritus; R=Retired; MBL=Marine Biological Laboratory, Woods Hole, Ma).

	# of peer reviewed articles	# of self-authored books	# of edited books	# of book chapters	pubs by lab members	# of pubs	Pubs with citation >1000	>500	>100	>50	total >50
Adams	11					11			1	12	13
Anderson (E)	23			4		27			2	8	10
Bush	8			2		10				3	3
Caira	38	2		5		45				3	3
Cardon (MBL)	11					11					
Chazdon	45	1		5		51		2	21	21	44
Coe	11					11				3	3
Colwell	35		1	6		42	4	5	23	15	47
Elphick	28	1	1	5		35			3	2	5
Goffinet	50	3	1 (+1)	6	11	60			3	7	10
Henry	12			1		13				3	3
Holsinger	36			1	1	37		1	17	13	31
Jockusch	12		1			13				3	3
Jones	15					15				2	2
Les	37			9		46	1		7	7	15
Lewis L.	23					23		1	4	1	6
Lewis P.	13		1			14	1	1	10	4	16
Rubega	8			1		9				1	1
Schaefer (E)	22	1	1	6		29			1	3	4
Schlichting	10			1		11	1	2	7	12	22
Schultz	15			4		19			4	11	15
Schwenk	17		1	4		22			4	8	12
Silander	36					36		1	12	13	26
Simon	19			1		20	1		9	14	24
Taigen (R)						0			2	2	4
Trumbo	10			1		11				5	5
Turchin	23	2	2	8		35	1	1	25	12	39
Urban	21					21				9	9
Wagner	22	3	1	5		31			3	3	6
Wells		1		1	2	2		1	8	12	21
Willig	51	1	2	14		68		5	7	25	37
Yarish	30			13		43			3	3	6
TOTAL	**692**	**16**	**13**	**103**	**14**	**821**	**9**	**20**	**176**	**240**	**445**

Appendix B2 (continued)

	Total # of citations	citations since 2007	h-index[1]	h-index since 2007[2]	i 10-index[3]	i 10-index since 2007[4]
Adams	1562	685	24	15	34	22
Anderson (E)	2070	797	23	14	61	25
Bush	346	297	8	7	6	6
Caira	1095	614	17	12	38	17
Cardon (MBL)						
Chazdon	8279	4308	46	34	88	74
Coe	357	214	8	7	7	6
Colwell	19426	11618	47	39	78	62
Elphick	967	726	14	13	23	19
Goffinet	1986	1251	24	19	43	32
Henry	981	380	19	11	31	13
Holsinger	6242	2553	37	22	73	43
Jockusch	588	308	14	12	17	13
Jones	602	303	15	10	17	10
Les	3958	1272	26	17	54	30
Lewis L.	2063	1378	17	13	23	18
Lewis P.	4587	2653	20	19	26	24
Rubega	415	258	13	9	13	6
Schaefer (E)	1568	793	19	14	47	21
Schlichting	5566	2398	34	21	50	33
Schultz	1971	883	20	17	27	20
Schwenk	1738	748	23	17	29	21
Silander	5715	2731	34	25	63	50
Simon	6172	2920	36	23	58	42
Taigen (R)						
Trumbo	943	429	19	13	29	20
Turchin	8674	3966	42	33	76	54
Urban	846	810	15	14	17	17
Wagner	1185	607	18	12	29	16
Wells	3795	1404	30	16	40	25
Willig	8853	5114	43	31	114	87
Yarish	2652	1488	22	17	50	27
TOTAL	**105202**	**53906**	**$\bar{x}$= 24.23**	**$\bar{x}$=17.53**	**$\bar{x}$=42.03**	**$\bar{x}$=28.43**

[1] h-index is the largest number h such that h publications have at least h citations

[2] h-index since 2007: the largest number h such that h publications have at least h new citations in the last 5 years

[3] i 10-index is the number of publications with at least 10 citations

[4] i 10-index since 2007 the number of publications that have received at least 10 new citations in the last 5 years.

Appendix B3: Presentations made by EEB faculty 2005-2012

Appendix B3a: List of plenary talks given by EEB faculty

Bush

2012	"The Comings and Goings of Animal Life on Earth", Agouron Institute, Washington, D.C.
2008	Paleontological Society Centennial Short Course

Caira

2011	Tapeworms of sharks and rays: Numbers, fidelity, infidelity and globetrotting. The Natural History Museum of London, Darwin's Birthday Celebration.
2011	Presidential Address: American Society of Parasitologists: Who are we now? National Meeting of the American Society of Parastiologists. Anchorage, Alaska.
2010	Plenary Address. Inroads into the Discovery and Description of Global Parasite Biodiversity. 12th International Congress of Parasitology. Melbourne, Australia.

Chazdon

2012	Keynote address, 18th Annual Conference, Yale Chapter of the International Society of Tropical Foresters
2011	Plenary lecture, Student Conference on Conservation Science; American Museum of Natural History
2007	Keynote Address: Congreso Mexicano de Botánica, Zacatecas, México

Colwell

2013	Keynote Speaker, INTECOL Symposium on Tropical Elevational Gradients, London, UK.
2011	Invited Speaker, Sun Yat-Sen University, Guangzhou, China Invited Speaker, Insitute of Zoology, Chinese Academy of Sciences, Beijing, China Keynote Speaker, International Biogeography Society, Heraklion, Crete, Greece
2010	Invited Speaker, Royal Society, London, UK, October Keynote Speaker, Instituto de Ecología A.C. (INECOL) Student Colloquium, Xalapa, Mexico
2009	Keynote Speaker, International Biogeography Society, Mérida, Mexico
2008	Invited Speaker, National Academy of Science Sakler Colloquium, Irvine, CA

Elphick

2012	Plenary talk, Bird Conservation Conference in the Northeast, Plymouth, MA, USA.
2009	Plenary talk, Wetlands and Waterbirds Conference, Leeton, Australia.
2007	Dinner presentation, Western Field Ornithologists Annual Meeting, Las Vegas, NV, USA.

Holsinger

2009	LDS: Botany in 2009

Schlichting

2009	Darwin Bicentennial lecture: Evolutionary biology 2009: Phylogeny, speciation, co-evolution, development, genomes, life histories, plasticity. What is new? Rennes, Brittany, France
2008	TREEBREEDEX: European network on forest tree breeding and genetics. Madrid.

Appendix B3a (continued)

Schultz

2012	10ο Πανελλήνιο Συμπόσιο Ωκεανογραφίας & Αλιείας (10th Panhellenic Symposium of Oceanography and Fisheries), Athens Greece
2012	Ελληνικη Εταιρεια Βιολογικων Επιστημων (Hellenic Society of Biological Sciences), Τρίκαλα Greece
2006	First Marine Biology Conference of Brazil, Rio de Janeiro

Schwenk

2011	Workshop on: Natural Kinds in Philosophy and in the Life Sciences: Scholastic Twilight or New Dawn?, Granada, Spain
2005	XIIIth Altenberg Workshop in Theoretical Biology: Arriving at a Theoretical Biology—The Waddington Centennial, Konrad Lorenz Institute, Altenberg, Austria

Silander

2007	NIEAS International Symposium, Tsukuba, Japan
2009	Odum Conference: Understanding and managing biological invasions as dynamic processes: integrating information across space and time.
2010	USDA International Symposium: Invasive Plants in the Northeast of Asia and America: Trading Problems, Trading Solutions.
2012	Fynbos Forum, Cape St. Francis, South Africa

Simon

2008.	Presidential Address, Society of Systematic Biologists. Systematics, Evolution, and Natural History: Lessons from Past Presidents and Cicadas. Evolution 2008 International Meetings, Minneapolis, MN. 23 June 2008.
2009	Illustrating Darwin's Origin of Species with examples from Cicada Evolution. BioEd 2009. Darwin 200 Symposium. Celebrating the 200th anniversary of the birth of Charles Darwin, sponsored by the International Union of Biological Sciences, Commission on Biological Education, and the United Nations Educational Scientific and Cultural Organization; Hosted by the Allan Wilson Center, Christchurch, NZ. 13 February 2009.
2010	NZ Ecology Meetings, Dunedin, New Zealand. Using Molecules to Understand the Evolution of NZ Cicada Biodiversity. 23 November 2010.

Turchin

2012	Towards Cliodynamics: An Analytical, Predictive Science of History. Plenary speaker at the COST conference, Galway, Ireland.
2010	Invited Key Lecturer at the SIDER Workshop on “Modeling Reality: Using Mathematical Models to Describe and Predict Social Dynamics”, Sde Boqer, Israel.

Urban

2009	Keynote speaker, University of Toronto Ecology and Evolutionary Biology Colloquium

Appendix B3a (continued)

Wagner

2006	Cascading consequences of introduced and invasive species on imperiled invertebrates, 18th USDA Interagency Research Forum on Gypsy Moth and Other Invasive Species. Annapolis, MD.
2006	Lepidopteran Conservation in Eastern North American, Fourth Annual Conservation Symposium, Cleveland Natural History Museum.
2007	Cascading consequences of introduced and invasive species on imperiled invertebrates, Natural Areas Conference, Cleveland, Ohio.
2010	Spring Caterpillar Fauna of the Appalachians with Ecological, Behavioral, and Evolutionary Vignettes of Southeastern Species, Society of Southeastern Biologists, Asheville, North Carolina, April, 2010

Wells

2010	Invited plenary lecture on "The Social Behavior of Anuran Amphibians: What have we Learned in 35 Years?", Annual joint meeting of American Society of Ichthyologists and Herpetologists, Herpetologists' League, and Society for the Study of Amphibians and Reptiles, Providence, R.I., summer 2010.

Willig

2005	inaugural lecture in the "Professor Walter G. Moore Lecture in Ecology Series" (Loyola University)
2005	plenary address at the "International Symposium on the Importance of Bats as Bioindicators" (Barcelona, Spain)

Yarish

2005	Keynote Presentation at the Centre for Marine Resources and Mariculture (C-Mar) 8th Annual Aquaculture Workshop, Portaferry, Northern Ireland.

Appendix B3b: Number of annual talks given by EEB faculty

	Plenary talks	Seminars	Other talks
Adams		3	4
Bush	2	10	17
Caira	3	10	40
Chazdon	3	19	20
Colwell	8	41	6
Elphick	3	7	49
Goffinet			10
Henry			11
Holsinger	2	6	10
Jockusch		9	16
Jones		2	1
Les		9	29
Lewis		11	53
Lewis		16	11
Rubega		6	21
Schlichting	2	8	0
Schultz	3	7	59
Schwenk	2	10	15
Silander	4	20	50
Simon	3	8	37
Turchin	2	21	31
Urban	1	23	7
Wagner	4	14	15
Wells	1		
Willig	2	12	38
Trumbo (Waterbury)		7	7
Yarish (Stamford)	1	14	15
Anderson (E)	2	12	19
Total	47	299	581

Appendix B4: Distribution of extramural awards per year by faculty. For each award active for at least one year 2005-2012; total award amount was divided by award period (# of years) and annual portions added for each faculty holding multiple awards. Only the portion of collaborative awards going to UCONN is included.

	2005	2006	2007	2008	2009	2010	2011	2012	Total	Total grant amounts of active	Total collab. award
Adams	58,250	58,250	—	90,333	90,333	90,333	—	—	387,500	504,000	504,000
Bush	—	—	—	—	—	60,804	60,804	60,804	182,411	182,411	182,411
Caira	242,654	112,613	207,261	207,261	617,663	617,663	816,863	716,745	3,538,724	4,836,981	7,498,508
Chazdon	50,000	50,000	50,000	80,065	128,565	155,244	162,698	180,186	856,758	1,307,489	1,422,615
Colwell	10,537	10,537	—	69,189	119,660	119,660	57,967	7,495	395,045	437,192	4,434,257
Elphick	57,814	—	49,445	—	—	207,663	9,960	—	324,882	441,630	4,384,829
Goffinet	5,775	120,390	114,615	114,615	114,615	219,286	104,671	277,057	1,071,022	1,336,812	5,355,910
Henry	—	—	5,543	5,543	—	—	—	—	11,085	11,085	11,085
Holsinger	—	—	16,486	22,469	16,472	—	98,834	98,834	253,094	818,862	2,570,632
Jockusch	5,591	45,613	138,947	138,947	99,329	65,996	60,000	—	554,423	554,423	554,423
Jones	31,000	31,000	31,000	58,000	58,000	186,931	285,764	285,764	967,459	1,263,959	1,046,994
Les	23,103	1,507	—	24,550	32,400	—	242,460	244,960	568,980	878,895	935,136
Lewis L.	132,217	281,382	149,165	149,165	149,165	240,336	91,171	111,011	1,303,610	1,560,807	4,395,925
Lewis P.	18,982	18,982	18,982	18,982	18,982	79,141	60,159	60,159	294,368	424,606	13,024,363
Rubega	—	24,952	200,732	61,698	—	32,958	26,667	31,632	378,639	296,566	276,059
Schlichting	—	—	—	—	6,000	6,000	98,834	98,834	209,668	506,167	3,008,642
Schultz	234,349	110,529	135,529	16,185	—	20,477	53,080	—	570,148	834,878	1,138,744
Schwenk	—	—	—	—	6,000	6,000	—	—	12,000	12,000	12,000
Silander	310,076	463,200	210,000	210,000	90,000	165,379	75,379	63,724	1,587,757	4,399,584	4,930,316
Simon	133,333	133,333	291,333	316,333	308,333	308,333	364,300	214,300	2,069,600	1,749,242	2,821,400
Turchin	660,000	156,667	156,667	56,667	—	—	30,000	30,000	1,090,000	3,137,055	3,137,055
Urban	—	35,000	78,000	78,000	—	—	166,667	256,637	614,304	1,141,451	1,141,451
Wagner	26,085	30,085	32,500	63,000	60,097	25,597	50,000	18,000	305,362	439,966	439,966
Willig	109,979	363,599	77,711	227,602	746,145	422,839	249,792	322,830	2,520,497	2,520,497	13,115,334
Yarish	7,035	—	136,913	136,913	—	152,837	214,307	266,299	914,302	1,195,261	1,195,261
TOTAL	**2,116,778**	**2,047,637**	**2,100,827**	**2,145,515**	**2,770,760**	**3,292,475**	**3,489,375**	**3,454,270**	**21,417,638**	**30,884,316**	**77,629,813**

Appendix B5: Research grants received or submitted by EEB faculty 2005-2012. A. Pending. B. Extramural recent or active. C. Intramural recent or active.

Appendix B5A. Pending Extramural and Intramural grant proposals

Extramural

Chazdon

Pending — NSF, CNH; RCN (2012-2017): neoSelvas Network: Building a socio-ecological understanding of reforestation in the tropics.

Colwell

Pending — NSF, Collaborative Research: Using stochastic biogeographical models to link regional processes with continental patterns and the past with the future, $298,751.

Goffinet

Pending — NSF (DEB-1222493) full proposal pending IOS Preliminary Proposal: Dialects of decay: geographic, ecological and phylogenetic variation in a deceptive chemical signal. Collaborators: Dr. R. Raguso (Cornell) & P. Marino (Memorial University, Canada) (UCONN portion: $132,343).

Wagner

Pending — NSF (2013-2016): Collaborative Research: Understanding Positive Productivity-Richness Relationships in Birds: Integrating Local, Landscape and Regional Processes (with Allen Hurlbert as PI), UConn subaward $261,897.

Willig

Pending — NSF. DEB 1239764. LTER 5: Understanding Environmental Change in Northeastern Puerto Rico. Collaborators: Brokaw, Gonzalez, Pringle, Ramirez, and Willig. Request 5,880,000 for six years. Funded 1,960,000 for two years.

Yarish

Pending — Environmental Protection Agency/Long Island Sound Research Program (2013-2015). Comparative analysis and model development for determining the susceptibility to eutrophication of Long Island Sound (J. Vaudrey is lead PI): $400,000.

Pending — Environmental Protection Agency/Long Island Sound Research Program (2013-2015). Development of a scalable farm system for nutrient bioextraction: Its physical, ecological and environmental impacts in Long Island Sound: $399,922.

Pending — University of California (BARD is prime) (2013-2016): The use of aquaculture effluents in spray culture for the production of high protein macroalgae for shrimp aqua-feeds: $92,000.

Pending — Marine Biological Labs (Northeast Regional Aquaculture Center, USDA prime) (2013-2016): Multi-cropping of sea vegetables and shellfish for diversified business opportunities: $98,321.

Intramural

Henry

Pending — The genomics of recent, rapid and repeated speciation in a duetting insect (co-PI: M. Wells): $24,929.

Simon

Pending — Bridging Funds for Phylogeny and Biogeography of World Cicadas and Seed Data for Future Endosybiont Co-Phylogeny NSF Submission. $24,992).

Appendix B5B. Extramural recent or active grants

Adams

2007-2010 Army Research Office; "Swarm behavior during conflicts: from biological to engineered systems"; Co-P.I. with Nejat Olgac (Department of Mechanical Engineering; University of Connecticut); $271,000.

2002-2006 National Science Foundation Grant; "Behavioral control of the reproductive structure of termite colonies"; $233,000.

Bush

2009 NSF, EAR, Sedimentary Geology & Paleobiology (*Paleoecologic gradient analysis of the Frasnian/Famennian extinction and recovery*; $182,411)

Caira

2011–2013 MRI: Acquisition of a field emission scanning electron microscope with cryo transfer and EDS systems. $597,600) (Marie Cantino and Christoph Dupraz, Co–PIs).

2008–2013 National Science Foundation (Planetary Biodiversity Inventories Program): "A survey of the tapeworms (Cestoda: Platyhelminthes) from vertebrate bowels of the earth." $2,587,727) (Collaborative proposal with K. Jensen, T. Littlewood, J. Mariaux).

2006–2011 National Science Foundation (Biological Surveys and Inventories Program): "A survey of the elasmobranchs and their metazoan parasites of Indonesian Borneo (Kalimantan). $500,590) (Peter Last and Gavin Naylor, Co–PIs).

2004–2006 National Science Foundation (Systematic Biology Program): "Dissertation Research, Patterns of diversity and host specificity in the cestodes of freshwater stingrays." Dissertation Improvement Grant. $10,940) (Florian Reyda, Co–PI).

2001–2008 National Science Foundation (PEET Program): "Enhancing taxonomy in the Cestoda: monography of selected tetraphyllidean groups and the dawn of a global cestode database." $750,000) (Tim Ruhnke, Co–PI). $13,500 REU supplement, 2004; $9,095 REU supplement, 2005; $14,425 REU supplement 2006.

Chazdon

2012-2017 NSF, DEB; Collaborative Research/LTREB Renewal: Successional pathways and rates of change in tropical forests of Brazil, Costa Rica and Mexico. $344,072. REU Supplement (2011) $7,616

2011-2014 NSF, CNH; Collaborative Research: The emergence of effective governance arrangements for tropical forest ecosystems. $113,330

2011-2012 NSF, DEB; Dissertation Research: Functional trait diversity and community assembly of trees and seedlings during tropical forest succession, $14,909.

2011-2014 NSF, Population and Community Ecology; Collaborative Research: Modeling successional vegetation dynamics in wet tropical forests. To date $187,615

2009-2010 NSF, OISE Workshop Grant; Neotropical secondary forest regeneration: Integrating ecological processes across multiple scales, $39,028.

2009-2013 NASA; Detecting changes of forest biomass from fusion of radar and lidar: Developing DESDynl measurement requirements (subgrant from JPL) $135,000

2008-2012 Blue Moon Fund; Valuing the carbon and biodiversity of secondary and mature tropical forests. $184,213

2007-2011 NSF, LTREB; Collaborative Research/LTREB Successional pathways and rates of change in tropical forests of Brazil, Costa Rica, and Mexico, $326,502. REU Supplement (2008) $6,219.

Appendix B5B (continued)

2005–2007	Juan Pablo Arroyo (Chazdon) 2005-2007 "International Dissertation Enhancement Research: Natural Forest Management Plans in Costa Rica: A Potential Framework For Assessing Tree Biodiversity," OISE-0537208, $7000
2005–2006	SGER: Large-scale Ecology of a Diverse Tropical Rain Forest Landscape: a Multidisciplinary Proposal to Capitalize on a Unique Research Opportunity,"$22,680 (not to UConn).
2004-2007	NSF, Ecological Studies; Causes and consequences of temporal patterns in tree colonization during succession, $19,374.

Colwell

2010-2012	NSF DEB-1011304, "Dissertation Research: Spatio-Temporal Variation in an Ant-Plant Interaction" (PI; $14,990; Kellie Kuhn's dissertation research supported)
2009-2011	NSF DBI-0851290, "Extending Lifemapper to Enable Macroecological Research" (PI; $151,415)
2007-2010	NSF DEB-0639979,"Integrating ecological and evolutionary processes in stochastic biogeographical models" (PI; $207,566)
2003-2008	Conservation International TEAM Project, "Tropical Ecology, Assessment, and Monitoring in a Lowland Tropical Wet Forest" (Co-PI with two others, $1,550,646)
2000-2006	NSF DEB-0072702 "Arthropod diversity from Rainforest to Cloud Forest, Project ALAS Phase IV" (Project Director; 7 Co-P.I.'s, $959,075)
2003-2008	Conservation International TEAM Project, "Tropical Ecology, Assessment, and Monitoring in a Lowland Tropical Wet Forest" (Co-PI with two others, $1,550,646)

Elphick

2012	Sentinels of climate change: coastal indicators of wildlife and ecosystem change in Long Island Sound. CT DEEP. (PI: C.S. Elphick; Co-PIs: M. Huang, C. Field). $193,049
2011	Development of a decision support tool for coastal habitats in Connecticut. CT DEP. (PI: C.S. Elphick.) $9,960
2010	Identification of tidal marsh bird focal areas in BCR 30. Northeast Association of Fish and Wildlife Agencies. (PI: W.G. Shriver, U. Delaware; Co-PIs: D. Curson, C.S. Elphick, T.P. Hodgman, and B.J. Olsen.) $76,301
2010	Assessing change in the New England tidal marsh bird community. USFWS. (PI: B.J. Olsen, U. Maine; Co-PIs: T.P. Hodgman, C.S. Elphick and W.G. Shriver.) $47,420
2010	The conservation of tidal marsh birds: guiding action at the intersection of our changing land and seascapes. USFWS. (PI: T.P. Hodgman, Maine DIFW; Co-PIs: B.J. Olsen, C.S. Elphick and W.G. Shriver.) $760,202
2010	Estimating adult survival rates in saltmarsh sparrow. National Audubon Society. $3,385
2008	Migratory Bird Partnership. S.D. Bechtel, Jr. Foundation. (PI: G. Chisholm, Audubon-California; Joint grant to Audubon-Connecticut, PRBO Conservation Science and The Nature Conservancy; Cooperating investigator, C.S. Elphick, among others.) $3,000,000
2007	Chimney swift critical habitat needs and design of artificial nesting structures. CT DEP - Wildlife Division. (PI: M. Rubega). $49,804
2007	Estimating the demographic consequences of wetland fragmentation: Movement and survival patterns of a threatened salt marsh bird. CT DEP - OLISP (Co-PI: J. Hill.) $24,543
2006	Evaluating the benefits of salt marsh restoration and management for globally vulnerable birds. NOAA/Connecticut Sea Grant. (Co-PI: M. Rubega.) $139,165

Appendix B5B (continued)

2006 Waterbirds on working lands: literature review and bibliography development (supplement). National Audubon Society. $10,710

2005 Waterbirds on working lands: literature review and bibliography development. National Audubon Society. $30,240

2005 A comprehensive assessment of the distribution of saltmarsh sharp-tailed sparrows in Connecticut. CT DEP - OLISP. (Co-PI: M. Rubega.) $24,952

2005 Monitoring plan development for the Fenwick Saltmarsh Restoration Project Lynde Point Land Trust. $5,098

2005 Developing an IBA conservation plan for the East and West River marsh complex IBA in Guilford and Madison. National Audubon Society. $10,000

Goffinet

2012-2015 National Science Foundation (DEB-1240045) $484,948.00 Collaborative Research: AToL: Assembling the Pleurocarp Tree of Life: Resolving the rapid radiation using genomics and transcriptomics. Total award : $1,364,397 Collaborators : Dr. A.J. Shaw (Duke) & N. Wickett (Chicago Botanical Garden)

2012 National Science Foundation (DEB-1212505) US$38,080 Funding for support of graduate students to attend joint international conferences on molecular systematics of bryophytes and bryophyte genomics, and for professional development for 4-12 science teachers In NY in June 2012 (co-PI: Drs. Amy Litt, DorothyBelle Poli & William R. Buck).

2012-2015 National Science Foundation (DEB-1146295) US$531,550 Rapid radiation and sporophyte evolution in the Funariaceae: inferences from phylogenomics and cross generational cuticle development studies

2009-2011 National Science Foundation (DEB 0919284) US$599,242 Reduction & reversal in the Funariaceae: phylogenetic perspective on sporophyte complexity and role of the calyptra.

2009-2011 National Science Foundation (DEB 0910258) US$9,594 Dissertation Research: Genetic consequences of the shift to asexuality in bryophytes: insights from the hornwort *Megaceros aenigmaticus*; Thesis of Juan Carlos Villarreal.

2006-2010 National Science Foundation (EF 0531557) US$573,075 ATOL, Collaborative : Assembling the liverwort tree of life : window into the evolution of early land plants. (Six institutions, total of $2,839,578). REU supplements in 2007, 2008 and 2009 for $6,500, $7,000 and 8,500, respectively.

2004-2006 National Science Foundation (DEB 0408043) US$11,549 Dissertation Research: Chloroplast evolution of the nonphotosynthetic liverwort *Cryptothallus mirabilis* (Aneuraceae); Thesis of Norman Wickett.

Formal collaborative projects with funding at other institutions

2012-2014 Spanish Ministerio de Ciencia e Innovación CGL2011-28857 to Dr. Vicente Mazimpaka (Uni. of Madrid). Disyunciones intercontinentales en briofitos: estudios sistematicos y filogeograficos en el genero *Orthotrichum* (Orthotrichaceae, Bryopsida). [Intercontinental disjunctions in bryophytes: systematic and phylogeographic studies on the genus *Orthotrichum* Hedw. (Orthotrichaceae, Bryopsida)]. 97,000 €

2009-2011 Corporacion de Fomento CORFO, Chile. Awarded to Omora Foundation; project: Eco Turismo con Lupa en la Región Subantártica y Antártica Chilena. US$400,000

2007-2010 Ministerio de Educación y Ciencia, Dirección General de Investigación (Spain) CGL2007-61389 to Dr. Franscico Lara, Uni. Madrid. Estudios taxonómicos, sistemáticos y

Appendix B5B (continued)

	biogeográficos sobre *Orthotrichum* Hedw. Subg. *Pulchella* (Schimp.) Vitt (Orthotrichaceae, Bryopsida. Una revisión al nivel mundial. [Taxonomic, Systematic and Biogeographic studies on *Orthotrichum* subg. *Pulchell*a (Schimp.) Vitt. A world-wide revision]. 72,600€
2005	National Geographic Society (7942-05). Award to Robert Raguso (with Paul Marino and Bernard Goffinet as Co-PIs); Odor, color and fly-mediated spore dispersal in dung mosses (Splachnaceae). $23,806.83

Holsinger

2011	Collaborative: Dimensions: Parallel evolutionary radiations in *Protea* and *Pelargonium* in the Greater Cape Floristic Region, National Science Foundation DEB-1046328, $1,976,670 (Carl Schlichting, principal investigator; Cynthia Jones, John Silander, co-principal investigators)

Jockusch

2012-2013	University of Connecticut Research Foundation, Faculty Large Grant Program: Genome-wide Analysis of Hybridization between Salamanders with Giant Genomes, $21,000
2008	NSF Dissertation Improvement Grant: Dissertation Research: Origin and Diversification of Pseudoscorpions on Granite Outcrops in Southwestern Australia (with co-PI graduate student Roberta Engel), $11,992
2008	NSF IBN/DBI, Symposium Support: Evolution and Development of Integrated Phenotypes at the International Congress of Entomology in Durban, South Africa, July 6-12, 2008 (co-PI, with L. Nagy, U. Arizona), $20,000
2006-2011	NSF Systematics Panel: Hybridization and evolution in slender salamanders (Plethodontidae: *Batrachoseps*), $300,000. Research Experience for Undergraduates grant supplement, $10,000 (2006); $15,110 (2007), $7000 (2008), $7000 (2009)
2006-2008	USDA NRICGP seed grant, Functional Genomics of Arthropods and Nematodes Panel: Functional genomic analysis of appendage development in the red flour beetle, *Tribolium castaneum*, $100,000
2005-2008	NIH NRSA Ruth L. Kirchstein Postdoctoral Fellowship for postdoctoral researcher David Angelini: Developmental mechanisms underlying divergent morphology in the antennae of *Tribolium* flour beetles, ca. $135,000
2003-2005	NSF Dissertation Improvement Grant Panel: DISSERTATION RESEARCH: Testing the Parallel Speciation Hypothesis in Scincid Lizards of the *Eumeces skiltonianus* Species Complex (for Jonathan Richmond), $11,182

Jones

2011-2016	National Science Foundation Dimensions of Biodiversity: Parallel Evolutionary Radiations in *Protea* and *Pelargonium* in the Greater Cape Floristic Region; Schlichting, P.I., Holsinger, Jones, Silander co-PIs, Borevitz, Latimer collaborators; 5 years, $1,976,670 to UConn.
2009-2011	(+ one year no -cost extension) National Science Foundation (IOS - Organism-Enviro Interactions), EAGER: A mechanism for xylem repair under tension. H. J. Schenk (PI) (total grant $299,994) and C. S. Jones (Subcontract $87,171).
2009-2012	National Science Foundation (DEB - Systematic Biology and Biodiversity Inventory) Reduction & reversal in the Funariaceae: phylogenetic perspective on sporophyte

Appendix B5B (continued)

complexity and role of the calyptra. PI B. Goffinet, co-PI C. S. Jones $599,242).

2007-2010 (+ 1.5 year no-cost extension) National Science Foundation (IOS - Organism-Enviro Interactions), Collaborative Research: Resistance, repair and redundancy: Traits that protect shrubs against drought-induced hydraulic failure. H. J. Schenk and C. S. Jones. (Total grant: $654,000; $290,000 to UConn.)

2006-2009 (+ one year no-cost extension) National Science Foundation International Research Experience for Students: Biodiversity Hotspots: Ecological and Evolutionary Patterns and Processes in the Cape Floristic Region of South Africa. PI John Silander, co-PIs C. Schlichting, C. Jones and K. Holsinger. $149,000.

2004-2007 Mellon Foundation, Hydraulic Segmentation and Axis Splitting in Desert Shrubs, H. J. Schenk (PI) and C. Jones (Subcontract $93,000).

Les

2009–2013 Collaborative Research: Systematic and ecological studies of North American *Najas* L. (Hydrocharitaceae). DEB-0841658 [PI: D. Les]/DEB-0841745 [PI: S. Sheldon] . National Science Foundation. $ 297,040 [UConn] + $89,241 [Middlebury College] = $386,281.

2009–2013 Completing a virtual herbarium at the University of Connecticut. DBI-0847111. National Science Foundation. (PI; with R. S. Capers, co-PI). Project featured on www.research.gov $ 430,140 + $5,140 (REU: DBI-0943027) + $6,365 (REU: DBI-1027190) + $6,394 (REU: DBI-1112470) = $448,039; + supplement (DBI-1137615) $28,010 = $476,049.

2012 Genetic variation in *Sparganium natans* (small bur-reed). Massachusetts Natural Heritage and Endangered Species Program. $2,500

2008–2009 RUI: Surveys of Podostemaceae (riverweeds) in Latin America. National Science Foundation/Western Connecticut State University. $10,000

2007–2009 Biological control and ecology of *Cabomba*. CSIRO, Canberra, Australia. (with Amy Weise). $30,000

2007–2009 A molecular genetic approach to evaluate herbicide resistance and vectors of spread for populations of the invasive aquatic plant *Hydrilla verticillata* (Hydrocharitaceae) in Connecticut. Long Island Sound Program. (with L. Benoit). $14,800

2007–2008 Development of molecular methods to distinguish two Connecticut State Listed aquatic plants: *Potamogeton vaseyi* and *P. pusillus* var. *gemmiparus* (Potamogetonaceae). Connecticut Department of Environmental Protection, Endangered Species Program. (PI; DEP sponsor – N. Murray). $2,150

2006 Genetic analysis of invasive *Hydrilla verticillata* populations in Connecticut. SeaGrant Development grant. (with L. Benoit). $1,507

2004–2005 Fluridone resistance in submersed aquatic plants. Griffin-LLC Co., Valdosta, Georgia. $57,758 [reduced to $23,103 by contract termination due to sale of company]

Lewis, Louise

2012 National Science Foundation, Systematic Biology Program, DEB1213675, ROA supplement for ATOL: Collaborative Research: Assembling the Green Algal Tree of Life (GRAToL), $19,840.

2010-2015 National Science Foundation, Systematic Biology Program, DEB1036466, ATOL: Collaborative Research: Assembling the Green Algal Tree of Life (GRAToL), 09/01/2010–8/31/2015, with co-I P.O. Lewis, $601,590 (of $2,706,890).

Appendix B5B (continued)

2008-2011 National Aeronautics and Space Administration, Exobiology Program, 07-EXB07-0066, Leaping to land – physiology and phylogenetics of desert green algae, 07/01/2008–06/30/2011, Co-I with Z.G. Cardon (MBL, lead), H. Frank (UConn, Chemistry), $93,035 (of $531,978).

2006-2007 National Science Foundation, Systematic Biology and Biodiversity Inventories Program, DEB0529737, REU for PEET: Integrating classical with phylogenetic taxonomic treatments in five genera of coccoid green algae (Chlorophyta), 09/01/2006–8/31/2007, $6,700.

2005-2012 National Science Foundation, Systematic Biology and Biodiversity Inventories Program, DEB0529737. PEET: Integrating classical with phylogenetic taxonomic treatments in five genera of coccoid green algae (Chlorophyta), 09/01/2005–8/31/2010 (2012 with no-cost extension), $745,825.

2004-2006 National Science Foundation, Systematic Biology and Biodiversity Inventories Program, DEB0407752, Dissertation Research: Systematics, Colony Form Evolution and Phenotypic Plasticity within the Family Hydrodictyaceae (Sphaeropleales, Chlorophyta), 07/30/2004–07/29/2006, with Hilary McManus, $10,516.

2003-2006 National Aeronautics and Space Administration, Exobiology Program, EXB02-0042-0054, Phylogenetic diversity and comparative physiology of independently-evolved lineages of desert green algae (Chlorophyta), 05/1/2003–04/30/2006, Co-I with Z.G. Cardon, $380,876.

Lewis, Paul

2010-2015 National Science Foundation Collaborative Research: Assembling the Green Algal Tree of Life (GrAToL) Grant DEB-1036448, $649,872. Co-PI with Louise A. Lewis.

2006 National Evolutionary Synthesis Center (NESCent) Sabbatical Fellowship, Spring Semester 2006

2003-2010 National Science Foundation Information Technology Research (ITR) Large Grant NSF EF-0331495, 2003, $113, 891. Co-PI with David L. Swofford (Duke), Ward Wheeler (American Museum of Natural History), Wayne Maddison (University of Britsh Columbia) and David Maddison (Oregon State University).

Rubega

2012 Inventory and Assessment of Greatest Conservation Need Avian Species. CT Department of Environmental Protection. M. Rubega, PI $31,632

2011 Inventory and Assessment of Greatest Conservation Need Avian Species. CT Department of Environmental Protection. M. Rubega, PI $26,667

2010 Inventory and Assessment of Greatest Conservation Need Avian Species. CT Department of Environmental Protection. M. Rubega, PI (Co-PI: Chris Elphick) 5/1/2010 – 10/14/2010. $32,958

2009 Graduate Research Assistantship Award to support Faculty Members in pursuit of Multidisciplinary Environmental Activities, UConn Center for Environmental Science and Engineering: Preparing specimens for research, education and outreach in the UConn Biological Collections. M. Rubega, P.I. $10,000

2009 Graduate Research Assistantship Award to support Faculty Members in pursuit of Multidisciplinary Environmental Activities, UConn Center for Environmental Science and Engineering: Chimney Swift Conservation in CT. M. Rubega, P.I. $10,000

Appendix B5B (continued)

2008	Connecticut Avian Insectivores: Habitat-use Study and Design of Artificial Nesting Structures for Chimney Swifts. CT Dept of Environmental Protection. M. Rubega, PI (C.S. Elphick, Co-PI) $61,698
2007	Seed-dispersal mutualisms: the spatio-temporal dynamics of fleshy-fruited plants and their avian dispersers on landscapes. National Science Foundation. M. Rubega, PI (J. Silander, Co-PI). $123,104
2006	Evaluating the benefits of salt marsh restoration and management for globally vulnerable birds. CT-Seagrant. M.Rubega , Co-PI (C.S. Elphick, PI). $139,165
2005	A comprehensive assessment of the distribution of saltmarsh sharp-tailed sparrows in Connecticut. CT DEP - OLISP. M. Rubega, Co-PI (C.S. Elphick, PI) $24,952

Schlichting

2012-2016	Dimensions of Biodiversity: Parallel Evolutionary radiations in *Protea* and *Pelargonium* in the Greater Cape Floristic Region. National Science Foundation (DEB-) *C.D.SCHLICHTING,* K.E.Holsinger, C.S. Jones. $512,000
2011-2015	Dimensions of Biodiversity: Parallel Evolutionary radiations in *Protea* and *Pelargonium* in the Greater Cape Floristic Region. National Science Foundation (DEB-1046328). *C.D. SCHLICHTING,* K.E.Holsinger, C.S. Jones & J.A. Silander: $1,976,670. Collaborative *NSF*: J.O. Borevitz, University of Chicago: $544,558. Collaborative *NSF*: A.M. Latimer, University of California, Davis: $475,414.
2006-2010	International Research Experience for Students - Biodiversity Hotspots: Ecological and Evolutionary Patterns and Process in the Cape Floristic Region of South Africa. *NSF* (OISE-0623341). J.A. Silander, K.E. Holsinger, C.S. Jones, *C.D. SCHLICHTING*: $149,923.
2008-2010	Dissertation Research: Do egg size effects cascade through salamander ontogeny? Allometric engineering of maternal provisioning. *C.D. SCHLICHTING*, K. Schwenk and Tobias Landberg. *NSF:* $12,000.

Schultz

2012	Fulbright Program, U.S. Department of State. The physiology, ecology, and conservation of landlocked fishes in Greece. Four-month research and teaching fellowship at Aristotle University, Greece.
2011	Foster-Davis Foundation. How ion-exchange physiology adapts upon landlocking in anadromous fishes. (1 yr., $53,080)
2010	National Science Foundation. Planning Visit to East Africa for environmental research on Lake Victoria. (ETS and two other PIs in linked proposal; 1 yr., $ 20,477)
2008	Connecticut Department of Environmental Protection, Tax Checkoff Fund. Integrating fluvial geomorphology and stream ecology: Processes shaping the dDistribution of freshwater mussels in Connecticut. (1 yr., $ 16,185). NOAA National Sea Grant College. Estimating anadromous river herring natal stream homing rates and timing of juvenile emigration using otolith microchemistry. (J. Vokoun, Project Director; ETS and one other co-PI; 2 yr., $ 63,962)
2007	Connecticut Department of Environmental Protection, Long Island Sound Programs. Estimating predation on declining river herring: Tag-recapture study of striped bass in the Connecticut River. (1 yr., $ 25,000)
2005	Connecticut Department of Environmental Protection, State Wildlife Grant. Predator-prey interactions of striped bass and river herring in the Connecticut River. (3 yr., $ 230,233)

Appendix B5B (continued)

U.S. Environmental Protection Agency. Improved valuation of ecological benefits associated with aquatic living resources: development and testing of indicator-based stated preference valuation and transfer. (R.J. Johnston, Project Director; ETS and two other co-PIs; 3 yrs., $ 405,154)

Schwenk

2008-2010 NSF DDIG (*Do egg size effects cascade through salamander ontogeny? Allometric engineering of maternal provisioning*, T. Landberg, C. Schlichting and K. Schwenk) $12,000)

Silander

2012-2014 MacArthur Foundation "Strengthening Advance Training and research in Sustainable Biodiversity Conservation and Climate Change Science and Policy in Madagascar" (J. Ratsirarson PI, Université d'Antananarivo, J. Silander, co-PI, with W. Bond, University of Cape Town, co-PI) $400,000

2011-2015 NSF-Dimensions of Biodiversity (J.Silander, K. Holsinger, C. Jones co-PIs with C. Schlichting PI). "Dimensions of Biodiversity: Parallel Evolutionary radiations in Protea and Pelargonium in the Greater Cape Floristic Region" $3,000,000: collaborative grant with University of California Davis and University of Chicago; University of Connecticut as lead institution $2,000,000 portion).

2009-2012 NASA Earth and Space Science National Fellowship(J. Silander, Jr. P.I., A.Wilson, student fellow) $90,000)

2009-2012 NSF-DEB (Ecological Biology) (J. Silander PI with R. Primack (Boston University) and I. Ibanez (University of Michigan) "Collaborative Research: Spatiotemporal models of phenology: Integrating the effects of climate change on plants and animals." $187,575.

2008-2012 EPA/USDA. (J. Silander PI. Co-PIs: I Ibanez, G. Wang, D. Civco, A. Gelfand, C Reid) "A multi-scale approach to the forecast of potential distributions of invasive plant species." $545,000.

2007-2011 NSF DEB – (Population Biology) (J. Silander co-PI with K. Holsinger PI). "Evolutionary radiations in South African Proteaceae" $476,410

2006-2010 NSF-OSIE – Global Scientists and Engineers (J. Silander, PI, co-PIs: K. Holsinger, C. Jones and C. Schlichting) "International Research Experience for Students – Biodiversity Hotspots: Ecological and Evolutionary Patterns and Process in the Cape Floristic Region of South Africa" $149,923.

2006-2011 USDA (Congressional Earmark). (J. Silander, co-PI, Y. Li PI) UConn: Lead Institution in Consortium with the Universities of Vermont and Maine "New England Center for Invasive Species: A Multi-State Initiative to Neutralize Economically and Environmentally Harmful Invasive Plants." $393,892; 2008-2009: $293,705; 2009-2010: $276,120, 2010-2011: $276,120

2005-2011 US Geological Survey/NBII. (J. Silander, co-PI, L. Mehrhoff, PI). "Early Detection of Invasive Species" (cooperative agreement grant): $45,882

2005-2010 NSF, NSF, Ecology, Statistics and Climate Change. (J. Silander, PI, Alan Gelfand co-PI) "Collaborative QEIB Research: Spatio-temporal Models of species distributions and biodiversity at high resolution - integrating climate and population responses**."** $850,000 (UConn portion: $450,000; Duke portion: $400,000)

2005-2007 USDA - NRI – CREES: NRI #05.2217 (J. Silander, P.I. and L. Mehrhoff, co-P.I.) "Integrating

Appendix B5B (continued)

	Predictive Modeling and Volunteer Networks to Enhance Early Detection and Rapid Response to Invasive Species." $460,000
2001-2011	NSF-DEB (Ecological Biology) (J. Silander, co-PI with M. Rubega, PI) "Seed-dispersal mutualisms: the spatio-temporal dynamics of fleshy-fruited plants and their avian dispersers on landscapes." $123,104
2001-2005	NSF, Ecology, Statistics and Geography Programs (J. Silander, P.I. with A. Gelfand co-P.I.) "Stochastic Modeling for Geographic Diversity of Plants Species Richness in South Africa." $227,500)
2001-2005	U.S.D.A. (J. Silander, P.I. and L. Mehrhoff, co-P.I.) "An integrated approach to invasive plant species control: A New England Consortium." $1,266,000)

Simon

2010-2013	NSF DEB-09-55849 Systematics and Biogeography of the Family Cicadidae Awarded May 2010, $642,900. Three years. REU Supplement in 2011 for $7,500.
2007-2012	NSF DEB 07-20664 Systematics and biogeography of Australian Cicadettini and their relatives worldwide. Co-PI's Thomas Buckley, Peter Ritchie, and Max Moulds. $475,000, (3 years plus two no cost extensions). REU supplements in 2008, 2009, 2010, 2011, 2012 for $6,750, $15,000, $7,500, $7,500 and $7,500, respectively.
2006-2011	NSF DEB 05-29679 PEET: Partnerships for training new experts in Auchenorrhyncha taxonomy. $750,000 (5 years plus one no cost extension) Co-PI's Jason Cryan, Chris Dietrich, and Chris Simon (CS share of grant = 1/3).
2010	Feb REU Supplement to NSF DEB 05-29679 $7,500.
2004-2010	NSF DEB 04-22386, "Phylogeography of New Zealand Cicadas." Co-PI Thomas Buckley. $400,000. (3 years plus three no cost extensions). REU supplements in 2005, 2006, 2007, 2009, for $12,000, $6,000, $12,000, $ 7,000, respectively.
2006-2008	NZ Marsden Fund (equivalent of US NSF). Ice Age Refugia in New Zealand. PI Thomas Buckley (Landcare Research, Auckland), Associate Investigators Chris Simon (UCONN), Glenn Thackray (Idaho State U., Maureen Mara (U. Canterbury), Sponsor: Marsden Fund; Project period: 1/1/06-12/31/08. $675,000 NZD for three years. UCONN subcontract is $18,400 NZD for 2 years.

Turchin

2011–15	ESRC Ritual, Community, and Conflict (Project Director: H. Whitehouse)
2005–08	NSF Global state formation: modeling the rise, fall and upward sweeps of large polities in world history and the global future (with C. Chase-Dunn and E. Anderson)
2005–07	NSF Supplement to the 2000–5 NSF-IRCEB grant
2000–05	NSF-IRCEB Building a mechanistic basis for landscape ecology of ungulate populations (with J. Fryxell, M. Turner, M. Boyce, and E. Merrill)

Urban

2012-2017	Principal Investigator James S. McDonnell Foundation "Does evolution affect the assembly dynamics of biological communities?" $449,851
2011-2014	Principal Investigator National Science Foundation "Evolutionary and ecological feedbacks: Do locally adapted salamanders shape food web dynamics across natural landscapes?" $500,000

Appendix B5B (continued)

2009	Principal Investigator University of Connecticut Foundation "Evolutionary feedbacks on species diversity" $24,000
2005–2008	Co-Principal Investigator National Center for Ecological Analysis and Synthesis Working Group "Evolutionary and ecological sorting in space" with M. Leibold $105,000
2006-2008	Postdoctoral Research Fellow National Center for Ecological Analysis and Synthesis Fellowship "Interaction traits and metacommunity gene flow"$86,000.

Wagner

2010-2012	NSF: Collaborative Databasing of North American Bee Collections within a Global Informatics Network, $36,000.
2010-2011	USDA Forest Service, "Owlet Caterpillars of Eastern North America," $32,000.
2009-2010	Connecticut Department of Environmental Protection, " Connecticut Comprehensive Wildlife Conservation Strategy Invertebrate Species of Greatest Conservation Need Assessment: Grassland/ESS Habitat Invertebrates and CT Bees,"$51,193.
2008-2009	Connecticut Department of Environmental Protection, "Mapping of Key Habitats for Species of Greatest Conservation Need,"$69,000.
2008-2009	Northeast Utilities, Interstate Reliability Project Invertebrate Survey, $83,804.
2007-2008	Connecticut Department of Environmental Protection, "Apoid Pollinators: The Connecticut Bee Survey,"$57,000.
2006-2007	Northeast Utilities Foundation, "Powerline Corridors as Critical Habitat for Bird, Bees, and Butterflies," (with Robert Askins, Connecticut College), $8,000.
2004-2006	"Invertebrates of Connecticut's Coastal Strands Communities,"$24,969.
2001-2006	USDA-Forest Service, "Caterpillars of Southeastern Forests,"$78,000. Connecticut Department of Environmental Protection, Long Island Sound Fund

Willig

2012-2013	Quinnipiac River Fund (T. Bosker and C. Perkins). $18,000.
2011-2012	N.S.F.: Dimensions of Biodiversity Distributed Graduate Seminar (J. Parrish and S. Andelman, PIs). $37,521.
2011-2012	Audubon Connecticut (with B. Klingbeil and S. Presley). $18,554.
2011-2014	State of Minnesota (with C. Perkins and A. Provatas). $66,000.
2011-2013	AgriFuels, LLC (with C. Perkins). $30,000.
2011-2012	U.S.G.S. (with C. Perkins and A. Provatas). $6,000
2010-2011	Purification Technologies, Inc. (with a. Provats and C. Perkins). $12,500.
2009-2013	State of Connecticut, Department of Environmental Protection (with C. Perkins). $750,000.
2009-2010	N.S.F. Neotropical Secondary Florest Regeneration (with R. Chazdon) $39,082.
2009-2010	AgriFuels, LLC (with C. Perkins). $30,000.
2009	Bat Conservation International, $3,500.
2008-2013	State of Connecticut, Nitrogen-Credit Advisory Board (with J. Bushey and C. Perkins). $790,695
2007-2012	USGS Cooperative Agreement (with L. Liu). $287,602.
2006-2012	N.S.F. LTER IV (with N. Brokaw and others). $4,920,000.
2006-2007	E.P.A. (transfer from T. Xie). Center for Hazardous Substances in Urban Environments: Hartford Technology Transfer and Outreach (with C. Perkins). $327,380.
2006-2007	N.S.F. Interagency Personnel Agreement. $154,436.

Appendix B5B (continued)

2006-2007 E.P.A. (transfer from T. Xie). Hazardous Substances in Urban Environments: Training and Technical Assistance for Brownsfield (with C. Perkins). $124,995.

2005-2006 N.S.F. Supplement: Spatial Variation, Metacommunities, and Scale Sensitivity II. $128,260.

2005-2006 N.S.F. Supplement: Spatial Variation, Metacommunities, and Scale Sensitivity I. $121,431.

2004-2005 N.S.F. Interagency Personnel Agreement. $151,299.

2002-2006 N.I.H. Leptospirosis Transmission in the Peruvian Amazon (with J.M. Vinetz and others). $2,262,182.

2002-2006 N.S.F LTER (with J. Zimmerman and others). $2,800,000.

Yarish

2012-2014 Co-PI (with S. Lindell) on a proposal to the Woods Hole Sea Grant/NOAA (as a subaward through the Marine Biological Laboratory) entitled "Multi-cropping Shellfish and Macroalgae for Business and Bioextraction." Subcontract to MBL for Year I being $31,852 with direct costs of $20,818; Year II being $29,116 with direct costs of $19,030; Total of 2 year subcontract $60,968 with direct costs of $39,848. Total Grant: $155,014 (without match).

2012-2014 PI on a proposal to the Connecticut Sea Grant College Program entitled "Seaweed Aquaculture from Bioextraction of Nutrients from Long Island Sound." Year I being $64,962 with direct costs of $41,398; Year II being $65,141 with direct costs of $41,400; Total of 2 year grant $129,754 with direct costs of $82,798.

2011-2013 PI on a subcontract to Ocean Approved, LLC (Portland, Maine) entitled "Development of Native Kelp Culture System Technologies to Support Sea Vegetable Aquaculture in New England Coastal Waters" (NOAA-SBIR Phase II, for Year I being $41,999 with direct costs of $27,450; Year II being 29,029 with direct costs of $18,973; Total of 2 year grant $71,028 with direct costs of $46,423). Received notice on 10-13-2011 that grant will receive NOAA funding. FRS #: 561401, Award/Contract #: AG110895.

2011-2013 Associate Investigator on project entitled "Comparative analysis of eutrophic condition and habitat status in Connecticut and New York embayments of Long Island Sound" funded by Long Island Sound Research Fund (NY and CT Sea Grant College Programs) $199,998 (Principal Investigator J. Vaudrey).

2011-2012 PI on project entitled "Seaweed Aquaculture for Bioextraction of Nutrients from LIS" funded by The National Fish and Wildlife Foundation – Long Island Sound Futures Fund $123,999.00; PI)

2010-2013 Co-Principal Investigator project entitled "Development and application of a Long Island Sound GIS-based eelgrass habitat suitability index model" funded by: Long Island Sound Study and NEIWPCC (Principal investigator J. Vaudrey); $40,652).

2010 PI on a subcontract to Ocean Approved, LLC (Portland, Maine) entitled "Development of Native Kelp Culture System Technologies to Support Sea Vegetable Aquaculture in New England Coastal Waters" (NOAA-SBIR Phase I, for $31,660 with direct costs of $20,693). Received notice on 5-11-2010 that grant will receive NOAA funding.

2010 PI on a subcontracts to Gas Technology Institute (Des Plaines, Illinois) entitled "Macroalgae for CO_2 Capture and Renewable Energy: A Pilot-Commercial Demonstration Project" Phase I (Department of Energy's NETL Program, FOA# 0000015. $91,085 with direct costs of $59,533.

2010-2012 PI on a proposal to the Connecticut Sea Grant College Program (with C.D. Neefus of the University of New Hampshire) entitled "Development of Seaweed Culture System

Appendix B5B (continued)

Technologies to Support Integrated Multi-trophic Aquaculture and Sea Vegetable Aquaculture in New England." $99,275 with direct costs of $65,147; Grant No. NA10OAR4170095.

2006-2008 Co-PI on a proposal to the Packard Foundation (with Barry Costa-Pierce, University of Rhode Island and Jose Zertuche, Universidad Autonoma de Baja California, MX) entitled "Sustainability Assessment of Capture-Based Tuna Aquaculture in Mexico." The UConn subcontract to the Graduate School of Oceanography, University of Rhode Island was $18,355. Total award from Packard to the project was $156,221.

2006-2008 PI on a proposal to the US EPA Long Island Sound Research Grant Competition (with R.B. Whitlatch, G.P. Kraemer and S. Lin) entitled "Multi-component Evaluation to Minimize the Spread of Aquatic Invasive Seaweeds, Harmful Algal Bloom Microalgae, and Invertebrates via the Live Bait Vector in Long Island Sound." $101,756 with direct costs of $68,754 [EPA Grant Number: No: LI-97149601]. In addition, Connecticut Sea Grant College Program also contributed an additional $7,898.

2006-2010 PI on a proposal to the Connecticut Sea Grant College Program (with R.B. Whitlatch, G.P. Kraemer and S. Lin) entitled "Impacts and Spread of the Non-indigenous Rhodophycean Alga, *Grateloupia turuturu*, on Long Island Sound with total funding for a 2 yr project of $153,714 with direct costs of $103,861 [Award/Contract # NA06OAR4170072]

2003-2006 Co-PI on a proposal to the Maine Sea Grant College Program (with Susan Brawley, University of Maine) entitled "Enhanced spore production for seeding of New England *Porphyra* for integrated finfish/seaweed aquaculture." Total funding was $21,105.

Appendix B5C. Intramural research awards from the Research Advisory Council (RAC)

Bush

2006 $18,808

2010 Thin Section Laboratory (saw, impregnation unit, polishing/lapping system). $90,689.

Cardon

2006 $16,677

Chazdon

2009 Dynamnics and reassembly of woody seedling and sapling communities in tropical secondary forests; $15,000

Goffinet

2005 Providing a phylogenetic and ontogenetic framework for functional genomic studies in the model species *Physcomitrella patens*; $14,625.

2007 Providing a phylogenetic and ontogenetic framework for functional genomic studies in the model species *Physcomitrella patens*; $935.

2010 Assembling chloroplast genomes and screening microsatellite loci from total genomic liverwort 454 Sequences.; $23,373.00

2012 Rapid Radiation and Sporophyte Evolution in the Fumariaceae (Mosses): Inferences from phylogenomics; $21,000.

Holsinger

2005 $10,000.

2008 Gene flow and seed variability in a threatened Malagsay orchid; $1,500.

Jockusch

2012 Genome-Wide Analsyis of Hybridization Bewteen Salamanders with Giant Genomes; $21,000.

Jones

2008 Variation in Structural and Functional Traits Across Diverse Plant Growth Forms; $15,225.

Lewis

2005 Field Collection of Gren Algal Symvionts from Two Speciies of Pacific Sea Anemone, Anthopleura, Elegantissima and A.xanthogrammica; $934.

ABI 3130xl DNA Analyzer; $33,000.

Schultz

2008 Copulation kinematics in Poecilia, a genus of livebearing fish; $13,304.

Schwenk

2009 High-Speed Videography of Animal Function and Behavior: A Multi-Investigator Proposal; $20,000.

Appendix B5C (continued)

Silander

2007 Evolution of Elephant Birds in Madagascar - What Can We Learn from Ancient DNA?; $15,655.

Simon

2010 Using CAGT Genomic FLX Technology To Locate Microsatellites To Collect Preliminary Data For Tracking Gene Flow Across Species Boundaries; $24,000.

Trumbo

2008 Basic and Applied Research on a Host Shift Among Burying Beetles; $5,480.

Urban

2009 Evolutionary Feedbacks on Species Diversity: Does Local Adaptation in Salamanders Affect the Structure of Natural Communities?; $24,000.

Wagner

2010 Owlet Caterpillars of Eastern North America (Lepidoptera: Noctuidae); $1,500.

Wells

2008 Charles Darwin Bicentennial Colloquium Series; $2,000.00

Appendix B6: Honors, awards and professional service by EEB faculty 2005-2012.

Appendix B6a: Awards and Honors

University Honors and Awards

2012	Yarish	Provost Award in Public Engagement, UCONN
2012	Holsinger	Board of Trustees Distinguished Professor, UCONN
2011	Willig	Excellence in Research Award, CLAS, UCONN
2009	Anderson	Board of Trustees Distinguished Professor, UCONN
2009	Les	Excellence in Research Award, CLAS, UCONN
2008	Holsinger	Distinguished Alumni Award, College of Idaho
2007	Holsinger	Faculty Excellence Award in Research, UCONN Alumni Ass.
2007	Yarish	Faculty Recognition Award, Stamford Campus
2006	Caira	Board of Trustees Distinguished Professor, UCONN
2005	Chazdon	Honors Faculty Member of the Year, UCONN

State/Regional Societies and Associations

2012	Anderson	Annual Distinguished Speaker, New England Botanical Club
2012	Chazdon	Elected Member, Connecticut Academy of Science and Engineering
2012	Colwell	Elected Member, Connecticut Academy of Science and Engineering
2011	Caira	Elected Member, Connecticut Academy of Science and Engineering
2011	Willig	Elected Member, Connecticut Academy of Science and Engineering
2010	Holsinger	Elected Member, Connecticut Academy of Science and Engineering
2010	Silander	Elected Member, Connecticut Academy of Science and Engineering
2008	Yarish	Elected Member, Connecticut Academy of Science and Engineering
2007	Holsinger	Service Excellence Award, UCONN Chapter, AAUP

National Societies and Associations

2012	Colwell	Elected Fellow, Ecological Society of America
2012	Urban	Research Promise Award, AAUP
2012	Willig	Research Excellence Award, AAUP
2011	Colwell	Elected Fellow, American Academy of Arts and Sciences
2010	Anderson	Journal of Agricultural, Biological, and Environmental Statistics (JABES) honorific paper from 2008/2009 for: Lan Huang, Ming-Hui Chen, Paul R. Neal and Gregory J. Anderson. 2008. On Modeling Repeated Binary Responses and Time-Dependent Missing Covariates. JABES 34: 270-293.
2008	Urban	Young Investigator Award, American Society of Naturalists
2006	Anderson	Elected Member, The Honor Society of Phi Kapp Phi
2006	Anderson	Centennial Awardee, Botanical Society of America
2006	Holsinger	Centennial Awardee, Botanical Society of America
2006	Wagner	National Outdoor Book Award for Best Nature Guidebook

International

2011	Schultz	Scholarship, Fulbright Foundation in Greece

Appendix B6b: Journal Editorial Memberships (duplicates indicate positions held by multiple faculty members)

1 Acta Entomologica, Musei Nationalis Pragae: Editorial Board Member
2 Acta Parasitologica: Editorial Board Member
3 American Journal of Botany: Associate Editor, Associate Editor, Associate Editor
4 American Naturalist: Associate Editor
5 American Society of Mammalogists: Board of Directors Member
6 Anales de Biología: Associate Editor
7 Animal Conservation: Editorial Board Member
8 Annalen des Naturhistorischen Museums, Wien: Editorial Board Member
9 Annals of the Entomological Society of America: Subject Editor
10 Aquatic Botany: Editorial Advisory Board
11 Auk: Associate Editor
12 BioScience: Editorial Board Member
13 Biotropica: Editor in Chief: Editorial Board Member
14 The Bryologist: Editor
15 Cliodynamics: The Journal of Theoretical and Mathematical History: Editor in Chief
16 Copeia: Associate Editor, Editorial Board Member
17 Cryptogamie-Bryologie: Associate Editor
18 Ecography: Associate Editor
19 Ecology/Ecological Monographs: Subject Editor
20 Ecosystems: Advisory Board Member
21 Encyclopedia of Biodiversity: Associate Editor
22 European Journal of Entomology: Editorial Board Member
23 Evolution: Associate Editor
24 Evolutionary Ecology Research: Editor (under an EIC)
25 Journal of Anatomy: Editorial Board Member
26 Journal of Applied Ecology: Associate Editor
27 Journal of Experimental Zoology: Associate Editor: Editorial Board Member: Editorial Board Member
28 Journal of Helminthology: Editorial Board Member
29 Journal of Parasitology: Editorial Board Member
30 Journal of Phycology: Associate Editor
31 Kurtziana Gayana Botanica: Editorial Board Member
32 Medicinal and Aromatic Plants Abstracts (MAPA): Advisory Board Member
33 Marine Ecology Progress Series: Editorial Review Board Member
34 Oecologia: Associate Editor
35 PeerJ: Editorial Board Member
36 Plant Ecology and Evolution: Associate Editor
37 Plant Species Biology: Editorial Board Member
38 PLoS Currents: Tree of Life: Board of Moderators
39 Revista del Caribe Nicaragüense (Wani): Advisory Board Member

40 Systematic Biology: Associate Editor, Associate Editor
41 Systematic Botany Monographs: Editorial Committee Member
42 Systematic Parasitology: Editorial Board Member
43 Taxon: Editorial Board Member
44 The Year in Evolutionary Biology, Annals of the NY Academy of Science: Editor
45 Trends in Ecology and Evolution: Editorial Board Member

Appendix B6c: Society Activities

1 American Association of University Professors: Executive Committee Member
2 American Bryological and Lichenological Society: Executive Committee Member
3 American Institute for Biological Sciences: **President**; Committee Member on Biodiversity/ Taxonomy Services: Long Range Planning Committee Member: Nominations Committee Chair
4 American Society of Ichthyologists and Herpetologists: Board of Governors member: Editorial Board member: Executive Committee Member: Endowment and Finance Committee Chair: Long Range Planning Committee: Publications Policy Committee: Website Design Committee
5 American Society of Mammalogists: Planning & Finance Committee (Member): Development Committee (Member and Chair): Jackson Award Committee for Outstanding Service (Member and Chair): Merriam Award Committee for Outstanding Research (Member and Chair)
6 American Society of Parasitologists: **President**: Vice President: President-Elect: Council member
7 American Society of Plant Taxonomists: Cooley Award Committee
8 Association for Tropical Biology and Conservation: 50th Anniversary Annual Meeting Planning Committee (Member)
9 Botanical Society of America: **President**; Publications Committee: Chair, Developmental and Structural Section: Chair, Esau Award for best student paper: Member, Fundraising committee for Donald Kaplan Memorial Lecture Series: Development Committee Member: Strategic Planning Committee Member: Centennial Planning Committee Member: Secretary/Treasurer, Economic Botany Section
10 Ecological Society of America: Chair, MacArthur Award Committee
11 International Association of Bryologist: Award Adjudication Committee Member
12 International Association for Ecology: Honorary Member
13 International Society of Limnology: **President**: U. S. National Representative
14 Lepidopterists' Society: Conservation Committee Member
15 North East Algal Society: Annual Conference Convener: Executive Committee Member: Secretary
16 Phycological Society of America: Communications Committee Chair: Executive Committee Member
17 Society for Integrative and Comparative Biology, Division of Vertebrate Morphology: Division Chair: SICB Executive Committee Member: D. Dwight Davis Award Committee Chair: NE Regional Meeting Organizer: SICB 'Grand Challenges in Organismal Biology' Steering Committee Chair
18 Society for Systematic Biologists: **President** (3-year executive term as president elect, president, past president): Executive Committee Member: Publications Committee: Long Range Planning Committee
19 Society for the Study of Evolution: Nominations Committee

Appendix B6d: Advisory Board Memberships

1. Aldo Leopold Foundation, Inc.: Board of Directors and Vice Chair
2. Connecticut Conference on Natural Resources: Scientific Advisory Committee Member for Tropical Ecology Assessment and Monitoring Program (TEAM)
3. Conservation International: Scientific Advisory Board Member
4. Environmental Defense Fund: Board of Trustees
5. Foundation for the Advancement of the Atlantic Coast of Nicaragua (FADCANIC): Scientific Advisor
6. Friends of Mirror Lake Association (FMLA), Wisconsin: Honorary Board Member
7. Hubbard Brook Ecosystem Study: Elected, Scientific Coordinating Committee, Committee of Scientists: Chair, Hubbard Brook Ecosystem Study Information Oversight Committee
8. Hubbard Brook Research Foundation: Board of Trustees
9. Hudson River Foundation: Board of Trustees
10. Joseph W. Jones Ecological Research Center at Ichauway Plantation, Georgia: Chair, Scientific Advisory Committee
11. Marine Biological Laboratory: Advisory Board for Workshop in Molecular Evolution
12. National Socio-Environmental Synthesis Center: Scientific Review Committee
13. State of Connecticut Aquatic Nuisance Species Task Force: Task Force Member
14. State of Connecticut Endangered Species Technical Advisory Committees: Member Committee on Fishes
15. State of Connecticut Endangered Species Technical Advisory Committees: Member Committee on Amphibians and Reptiles
16. State of Connecticut Fishery Advisory Council: Council member
17. State of Connecticut, Governor's Steering Committee on Climate Change, Subcommittee on Climate Adaptation: Committee Member
18. State of Connecticut, Invasive Plants Council: Council Member Appointed by State Legislature
19. University of Idaho - CATIE IGERT Program: Advisory Committee Member
20. University of Texas Culture Collection of Algae: Advisory Board Member

Appendix B6e: Summary of Federal Panel Service. (National Science Foundation (program details not given to maintain confidentiality)

2012	7 Directorate for Biological Sciences (BIO) panels and 1 Crosscutting (NSF wide)
2011	6 Directorate for Biological Sciences (BIO) panels and 1 Crosscutting (NSF wide)
2010	4 Directorate for Biological Sciences (BIO) panels
2009	4 Directorate for Biological Sciences (BIO) panels
2008	3 Directorate for Biological Sciences (BIO) panels
2007	4 Directorate for Biological Sciences (BIO) panels
2006	2 Directorate for Biological Sciences (BIO) panels
2005	1 Directorate for Biological Sciences (BIO) panel

Appendix B6f: Faculty serving on University Committees

Adams
School or College:
Member, CLAS C&C Committee 2011-2012

Anderson
University Wide:
Member, Graduate Faculty Council (founding member via service on Grad Executive Committee) 1990-2008
Member, University Senate, Executive Committee, elected--1998-01; 2002-2005
Member, University Committee on Honorary Degrees and Awards--1997-02; 2002-07
Member, University Space Committee 2001- 2008
Member, Edwin Way Teale Series 1995- to present; lead coordinator 2002-2007
Co-founder, Arboretum Committee ~1985; Co-Director 1985-XX
Member, Executive Committee of the Graduate School 1986–2005; Chair as Graduate Dean and Vice Provost 05-08
Representative on Academic Affairs Committee – 2002-05
Member, Campus Appearance Committee 2011-12
Member, Campus Building Names Committee 2010-2013
Member, Select Campus Appearance Committee 2012-
Course re-numbering effort, culminated in selection of new University 4-digit numbering system; co-lead with Jeffrey Von Munkwitz-Smith ~2000-2005; implemented 2005
Nominated Honorary Doctoral recipient: Peter Crane (2011)

Bush
School or College:
Co-chair, Geochemistry Faculty Search 2012
Chair, Geosciences Graduate Committee 2011-present
Member, Geosciences Adjunct Faculty Search Committee2009
Member, Geosciences Faculty Advisory Committee2008-present
Member, Geosciences Undergraduate Curriculum Committee 2007-present
Chairperson, Geosciences Recruiting Committee 2007-present
Member, Biology Undergraduate Awards Committee2007-present
Member, Sedimentology Faculty Search Committee 2007

Caira
University Wide:
Member, University Research Council, 1995–2001; 2005–present
Member, University Senate, 1995–2002; 2003–present
Member, University Senate Budget Committee, 1995–1997; 2012
Member, Alumni Association Distinguished Professor Selection Committee, 1996, 2006
Member, Senate Executive Committee, 1998–2002; 2003–2006; 2007–2010
Member, University Senate Enrollment Committee 2000–2002, 2007
Member, Commencement Committee, 2000–2006
Member, Senate Nominating Committee, 2003–2006
Member, Research Council Life Sciences Area Review Committee, 2005–present
Member, AAUP Awards Selection Committee, 2006–present

Appendix B6f (continued)

Member, University Committee of Three, 2007–2009
Member, Search Committee for Vice President Research & Dean Grad School, 2008
Chair, University Committee of Three, 2009
Member, Board of Trustees Distinguished Professor Selection Committee, 2009–present
Member, IGERT proposal internal Selection Committee, 2009, 2011
Member, University Outstanding Teaching Assistant Selection Committee, 2009
Member, Research Council Intermediate Equipment grant award committee, 2009–2010
Member, Alumni Association Awards Committee, 2010–present
Chair, Board of Trustees Distinguished Professor Reception Committee, 2011
Member, Committee for Five Year Review of Director of CESE, 2011
Member, Search Committee for Vice Provost for Enrichment and Director of Honors, 2012
Chair, Committee for Five Year Review of Dean of College of Agricultural and Natural Resources, 2012

School or College:
Member, CLAS Strategic Planning Committee; Chair Community Subcommittee, 2005–2006
Member, Electron Microscopy Laboratory Technician, Search Committee, 2010
Member, Chemistry Head Search Committee, 2011

Chazdon
University Wide:
Member, Provost Search Committee, 2012-2013
Member, University Senate, Scholastic Standards Committee, 2012-2014
Panel Member, CLAS Grade Appeal, 2012
Member, Faculty Focus Group, W Taskforce, 2010-
Member, Udall Award Committee, 2010-
Member, Future of Environmental Sciences Committee, 2009
Member, Environmental Literacy Committee, 2006-2009
Member, Environmental Studies Degree Committee, 2008-
Faculty Advisor, Environmental Biology Concentration, Env. Sci. Major 2007-
Faculty Advisor, Environmental Studies Minor, 2002-
Member, Planning Committee, Teale Lecture Series on Nature and the Environment, 1999-
Advisor, Off-campus advisor for Ecology and Evolutionary Biology, 1995-
Board Member, Center for Biodiversity and Conservation, 1999-
Member, Caribbean and Latin American studies committee, 1990-

Colwell
University Wide:
UConn Delegate to Organization for Tropical Studies Assembly of Delegates 2010

Coe
University Wide:
Representative to the Hartford Consortium Environmental Planning Committee (UConn/Hartford) 2008-Present
Member, Pre-College Advisory Committee for the Hartford Public Schools (UConn/Hartford) 2007-Present
Member, Planning Committee for the "Year of Science" (UConn/Hartford) 2007-Present

Appendix B6f (continued)

Member, Learning Commons Taskforce (UConn/Hartford) 2007-Present
Member, Inclusive Science Curriculum Committee (UConn/Hartford) 2006-Present
Member, Student Affairs Committee (UConn/Hartford) 2006-Present
Member, Collections Committee (UConn/Storrs 2005-Present
Advisor, Environmental Science, Branch Campus Advisor (UConn/Hartford) 2005-Present
Member, Minority Recruitment Activities (UConn/Hartford 2004-Present
Faculty Representative for Puerto Rican Latin American Student Organization (UConn/Hartford) 2004-Present
Faculty Representative for Muslim Student Association (UConn/Hartford) 2004-Present

School or College:
Representative of CLAS to the Provost's International Executive Council 2009-2011

Elphick
Member, Teale Seminar Series, Teale Seminar Series Organizing Cmte 2011-2012

Goffinet
University Wide:
Member, Office of Sponsored Programs Advisory Committee (2006)

School or College:
Member, Search committee for BCS grants and contracts specialist (Fall 2010)

Henry
University Wide:
Member, Arboretum Committee

Holsinger
University Wide:
Faculty Representative, Financial Affairs Committee, UConn Board of Trustees 2000–2009
Member, University Senate 2005–2012
Member, Chair (2009–2010), Academic Center/Institute Review Committee 2007–2010
Member, Chair (2009–2010), Faculty Review Board 2007–2010
Chair, University Budget Committee, University Senate 2009–2010
Member, Chair (2011–2012), Senate Executive Committee 2010–2012

School or College:
Member, College of Liberal Arts & Sciences Dean Search Committee 2007–2008
Chair, College of Liberal Arts & Sciences Academic Advisory Board2011–2012

Jockusch
University Wide:
Member, University Senate (Fall 2011-present)
Member, General Education Oversight Committee and
Co-chair of Science and Technology Subcommittee (2008-2009, 2010-2012)
Secretary of the University Senate (Fall 2005, Spring 2011)

Appendix B6f (continued)

Member, Rhodes/Marshall Nominee Selection Committee (Spring 2006-present)
Member, Office of National Scholarships Director Search Committee (Spring 2008)
Member, Aquatics Facility Architect Selection Committee (Spring 2006)
Member, Searle Proposal Internal Review Committee (2005-2006)

School or College:
Member, CLAS Advisory Committee on External Funding (2005-2006)
Member, CLAS Committee on Committees (2005-2006)
Member, Biology Honors Committee (2003-present)
Member, Freshman and Sophomore Biology Honors Course Presentations (2002-present)

Jones
University Wide:
Member, Vice-Provost's Gateway Committee for Introductory Science Courses 2007
Member, College of Letters and Science Committee on Committees 2003-2005

Les, Don
University Wide:
Member, PCID Steering Committee February 28, 2011 - Present
Member, Field Trips Policy Committee 2011 - Present

School or College:
Member, ALTERR Committee May 18, 2010 - Present
Member, CLAS Research Awards Committee 2011

Lewis, Louise
University Wide:
Member, Graduate Faculty Council (2009, 2010–present); Alternate Member for Botany, Entomology, Zoology (2007–09)
Member, University Student Fulbright Scholarship Committee (2005–09)
Member, Anonymous Proposal Reviews, University of Connecticut Research Foundation (various times)

School or College:
Member, CLAS Policies and Procedures Committee (2009–11)
Member, Search Committee for 2 Microbiology positions, MCB (Fall 2006)

Lewis, Paul
University Wide:
Co-facility Head (with J. Peter Gogarten) of the Bioinformatics Facility, UConn Biotech Center

School or College:
Member, CLAS Courses & Curricula committee member (sitting in for M. Rubega Spring 2007)
Member, CLAS Courses & Curricula committee (EEB representative, Fall 2010 and Spring 2011)

Appendix B6f (continued)

Rubega
University Wide:
Member, Institutional Animal Care and Use Committee (IACUC) Effective October 1, 2009

Schlichting
University Wide:
Member, AAUP Executive Committee (*elected*) 2006-2007

Schultz
University Wide:
Alternate Member, Capital Projects Planning Advisory Council
Ex officio Member, General Education Oversight Committee
Member, Graduate Faculty Council
Member, Senate Executive Committee
Member, University Senate Curricula and Courses Committee
Member, Udall Scholarship Selection Committee
Member, University and Interdepartmental Curriculum Committee (ex officio)
Member, University Senate

Schwenk
University Wide:
Member, Alternate, Faculty Council. (February 2010 - May 2012).
Member, Pharmacy-Biology Public Art Selection Committee, EEB Rep. (April 2008 - May 2012).

Silander
University Wide:
Member, University Senate, elected 1996-2009
Member, University Senate Courses and Curricula Committee 1999-2004
Member, University Senate Faculty Standards Committee 2004-2009
Member, University Fulbright Committee 2001-2005
Member, University Study Abroad Committee 2010-present

School or College:
Member, CLAS Dean's Advisory Committee for Promotion and Tenure 2002-2005

Simon
University Wide:
Member, Summer Undergraduate Research Fellowship (SURF) selection committee Sp 2005
Member, Nature and the Environment, Edwin Way Teale Series Seminar committee F 2004 & Sp 2005
Member, SURF Awards review committee for honors program Sp 2007, 2008
Member, Internal screening committee to evaluate proposals for NSF-URM (Undergraduate Research and Mentoring in the Biological Sciences) submissions. Spring 2010.

Trumbo
Chair, Connecticut State Employees Campaign, UConn-Waterbury, 2004-present
Coordinator, Tri-Campus Biology 2004-2005

Appendix B6f (continued)

Member, University Senate 2006-2009
Member, Campus Lecture Series committee 2006-
Member, Year of Science organizing committee 2006-
Faculty Sponsor, Student Environmental Club 2011-

Urban
University Wide:
Member, Graduate School Faculty Council (2012 – present)
Member, UConn SURF Grant Review Committee (2012)

Wagner
University Wide:
University Senator: 2001-
Faculty Standards Committee: 2003-
Chair, Phi-Beta Kappa, UConn Chapter, committee for induction of graduate students 2007
Board Member, Connecticut State Museum of Natural History 1997-; Co-chair, Strategic Planning Committee 2008
Co-chair, EPAC's Environmental Literacy Committee with primary responsibility for academic oversight of Eco-House, 2008-2011
Member, Environmental Policy Advisory Council (EPAC): 2009-2011
Member, 100's Biology Teaching Awards Committee (1991 - Present)

Wells
University Wide:
Member, Regional Campus Liaison for EEB (2007 - Present)
Member, Graduate Faculty Council

School or College:
CLAS Courses & Curriculum Committee (continuing)

Willig
University Wide:
Member, Executive Committee for Implementation of the Environment Component of the Provost's Academic Plan, University Connecticut (2007-2008)
Member, Environmental Policy Advisory Council, Univ. Connecticut (2006-Present)
Member, Teale Lecture Series Committee, Univ. Connecticut (2006-Present)
Member, Steering Committee, Connecticut Conference on Natural Resources, UConn (2007-Present)
Member, Advisory Council, Wildlife Conservation Research Center, Univ. Connecticut (2007-Present)
Member, Coordinating Committee, Center for Public Health and Health Policy, UConn (2007-Present)
Member, Search Committee, Vice-Provost for Research & Graduate Education, UConn (2007-2008)
Member, Search Committee, Vice-President for Research and Graduate Education, UConn (2008-2009)
Member, Executive Committee, Atmospheric Sciences Group, Univ. Connecticut (2008-Present)
Member, Climate Action Task Force, Univ. Connecticut (2008-Present)
Member, Environmental Leadership Awards Committee, Univ. Connecticut (2008-2010)
Member, Undergraduate curriculum for Environmental Studies Committee, Univ. Connecticut (2008-2010)
Member, Committee for Excellence in Graduate and Professional Programs, Univ. Connecticut (2009-2010)

Appendix B6f (continued)

Member, Large Equipment Competition Evaluation Committee (2009)
Member, Provost's Committee on the Environment (2009-2011)
Member, Major Center/Institute Review Committee (2010-2011)
Member, Board of Advisors, Charles J. Zwick Center for Food and Resource Policy (2011-Present)
Member, Organizing Committee, The Norman Hascoe Distinguished Lectures on the Frontiers of Science (2011-Present)
Member, Organizing Committee, Climate Impact, Mitigation, and Adaptation Colloquium (2012)
Member, Tech Park Master Plan Committee (2012-Present)

Yarish

University Wide:

Member, Management Team (2011 - Present)
Member, The CT Aquatic Nuisance Species Workgroup (September 2006 - Present)
Member, Faculty Recognition Committee for Stamford Campus (March 2009 - August 2011)
Member, Chile Coordinating Committee, Office of International Programs 2000-present
Member, Safety Committee 2004-
Member, Oversight Committee for the Center for Globalization and Commerce Nov. 2005-present).
Member of the Connecticut Sea Grant (CTSG) 2006 Research Advisory Panel
Member, Bird Flu Committee 2006-
Member, Faculty/Professional Development Team 2007-
Member, Faculty Recognition Committee 2007-
Member, Pandemic Flu Committee 2008-
Member, Misconduct Board 2008-
Member, Year of Science Committee 2008-
Member, Stamford Campus-Norwalk Community College Committee 2008-
Member, Ad-Hoc Committee on Undergraduate Research (Co-organized Stamford Campus Student Research Poster Session, Spring 2011

Appendix B7: Comparison of target and peer EEB departments based on NRC rankings and NSF-DEB awards .

Appendix B7a: NRC data for current target (above UCONN) and peer (below UCONN) EEB institutions (n=94). Peer (P) and target (T) institutions at the time of previous self study (2001) are identified in parentheses following institution name.

Institution Name	R Rankings 5th percentile	R Rankings 95th percentile	S Rankings 5th percentile	S Rankings 95th percentile	Research Activity 5th percentile	Research Activity 95th percentile	Average number of publications (00-06) per allocated Faculty, 2006	Average citations per publication
Indiana (T)	3	14	3	14	2	17	2.03	4.05
Berkeley (T)	3	17	9	36	12	47	1.77	3.62
Michigan State	4	21	12	50	16	60	1.49	2.82
Kansas (P)	6	26	14	49	21	64	1.83	1.91
Texas, Austin (T)	11	30	12	51	7	38	1.71	3.84
UCONN	**14**	**38**	**22**	**60**	**20**	**67**	**1.51**	**2.89**
Arizona (T)	19	46	8	37	10	44	1.67	3.89
Rutgers (P)	20	46	48	73	29	65	1.84	2.69
Stony Brook (T)	32	55	24	61	19	61	1.60	3.13
UMass (P)	38	64	41	76	41	85	1.03	2.20
Tennessee (P)	42	65	33	67	35	77	1.40	1.98
Florida State (P)	59	78	56	85	17	68	1.39	3.04

Appendix B7a (continued)

Institution Name	Percent of faculty with grants, 2006	Awards per allocated faculty member, 2006	Average completion percentage: 6 Years or <	Median time to degree 2006	Average number of Ph.D.s graduated, 2002-2006	Average GRE scores, 2004-2006	Number of core and new faculty, 2006	Number of TA line per faculty
Indiana (T)	92.7%	1.32	51.7%	6.10	7.20	691	22	1.8
Berkeley (T)	75.6%	0.36	41.2%	6.30	18.00	702	42	1.26
Michigan State	86.6%	0.46	56.7%	5.70	12.80	*677*	87	0.23
Kansas (P)	75.4%	0.68	42.9%	5.70	8.80	683	37	1.07
Texas, Austin (T)	80.4%	0.95	20.8%	6.00	4.00	697	46	0.56
UCONN	**74.2%**	**0.58**	**55.6%**	**5.30**	**7.00**	**658**	**29**	**0.63**
Arizona (T)	77.2%	0.55	27.7%	6.00	6.40	703	26	1.1
Rutgers (P)	63.4%	0.19	13.7%	7.08	6.20	699	59	0.62
Stony Brook (T)	74.9%	0.38	17.8%	5.90	4.40	715	26	0.88
UMass Amherts (P)	81.7%	0.36	52.0%	5.70	4.40	660	38	0.18
Tennessee (P)	71.7%	0.68	55.5%	5.70	5.00	666	25	1.07
Florida State (P)	87.5%	0	14.0%	7.50	1.60	683	18	0.06

Appendix B7b: Comparison of peer and target EEB program based on active NSF research awards. Peer (P) and target (T) institutions at the time of previous self study (2001) are identified in parentheses following institution name.

School	Fac	With funds	% funded Fac	NSF $ funds	Other NSF funds	$/Fac	$/Funded fac	Ranked $/Fac
Indiana (T)	23	15	0.65	10,764,565	992,661	468,025	717,638	2
Berkeley (T)	38	24	0.63	8,370,112	5,066,133	220,266	348,755	8
Michigan State	110	37	0.34	24,266,208	18,790,625	220,602	655,843	7
Kansas (P)	39	19	0.49	11,073,090	4,871,883	283,925	582,794	6
Texas (T)	40	19	0.48	18,007,687	211,024	450,192	947,773	3
UConn	**26**	**11**	**0.42**	**9,595,435**	**129,000**	**369,055**	**872,312**	**4**
Arizona (T)	26	11	0.42	15,732,201	5,964,344	605,085	1,430,200	1
Rutgers (P)	65	16	0.25	9,518,076	8,382,741	146,432	594,880	10
Stony Brook (T)	17	8	0.47	3,063,488	0	180,205	382,936	9
UMass Amherts (P)	31	9	0.29	4,160,353	1,216,029	134,205	462,261	11
Tennessee (P)	28	12	0.43	2,121,243	18,076,813	75,759	176,770	12
Florida State (P)	21	12	0.57	6,457,760	1,138,970	307,512	538,147	5

Appendix B8: Comparison of NRC data for EEB and sister biology departments at the University of Connecticut

	R Rankings		S Ranking		Research Activity		Average # of Pubs (00-06) /Allocated Fa in 06	Average Citations per Pub	% of faculty with grant
	5th percentile	95th percentile	5th percentile	95th percentile	5th percentile	95th percentile			
EEB	**14**	**38**	**22**	**60**	**20**	**67**	**1.51**	**2.89**	**74.2%**
PNB	54	85	29	67	70	91	0.98	2.24	71.5%
Microbiology	49	61	56	63	50	64	0.75	1.61	80.3%
Genetics	56	63	60	64	54	64	0.87	2.62	67.8%
Cell Biology	96	120	103	120	48	109	1.48	2.31	85.9%

	Awards per Allocated Faculty 2006	Avg. Completion % 6 Years	Median Time to Degree 2006	% Non-Asian Minority Fac. 2006	% Female Faculty 2006	% Non-Asian Minority Students Fall 2005	% Female Students Fall 2005	% International Students Fall 2005	Average # of Ph.D.s Graduated, 2002-2006
EEB	**0.58**	**55.6%**	**5.30**	**0%**	**27.6%**	**4.0%**	**56.5%**	**17.4%**	**7.00**
PNB	0.07	68.3%	5.30	6.3%	31.3%	0%	51.6%	45.2%	3.20
Microbiology	0	10.7%	7.30	8.3%	16.7%	16.7%	55.6%	33.3%	2.00
Genetics	0.02	8.3%	6.50	5.9%	23.5%	4.0%	30.3%	15.2%	1.60
Cell Biology	0.05	6.5%	8.00	0%	34.8%	6.7%	50.0%	35.7%	3.20

Appendix B8 (continued)

	Percent of Interdisciplinary Faculty, 2006	Average GRE Scores, 2004-2006	Total Faculty, 2006	Number of Allocated Faculty, 2006	Assistant Professors as a Percent of Total Faculty, 2006	Tenured Faculty as a Percent of Total Faculty, 2006	Number of Core and New Faculty, 2006	Number of Students Enrolled, Fall 2005	Average Annual First Year Enrollment, 2002-2006
EEB	**27.5%**	**658**	**40**	**29.03**	**13.0%**	**78.0%**	**29**	**46**	**8.67**
PNB	52.9%	731	34	14.49	12.0%	82.0%	16	31	6.33
Microbiology	33.3%	709	18	6.54	11.0%	78.0%	12	18	3.33
Genetics	45.2%	649	31	8.52	16.0%	81.0%	17	33	6.67
Cell Biology	45.2%	590	42	9.56	17.0%	76.0%	23	28	8.00

	% of Students with RA (Fall 2005)	% of Students with TAs, Fall 2005
EEB	**22.5%**	**40.0%**
PNB	50.0%	42.9%
Microbiology	27.8%	55.6%
Genetics	12.9%	74.2%
Cell Biology	12.5%	70.8%

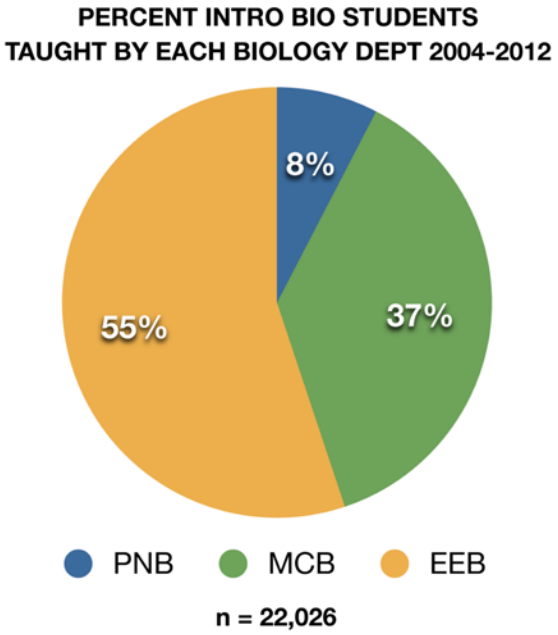
Appendix C1: EEB course enrollment 2005-2012

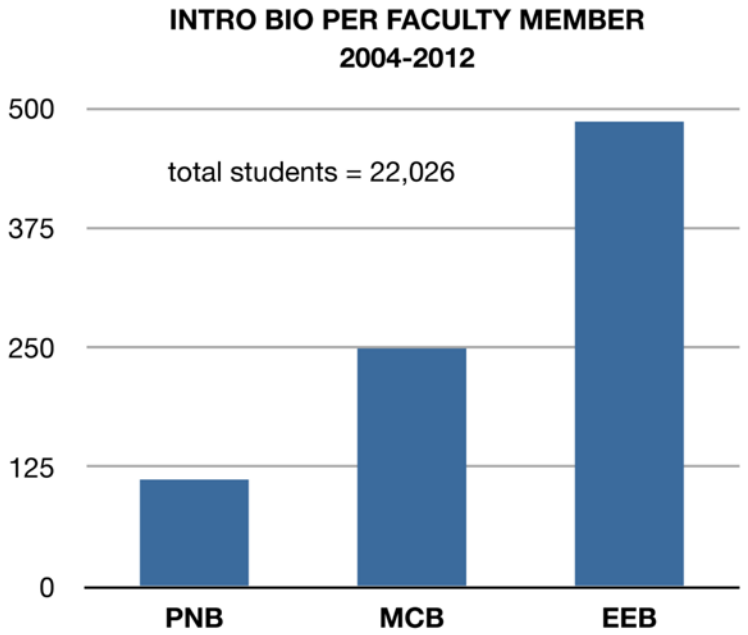
C1a: Enrollment in Introductory biology and upper division courses taught within the biological sciences by EEB, MCB and PNB

		04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	total
MCB	BIO 1103	96	95	95	76					362
MCB/PNB	BIO 1107	1103	1107	1146	1174	1295	1196	1218	1284	9,523
	Total	**1201**	**1202**	**2141**	**1250**	**1295**	**1196**	**1218**	**1284**	**9,885**
EEB	BIO 1102	975	1016	1035	1002	863	851	863	867	7,472
EEB	BIO 1108	446	445	486	517	553	582	576	637	4,242
EEB	BIO 1110	51	58	36	53	54	61	56	59	428
	Total	**1472**	**1519**	**1557**	**1572**	**1470**	**1494**	**1495**	**1563**	**12,142**
	Grand Total	**2671**	**2721**	**2798**	**2822**	**2765**	**2690**	**2713**	**2847**	**22,027**
Upper division courses										
	EEB	646	671	702	918	944	1117	1098	1296	**7,392**
	PNB	1303	1496	1458	961	1980	2232	2333	2651	**15,414**
	MCB	2558	2692	2971	3093	3035	3285	3206	3515	**24,355**
	Total # of students taught by EEB	2116	2210	2311	2578	2484	2656	2655	2890	**19,959**

C1b: Enrollment in EEB graduate courses

04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	Total
212	241	272	255	246	196	321	204	**1,947**

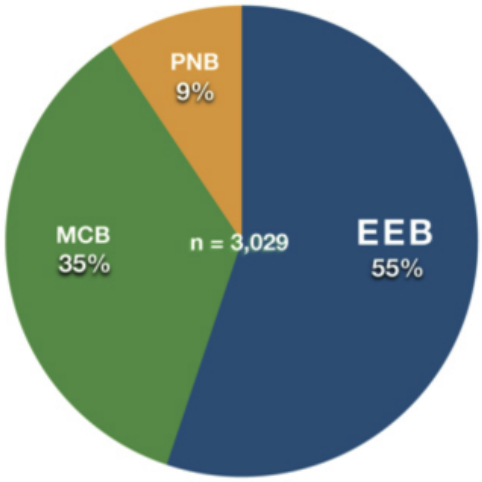

PERCENT INTRO BIO STUDENTS
TAUGHT BY EACH BIOLOGY DEPT 2004-2012
8%
37%
55%
PNB
MCB
EEB
n = 22,026


INTRO BIO PER FACULTY MEMBER
2004-2012
500
375
250
125
0
total students = 22,026
PNB
MCB
EEB

Appendix C10: W enrollments of 3 biology departments 2005-2012 (total # W students: 3,029)

	EEB	PNB	MCB
2004 F (incl 10 reg)	92	31	23
2005 S	108	2	33
2005 F	104	0	45
2006 S	82	11	12
2006 F (incl 9 reg)	114	32	24
2007 S	86	4	86
2007 F	112	27	41
2008 S	95	6	53
2008 F (incl 6 reg)	130	30	69
2009 S	102	13	100
2009 F	96	21	79
2010 S	89	12	118
2010 F	131	32	62
2011 S (+Biol 3520W)	76	4	146
2011 F	94	34	79
2012 S (+Biol 3520W)	142	16	131
Total	1,653	275	1,101
Percentage of total	54.6	9.1	36.3

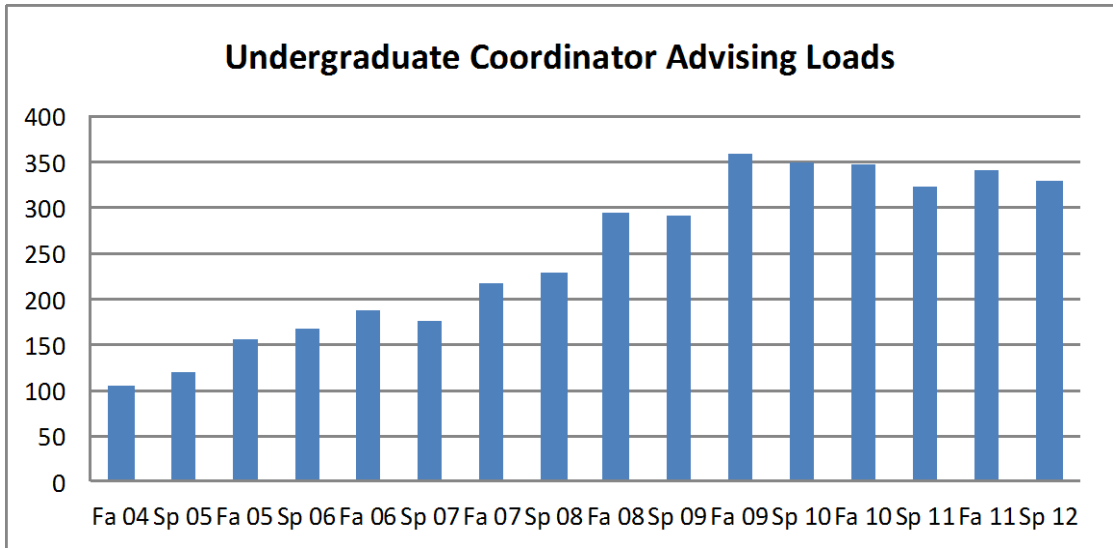
Distribution of W student teaching among 3 biology departments.



Appendix C11: Advising loads in EEB in Fall (F/Fa) and Spring (S/Sp) semester 2005-2012. (Under. Coor.: Undergraduate coordinator; Ret. Fac.: Retired Faculty; Reg. Camp.: Regional Campus)

Advisor Type	F 04	S 05	F 05	S 06	F 06	S 07	F 07	S 08	F 08	S 09	F 09	S 10	F 10	S 11	F 11	S 12
Under. Coor.	105	120	154	166	188	175	217	228	294	291	357	349	346	323	340	329
Ret. Fac.*	N/A	70	191	130	187	141	189	125	190	149	124	107	133	115	N/A	N/A
Faculty**	38	32	30	30	32	36	56	49	53	49	58	54	63	59	63	57
Reg. Camp.***	28	56	73	68	89	72	50	36	61	47	45	43	37	26	34	44
Total	171	278	448	394	496	424	512	438	598	536	584	553	579	523	437	430

* A retired EEB faculty member advised half of the Biology, EEB, and MCB freshmen between Spring 2005 and Spring 2011. In Fall 2011, a professional staff member was hired to advise these freshmen.
** Honors advising is handled by faculty members.
*** EEB faculty members at the regional campuses advise students in the biologies at their campuses.



Appendix C12: Summary of student evaluation of EEB faculty teaching 2005-2012. A: Introductory Biology courses; B. Upper division courses.

A. Biology 1000s Courses

Semester	EEB Mean	Biology Mean	University Mean
Fall 2004	8.48	7.79	8.50
Spring 2005	8.07	7.98	8.60
Fall 2005	8.67	8.36	8.61
Spring 2006	8.28	8.15	8.69
Fall 2006	8.61	8.71	8.64
Spring 2007	8.70	8.62	8.68
Fall 2007	8.61	8.63	8.68
Spring 2008	8.46	8.38	8.62
Fall 2008	8.61	8.70	8.70
Spring 2009	8.89	8.83	8.70
Fall 2009	8.42	8.52	8.72
Spring 2010	8.39	8.51	8.80
Fall 2010	8.79	8.67	8.81
Spring 2011	8.51	8.50	8.60
Fall 2011	8.79	8.75	8.71
Spring 2012	8.76	8.81	8.79
Overall Mean	8.57	8.49	8.68

Appendix C12 (continued)

B. 2000s, 3000+ Courses

Semester	Course Level	Instructor Mean	Department Mean	University Mean
Fall 2004	2000	8.7	8.74	8.6
	3000+	8.94	8.96	8.7
Spring 2005	2000	8.61	8.62	8.6
	3000+	9.42	9.34	8.8
Fall 2005	2000	8.82	8.89	8.7
	3000+	9.2	9.1	8.8
Spring 2006	2000	8.66	8.83	8.7
	3000+		8.86	8.7
Fall 2006	2000	8.77	8.8	8.64
	3000+	9.1	8.8	8.7
Spring 2007	2000	8.46	9.0	8.7
	3000+	9.14	9.05	8.7
Fall 2007	2000	8.96	9.05	8.68
	3000+	9.57	9.55	8.8
Spring 2008	2000	8.95	9.11	8.7
	3000+	9.7	9.7	8.9
Fall 2008	2000	8.65	8.63	8.62
	3000+	9.31	9.3	8.78
Spring 2009	2000	8.93	8.9	8.64
	3000+	9.11	9.11	8.81
Fall 2009	2000	8.4	8.5	8.5
	3000+	9.12	9.22	8.87
Spring 2010	2000	9.0	9.0	8.43
	3000+	8.97	8.95	8.85
Fall 2010	2000	8.37	8.37	8.65
	3000+	9.22	9.23	8.86
Spring 2011	2000	8.33	8.33	8.43
	3000+	9.18	9.15	8.89
Fall 2011	2000	8.72	8.72	8.7
	3000+	9.11	9.16	8.9
Spring 2012	2000	8.48	8.5	8.7
	3000+	8.84	8.82	8.9
Overall mean		**8.93**	**8.95**	**8.72**

Appendix C2: Enrollment at the Regional campuses in courses taught by EEB faculty 2005-2012 (total number of student taught: 4277; Biology courses labeled "B", EEB course labeled "E"; Campus: A=Avery Point, H=Hartford, T=Torrington, S=Stamford, W=Waterbury; Semesters: F=Fall, S=Spring; s= summer).

	F 04	S 05	s 05	F 05	S 06	s 06	F 06	S 07	s 07	F 07	S 08	s 08	F 08	S 09	s 09	F 09	S 10	s 10	F 10	S 11	s 11	F 11	S 12	s 12	Tt
Hartford																									**0**
B1108		21			39			43			46			48	9		47	22		47	42		46	39	**449**
B1102	36		14	42		16	38		19	40		13	41		17	44		20	43		17	41		12	**453**
B1110																		7			8				**15**
B1999				1																					**1**
E3201														14						30					**44**
E3899																			1			5		2	**8**
E3256																				7			20		**27**
E2202																		31			15	33		12	**91**
E2245																								46	**46**
Avery Point																									**0**
B1102	16	20		18	19		19	19		15	19		19	16	6	11	18		14	17	3	25	18		**292**
B1108	26		8	27			39		20	35			33			37			40			32			**297**
E348							4																		**4**
Waterbury																									**0**
B1108		41			41			37			37			37			38	23		36	16		38	14	**358**
B1102	44	43	4	46	23	11	46	24	13	47	47	13	43	47	13	47	47	15	45	44		46	46		**764**
B1110					24			21			8			8		1									**62**
B1199											1			1											**2**
E299		1		3																					**4**
E3201				28													23						24		
E3899													1			2			1	2		1	1		**8**
E2202											25		24	25			29		27	30	10	29	29	14	**242**
E3891																				1					**1**

Appendix C2 (continued)

	F 04	S 05	s 05	F 05	S 06	s 06	F 06	S 07	s 07	F 07	S 08	s 08	F 08	S 09	s 09	F 09	S 10	s 10	F 10	S 11	s 11	F 11	S 12	s 12	Tt
Torrington																									**0**
B1102								12					19						16						**47**
B1108		11		17			13			7			14			14			8			7			**91**
Stamford																									
B1102	47	21	14	42	24	12	22	26	14	23	20	15	23	24	21	22	22	16	22	24	22	20	23	17	**536**
B1110	5			2																					**7**
B1108		14			28			21			29			29			36			44			37		**238**
E2214		9			10			6			6			16			11			12			17		**87**
E2244							9						3												**12**
E244W							9						6												**15**

Appendix C3: Curriculum for an EEB major (and minor – see end)

Students majoring in Ecology and Evolutionary Biology may opt for either a Bachelor of Arts degree or Bachelor of Science degree. Both BA and BS degree candidates must complete the following courses in addition to the general CLAS requirements for these degrees:

Biol. 1107 and Biol. 1108 or 1110	8 cr. total
Chem. 1127Q/1128Q or 1124Q/1125Q/1126Q	8-10 cr. total

REQUIREMENTS FOR THE EEB MAJOR (BS OR BA)

At least 24 credits of EEB courses at the 2000-level or higher, which includes courses in I-IV below. It is recommended that students take at least four EEB courses that require extensive laboratory or field work. Students are encouraged to complete a course in statistics.

I. Both of the following core courses:

EEB 2244/W	General Ecology	4 cr.
EEB 2245/W	Evolutionary Biology	3-4 cr.

II. At least one of the following animal diversity courses:

EEB 2214	Biology of the Vertebrates	3 cr.
EEB 3254	Mammalogy	4 cr.
EEB 3265	Herpetology	4 cr.
EEB 3273	Comparative Vertebrate Anatomy	4 cr.
EEB 4200	Biology of Fishes	4 cr.
EEB 4250	General Entomology	4 cr.
EEB 4252	Field Entomology	3 cr.
EEB 4260 & 4261	Ornithology& Ornithology Lab	4 cr.
EEB 4274	Introduction to Parasitology	4 cr.
EEB 4275	Invertebrate Zoology	4 cr.

III. At least one of the following plant diversity courses:

EEB 3203	Developmental Plant Morphology	4 cr.
EEB 3204	Aquatic Plant Biology	4 cr.
EEB 3220/W	Evolution of Green Plants	3-4 cr.
EEB 3240	Biology of Bryophytes and Lichens	4 cr.
EEB 3250	Biology of the Algae	4 cr.
EEB 3271	Plant Systematics	4 cr.
EEB 4272	The Summer Flora	3 cr.

IV. A course in physiology

EEB 4215	Physiological Ecology	3 cr.

(students who take PNB 2250 as a related course are not required to take EEB 4215)

RELATED COURSE REQUIREMENTS:

At least 12 credits of 2000 level science courses outside EEB, which must include either MCB 2410 (Human Genetics) or 2413 (Concepts of Genetic Analysis). One semester of organic chemistry is recommended.

Appendix C3 (continued)

EEB COURSE OFFERINGS:

Below is a list of the undergraduate courses that can be applied to the major. Bold course numbers indicate laboratory and field courses. Courses offered in alternate years are indicated with an asterisk. Students should take this into consideration in preparing their plan of study. Ordinarily, students will fulfill this requirement primarily or exclusively with undergraduate courses. However, some graduate courses are open to undergraduates with the consent of the instructor (see 5000-level or higher below). **Honors students are encouraged to take these courses under the graduate number.**

EEB 2202	Evolution and Human Diversity	3 cr.
EEB 2208	Intro to Conservation Biology	3 cr.
EEB 2214	Biology of the Vertebrates	3 cr.
EEB 2244/W	General Ecology	4 cr.
EEB 2245/W	Evolutionary Biology	3-4 cr.
EEB/Psych 3201	Animal Behavior	3 cr.
EEB 3203/5203*	**Developmental Plant Morphology**	**4 cr.**
EEB 3204/5204*	**Aquatic Plant Biology**	**4 cr.**
EEB 3205*	Current Issues in Environmental Sci	3 cr.
EEB 3220/W/5220	Evolution of Green Plants	3 cr.
EEB 3221/5221*	**Evolution of Green Plants Lab**	**1 cr.**
EEB 3230	**Marine Biology**	**3 cr.**
EEB 3240/5240*	**Biology of Bryophytes and Lichens**	**4 cr.**
EEB 3247*	**Limnology**	**4 cr.**
EEB 3250/5250*	**Biology of the Algae**	**4 cr.**
EEB 3254/5254*	**Mammalogy**	**4 cr.**
EEB 3265/5265*	**Herpetology**	**4 cr.**
EEB 3269/5269*	Social Insects	3 cr.
EEB 3271/5271*	**Systematic Botany**	**4 cr.**
EEB 3273*	**Comparative Vertebrate Anatomy**	**4 cr.**
EEB 3307/5307*	**African Field Ecology**	**4 cr.**
EEB 3891	Internship in EEB	var. cr.
EEB 3894	Undergraduate Seminar	var. cr.
EEB 3895	Special Topics	var. cr.
EEB 3899	Independent Study	var. cr.
EEB 4200/5200*	**Biology of Fishes**	**4 cr.**
EEB 4215/5215*	Physiological Ecology	3 cr.
EEB 4230W	**Methods of Ecology**	**4 cr.**
EEB 4250	**General Entomology**	**4 cr.**
EEB 4251/W*	**Medical Entomology**	**3 cr.**
EEB 4252	**Field Entomology**	**3 cr.**
EEB 4260	Ornithology	2 cr.
EEB 4261	**Ornithology Laboratory**	**2 cr.**
EEB 4272	**The Summer Flora**	**3 cr.**
EEB 4274*	**Introduction to Animal Parasitology**	**4 cr.**
EEB 4275*	**Invertebrate Zoology**	**4 cr.**
EEB 4276/W*	**Plant Anatomy**	**4 cr.**
EEB 4896W	Senior Thesis in EEB	3 cr.

Appendix C3 (continued)

EEB 5301*	Population and Community Ecology	3 cr.
EEB 5302*	Organisms and Ecosystems	3 cr.
EEB 5310*	Conservation Biology	3 cr.
EEB 5333*	Evolutionary Developmental Biology	3 cr.
EEB 5335W*	Vertebrate Social Behavior	3 cr.
EEB 5347	**Prin. Methods of Systematic Biology**	**4 cr.**
EEB 5348*	Population Genetics	3 cr.
EEB 5349*	**Phylogenetics**	**4 cr.**
EEB 5350*	**Molecular Systematics**	**2 cr.**
EEB 5360*	Functional Ecology of Plants	3 cr.
EEB 5369	Current Topics Biodiversity	1 cr.
EEB 5370	Current Topics Conservation Biology	1 cr.
EEB 5375*	Evolution and Ecology Communities	3 cr.
EEB 5449*	Evolution	3 cr.
EEB 6480-6490	Various Graduate Seminars	1 cr.

THE EEB MINOR:

An alternative for some students is a minor in Ecology and Evolutionary Biology. Requirements are a minimum of 15 credits of 2000-level or higher EEB courses, including *both* General Ecology (EEB 2244 or 2244W) and Evolutionary Biology (EEB 2245 or 2245W).

"Completion of a minor requires that a student earn a C (2.0) grade or better in each of the required courses for that minor. Substitutions are not possible for required courses in a minor." (Undergraduate Catalog)

Appendix C4: Recent undergraduate course offerings per semester (Lab = Bold; Animal Diversity; Plant Diversity; Core Course).

Fall Odd	Fall Even
2214 - Biology of the Vertebrates	2214 - Biology of the Vertebrates
2244/W - General Ecology	2244/W - General Ecology
3203 - Developmental Plant Morphology	2245/W - Evolutionary Biology
3204 - Aquatic Plant Biology	**3230 - Marine Biology**
3205 - Current Issues in Environmental Science	**3250 - Biology of the Algae**
3230 - Marine Biology	**3273 - Comparative Vertebrate Anatomy**
3247 - Limnology	**4230W - Methods of Ecology**
3254 - Mammalogy	**4250 - General Entomology**
4230W - Methods of Ecology	**4275 - Invertebrate Zoology**
4250 - General Entomology	**4276/W - Plant Anatomy**
4274 – Animal Parasitology	

Spring Even	Spring Odd
2202 - Evolution & Human Diversity	2202 - Evolution & Human Diversity
2208 - Intro Conservation Biology	2208 - Intro Conservation Biology
2244/W - General Ecology	2244/W - General Ecology
2245/W - Evolutionary Biology	2245/W - Evolutionary Biology
3220/3221 - Evolution Green Plants	**3240 - Biology of Bryophytes and Lichens**
3269 - Social Insects	**3265 - Herpetology**
3895 - Ethical Perspective in Biology	**3271 - Systematic Botany**
4120 - Paleobiology	**4200 - Biology of Fishes**
4215 - Physiological Ecology of Animals	**4260/4261 - Ornithology**
4260/4261 - Ornithology	

Appendix C5: Enrollment in EEB upper division undergraduate courses 2005-2012 (S= sabbatical; Lab courses are in bold).

Course	Title	F 04	S 05	F 05	S 06	F 06	S 07	F 07	S 08	F 08	S 09	F 09	S 10	F 10	S 11	F 11	S 12
2202	Evolution & Human Diversity								77				147		148		150
2208	Intro Conservation Biology	15		22		43			78		148		103		145		148
2210	Animal Models in Human Evolution				22		43		46								
2214	Biology of Vertebrates	48		49		61		67		104		147		128		148	
2244+W	General Ecology	129		160		176		192		191	31	188	32	223		310	64
2245+W	Evolutionary Biology		168		172		188		147	43	146		160	41	151		245
3203	**Developmental Plant Morphology**	7				S		11				7				6	
3204	**Aquatic Plant Biology**			8				7				10				10	
3205	Current Issues ENVS	15				12		18				20				18	
3209W	Soil Degradation /Conservation		9														
3220+W	Evolution of Green Plants				S				23				21				31
3221	**Evolution of Green Plants Lab**								2				5				7
3230	**Marine Biology**	13		14		14		18		23		17		19		20	
3240	**Biology of Bryophytes & Lichens**		8		8		S				10				13		
3247	**Limnology**	15		13		13						13				7	
3250	**Biology of Algae**	5				13				9				11			
3254	**Mammalogy**			7				10				S				21	
3265	**Herpetology**		11				15				13				15		
3269	Social Insects				26				24				26				40
3271	**Systematic Botany**		12				S				18				16		
3273	**Comparative Vertebrate Anatomy**	14				12				15				19			
3307	**African Field Ecology**		3								0						
3891	Internship		1		8				1	1	2	3			2		1
3894	Current Topics in EEB	12	1	9		10	5	5	21	10	11	8	10				

Appendix C5 (continued)

Course	Title	F 04	S 05	F 05	S 06	F 06	S 07	F 07	S 08	F 08	S 09	F 09	S 10	F 10	S 11	F 11	S 12
3895	Ethic Persp of Biol Research/Tech												16				
3899	Independent Study	15	20	28	15	30	37	46	37	29	43	38	42	34	45	21	35
4120	Paleobiology				5				8				15				9
4200	**Biology of Fishes**		30				37				29				30		
4215	Physiological Ecology of Animals				29				39				33				
4230W	**Methods of Ecology**			6		6		11		8		13		9		8	
4250	**General Entomology**	12		9		12		9		14		9		16		14	
4251+W	**Medical Entomology**		23				23				21						
4260	Ornithology		33		46		S		65		56		44		49		73
4261	**Ornithology Lab**		13		12		S		18		12		12		12		12
4274	**Intro to Parasitology**	7				S		19				16				19	
4275	**Invertebrate Zoology**			9						11				18			
4276+W	**Plant Anatomy**			5						12				8			
4896W	Senior Thesis	2	3	3	6		4		7		4		7	1	6	1	9
5335W	Vertebrate Social Behavior	17				9				14				19			
	Total Number of Students	**326**	**335**	**342**	**349**	**411**	**352**	**413**	**593**	**484**	**544**	**489**	**673**	**547**	**632**	**503**	**824**

Total number of students enrolled in EEB upper division courses: 7,817

Appendix C6: Undergraduates involved in research in EEB 2005-2012.

(F: female; M: male; E, ethnic; H: Honors thesis; nH: non honors thesis).

Faculty	Total students	Under-represented	Paid/ Volunteer	Independent research	Presentation/ publications	Thesis	Current occupations
Adams	9	6F		8	3 pres		Environmental Technician; Nurse
Anderson	8		7	1	1 pres	1H	1 Ph.D. program
Bush	10		5?	5		3H; 1nH	1 teaching high school; 1 working for non-profit and applying to graduate school; 1 graduate school
Caira	13	9F, 2E	2P	2	8 pres; 8 pub	6H	2 medical school; 1 dental school; 1 genetic counselor; 1 Ph.D. program; 1 MS program; 1 National Park Service; 1 City Year program New York; 1 teaching high school; 1 chemical company; 2 still undergrads
Chazdon	4	2F	2	2	2 pres	2H	All leaning towards graduate school
Colwell	14	7F	4P; 10V	6	3 pres	1H	2 grad school, 4 applying, rest unknown; 2 still undergrads
Elphick	18	11F	3	15	2 pres	7H	1 MS program; 1 MS Program in Env. Education; 4 Ph.D. program; 1 Microbiologist; 1 Wildlife Biologist
Goffinet	13	4 F	3P; 2V		1 pres		1 in graduate school
Henry	5	3F	1	4			
Jockusch	15	5F	2	13	2 pres	2nH	1 MS program; 2 Ph.D. program; 2 dental school; 1 Health Center technician; 1 art school; 4 still undergrads
Jones	12	10F	5	7	3 pres	2H	1 Ph.D. program; 1 Botanist, Chicago Botanical Garden; 1 technician, DEP; 1 teaching high school; 1 Quality compliance specialist for poultry; 1 Ph.D. program in Physical Therapy
Les	3	3	38	3		1H	1 Ecologist,Golden Gate Recreation area; 1 Research Associate at Genomas, Inc.
Lewis, L.	6	2F, 2E		6	3 pres 3 pub	1H	1 Public Health program; 1 nursing, 1 Pharmacy program

Appendix C6 (continued)

Rubega	23	13F	16	7	2 pres	4H	5 Ph.D. programs (one of those Anthropology) ; 2 Wildlife Biologists; 3 medical school; 2 applying to medical school; 1 applying to M.S. program; 5 still undergrads
Schlichting	8	5F	1	3	2 pres	2H	2 grad school; 1 teaching high school, 1 National Park Service
Schultz	46	21F, 2E	1	46	5 pres	2H; 1nH	9 grad school; 4 state or federal agency; 1 university staff; 1 dental school; 1 teaching high school; 2 private sector (consulting, food retail)
Schwenk	22	13F, 4E	1	10	2 pres	2H, 1nH	1 grad school; 2 teaching school; 1 field research tech; 1 CT DEEP; 1 vet school; 1 lab tech; 6 remain undergrads
Silander	10	3F, 1E	10	7	3 pres	3H 2nH	4 in grad school; 1 in law school, 1 teaching high school; 1 DEEP-CT
Simon	13	9F, 2E		13	15 pres	8H	1 medical school; 1 dental school; 1 Pharmacy Technician; 1 Ph.D. program; 1 MS program; 1 School of Public Health; 1 research internship; 1 working for a private agricultural research company
Trumbo*	16			16			
Urban	6	4F	1	3		3H	5 graduate school
Wagner	23	7F, 1M	12	11	1 pres	1H	4 graduate school; 1 applying to grad school; 1 working in biology; 1 Nursing school; 1-working at UConn; 1 chemical company
Willig	10	6F		10			
Total	**307**					**49H, 7nH**	

* Regional Campus, first two years of study only

Appendix C7. List of undergraduate awards (known to faculty) 2005-2012.

EXTRAMURAL AWARDS AND HONORS:

Goldwater (2): Colin Carlson (Schlichting), Burgio (Rubega)
Udall Fellowship (1): Colin Carlson (Schlichting)
Truman Award (2): Colin Carlson (Schlichting), Logan Senack (Holsinger)
Fellowship to Law School (1): Steve Ferketic (Silander)
National Science Foundation Graduate Fellowships (4): Kevin Burgio (Rubega), Graziella DiRenzo (Bush), Kathryn Gannon Fontaine 2005 (Simon), Martha Ellis 2005 (Elphick)
Botanical Society of America Young Botanist Award (3): Jessica Clopton (Goffinet); Nikisha Patel (Anderson-Holsinger)
Society for Advancement of Chicano and Native Americans in Science (1): Jeselyn Calderon-Ayala (Simon) First place poster
Division of Vertebrate Morphology, Soc. For Integrative and Comparative Biology (SICB) (1): Leah H. Brown-Wilusz (Schwenk) Best student poster award
Helminthological Society of Washington (1): James Bernot (Caira) Best student paper award
National Science Foundation REU Awards (37): Caira (6), Chazdon (2), Jockusch (4), Goffinet (5), Lewis L. (1), Simon (17), Willig (1)
NSF – LSAMP (1): Leroy Robinson 2006 (Jockusch)
NSF- IRES: Students offered International Research Experience in South Africa (13): Katie Johnson, Chelsea Lane, Logan Senak, Walter Barozi, Bianca Lopez, Jonathan Glenn, Bronwen Tomb, Adam Pellegrini, Christina Natalie, Colin Carlson, Emily Scherbatskoy, Georgia Thomas, Jeffrey Ferketic, (Silander, Holsinger, Jones, Schlichting)

INTRAMURAL AWARDS AND HONORS (since 2005):

University of Connecticut New England Scholar (1): Michael Cordiero (Simon)
Connecticut Presidential Scholar (1): Nicole Piatt (L. Lewis)
Nutmeg Scholar (2): Kira Sullivan-Wiley (Rubega); Kaitlin Heenehan
Frontiers for Undergraduate Research (1): Kathryn Gannon Fontaine (Simon) Peer poster award
UConn Achievement Scholarship (1): Michael Cordiero (Simon)
University Scholars Supervised (9): Benjamin Plourde (Chazdon), Colin Carlson (Schlichting) James Moriarty (Elphick); Martha Ellis (Elphick), David Fryxell (Urban), Kira Sullivan-Wiley (Rubega); Kevin Burgio (Rubega), Kaitlin Heenehan (Caira), Steve Ferketic (Silander).
Summer Undergrad Research Fellowship (University-wide competition) (9): Georgia Thomas (Jones), Devin O'Brien (Jockusch); Taylor Ferguson (Jockusch), Jessica Clopton (Goffinet), Colleen Chambers (Simon), Anne O'Sullivan (Adams), Selena Humphries (Rubega/Elphick co-advised), KiraSullivan-Wiley (2 with Rubega), Kevin Burgio (Rubega)
Northeast Alliance for Minority Participation Summer Research Program (3): Jallah Rouse 2007; Avis Thompson 2008 (Jockusch), Jeselyn Calderon-Ayala 2007 (Simon)
Office of Undergraduate Research Grants (6): Summer Payne (Jones), Peter Meney (Henry), Jared Rada (L. Lewis), Katie Abbot (Willig), Kira Sullivan-Wiley (Rubega); Kevin Burgio (Rubega)
Margaret F. Ertman award for Best Biology Student (1): Meghan Twohig (Caira)
Claire Berg award for best biology genetics honors thesis (1): Megan Ribak (Simon)
Katie Bu Memorial Award (1): Kevin Burgio (Rubega)
Outstanding EEB Senior (5): Kerri Mocko (Jones), Kira Sullivan-Wiley (Rubega), April Rodd (Wagner), Graziella DiRenzo (Bush), Joseph Mega (Caira); Paul Gignac (Schwenk)
Museum of Natural History Award (3): Kevin Burgio (Rubega), Selena Humphries (Rubega/Elphick co-advised), Cassandra Daley (Wagner)

Appendix C8: Distribution of majors within biology 2005-2012.

		First-time Freshmen	Other First Year	Sophomore	Junior	Senior	Total Head Count	Majors in EEB, MCB & PNB (%)	Biology Majors	Majors across all biologies
Fall 2004	**EEB**	4	0	8	11	24	**47**	**435 (42%)**	**611 (58%)**	**1,046**
	MCB	28	2	44	72	98	**244**			
	PNB	22	3	32	48	39	**144**			
	BIO						**611**			
Fall 2005	**EEB**	2	3	15	10	22	**52**	**494 (40%)**	**744 (60%)**	**1,238**
	MCB	21	2	56	69	126	**274**			
	PNB	32	4	35	45	52	**168**			
	BIO						**744**			
Fall 2006	**EEB**	10	1	8	24	18	**61**	**483 (37%)**	**809 (63%)**	**1,292**
	MCB	37	2	24	72	111	**246**			
	PNB	36	3	43	51	43	**176**			
	BIO						**809**			
Fall 2007	**EEB**	2	1	11	14	27	**55**	**519 (37%)**	**896 (63%)**	**1,415**
	MCB	24	5	38	70	105	**242**			
	PNB	37	4	49	71	61	**222**			
	BIO						**896**			
Fall 2008	**EEB**	5	0	13	18	20	**56**	**592 (37%)**	**1020 (63%)**	**1,612**
	MCB	39	2	30	88	124	**283**			
	PNB	67	5	58	59	64	**253**			
	BIO						**1,020**			

Appendix C8 (continued)

Fall 2009	**EEB**	7	0	10	20	25	62	**616 (35%)**	**1130 (65%)**	**1,746**
	MCB	37	2	60	80	120	299			
	PNB	58	1	80	54	62	255			
	BIO						1,130			
Fall 2010	**EEB**	4	1	13	17	21	56	**638 (34%)**	**1260 (66%)**	**1,898**
	MCB	51	2	45	98	104	300			
	PNB	77	5	60	84	56	282			
	BIO						1,260			
Fall 2011	**EEB**	5	0	10	28	25	68	**704 (35%)**	**1301 (65%)**	**2,005**
	MCB	54	5	58	85	118	320			
	PNB	72	4	91	64	85	316			
	BIO						1,301			
Fall 2012	**EEB**	6	0	7	18	37	68	**709 (35%)**	**1319 (65%)**	**2,028**
	MCB	33	2	52	99	98	284			
	PNB	97	3	88	94	75	357			
	BIO						1319			

Appendix C9: Storrs Campus enrollment in writing intensive (W) classes in Fall (F) and Spring (S) semesters 2005-2012.

Course	Title	F 04	S 05	F 05	S 06	F 06	S 07	F 07	S 08	F 08	S 09	F 09	S 10	F 10	S 11	F 11	S 12
EEB 2244W*	General Ecology	73		96		96		103		95	12	84	12	92		81	24
EEB 2245W**	Evolutionary Biology		84		80		82		94	12	83		75	13	83		106
EEB 3209W	Soil Degradation/Conservation		9														
EEB 3220W	Evolution of Green Plants								4				5				10
EEB 4230W	Methods of Ecology			6		6		11		8		13		9		8	
EEB 4251W	Medical Entomology		11				11				11						
EEB 4276W	Plant Anatomy			1						1				4			
EEB 4896W	Senior Thesis	2	3	3	6	0	4		7		4	0	7	1	6	1	9
EEB 5335W	Vertebrate Social Behavior	17				9				14				19			
EEB 5477W	Insect Phylogeny		5														
BIO 3520W	Ethical Perspective in Bio. Res.														19		20
Total Ws		92	112	106	86	102	97	114	105	116	110	97	99	138	108	90	169
Total W's per year			204		192		199		219		226		196		246		259

*Up until Spring 2009, EEB 2244/W was only offered in the fall semester. Due to enrollment pressures, the department began offering the class in both fall and spring semesters. In Spring 2013, we will offer 128 seats in EEB 2244 and 2244W combined.

**A small section of EEB 2245/W is offered every other fall to help with enrollment demands. Enrollment in both sections was dramatically increased in Spring 2012 to meet enrollment demands.

Appendix D1. Support, composition and size of graduate student population in EEB between 2005-2012.

	F05	S06	F06	S07	F07	S08	F08	S09	F09	S10	F10	S11	F11	S12	F12	$\bar{x}$
New grads	8	3	8	0	10	1	3	0	5	2	11	1	10	2	8	
Ph.D. PROGRAM																
New Ph.D.	7	3	8	0	8	1	1	0	5	1	10	1	6	2	5	
Ph.D. TA	22.5	22.5	28.5	23.5	29	22.5	24.5	19	16	14	25	20.5	24	20.5	24.5	
Ph.D. Univ support	0	2.5	3	1	1	1	1	1	0						1	
Ph.D. RA	13.5	14	9	11.5	11.5	13.5	9.5	12	19.5	17	14	13	12	12	8.5	
Ph.D. Internal fellowship	1.5	1.5	2	2.5	3	4	3.5	1.5	2.5	3	3.5	6.5	3.5	3.5	5.5	
Ph.D. External fellowship	2	3	3.5	3.5	3.5	2.5	1	0.5	2	2	2	2	4.5	3.5	4.5	
DEMI/2				2		2		2.5		1.5		2		1.5		
No support	2	0	0.5	2	0.5	0	0	0	1	1	0		1	2	1	
Not active	4	4	5	5	3	4	3	2	2	2	2	1	1	1	1	
Active Ph.D.	41.5	43.5	46.5	46	48.5	45.5	39.5	36.5	41	38.5	44.5	44	45	43	45	43
MASTER PROGRAM																
New M.S.	1	0	0	0	2	0	2	0	0	1	1	0	4	0	3	
M.S. TA	1	1	1	2	1	1.5	1	2	4	2.5	1.5	1	4	4	6	
M.S. Univ support					1	1	1	1	1	2	1	1	1	1	0	
M.S. RA	1	0	1	0	1	0.5	2	1	0	0.5	0.5	0	1	1	0	
Active M.S.	2	1	2	2	3	3	4	4	5	5	3	2	6	6	6	4
Total Active research grads	**43.5**	**44.5**	**48.5**	**48**	**51.5**	**48.5**	**43.5**	**40.5**	**46**	**43.5**	**47.5**	**46**	**51**	**49**	**51**	**47**
B.S./M.S. PROGRAM																
Active B.S./M.S.	7	7	3	3	7	6	9	9	10	8	10	10	7	7	6	7
B.S./M.S. on TA	5	5	0.5	2	1	0.5	2.5	2	4	2	1	4.5	2	4	1	
Total grads (Ph.D. + M.S. +B.S./M.S.)	**50.5**	**51.5**	**51.5**	**51**	**58.5**	**54.5**	**52.5**	**49.5**	**56**	**51.5**	**57.5**	**56**	**58**	**56**	**57**	**54**
TOTAL TAs	**28.5**	**28.5**	**30**	**27.5**	**31**	**24.5**	**28**	**23**	**24**	**18**	**27.5**	**30.5**	**30**	**28.5**	**31**	**27.4**

Appendix D2. Awards received by graduate students in EEB between 2005 and 2012.

Summary:
Extramural research awards: 25
Intramural awards: 55
Societal extramural awards: 64
Best student presentation awards: 17
Travel awards: 10

EXTRAMURAL AWARDS (25)

National Science Foundation Predoctoral fellowships (6):

2007 Susan Letcher
2008 Vanessa Boukili
2009 Alyssa Borowske
2010 Lily Lewis
2011 Kevin Burgio
2012 Jessica Rack

Doctoral Dissertation Improvement grants (total active: 15; *awarded after 2005: 10):

Jonathan Richmond (Jockusch) 2003-2005: "Testing the Parallel Speciation Hypothesis in Scincid Lizards of the *Eumeces skiltonianus* Species Complex." $11,182.

Norman Wickett (Goffinet) 2004-2006: "Chloroplast evolution of the non photosynthetic liverwort *Cryptothallus mirabilis* (Aneuraceae)." $11,549.

Hillary McManus (L. Lewis) 2004-2006: "Systematics, Colony Form Evolution and Phenotypic Plasticity within the Family Hydrodictyaceae (Sphaeropleales, Chlorophyta). " $10,516.

Florian Reyda (Caira) 2004–2006: "Dissertation Research, Patterns of diversity and host specificity in the cestodes of freshwater stingrays." $10,940.

Patrick Herron (Cardon) 2004-2007: "Does hydraulic redistribution increase microbial activity in the rhizosphere?" $12,000.

*Maxi Polihronakis (Henry) 2006-2008: "Understanding the Evolutionary Patterns Contributing to Species-Specific Male and Female Genitalia in a Group of Scarab Beetles." $11,085.

*Krissa Skogen (Holsinger) 2006-2008: "Nitrogen Depostion and PopulationDynamics of a Declining N-Fixer. "$11,993.

*Rachel Prunier (Holsinger) 2007-2010: "Exploring the Mode of Speciation in the South African Genus *Protea* (Proteaceae)." $11,965.

*Tobias Landberg (Schlichting, Schwenk) 2008-2010. "Do egg size effects cascade through salamander ontogeny? Allometric engineering of maternal provisioning." $12,000.

*Roberta Engel (Jockusch) 2008-2010: "Origin and Diversification of Pseudoscorpions on Granite Outcrops in Southwestern Australia". $11,992.

*Juan Carlos Villarreal (Goffinet) 2009-2011: "Genetic consequences of the shift to asexuality in bryophytes: insights from the hornwort *Megaceros aenigmaticus*." $9,594.

*Chris Owen (Simon) 2010-2012: Dissertation Research "Systematics and diversification of the Australian cicada genus Pauropsalta." $14,769.

*Kellie Kuhn (Colwell) 2010-2012: "Spatio-Temporal Variation in an Ant-Plant Interaction" $14,990.

*Diego Suistata (Rubega) 2011-2013: Dissertation Research: Biomechanics of Feeding in Loggerhead Shrikes." $14,452.

*Vanessa Boukili (Chazdon) 2011-2012. "Functional trait diversity and community assembly of trees and seedlings during tropical forest succession." $14,909.

Appendix D2 (continued)

East Asia and Pacific Summer Institute (2):
2008. Jenica Allen, Jessica Budke
EDEN research exchange grant (sponsored; 1):
2011. Frank Smith
National Center for Ecological Analysis and Synthesis (sponsored; 2).
2010-2011. Jenica Allen—Invited Working Group Member
2011: Chris Owen: Next-gen Sequencing Bioinformatics Course
Northeast Alliance for Graduate Education and the Professoriate Mentoring Fellowship (1).
Klingbeil (2011)
Fulbright Foundation (2).
Research Fellowship: 2009. Amanda Wendt
Graduate Fellowship: 2008. Alejandro Rico-Guevara
EPA Star Fellowship (1): 2012. Heidi Golden
NASA Graduate fellowship (1): 2008. Adam Wilson.
Switzer Fellowship (1): 2009. Kathryn Theiss
AOU and Cooper Ornithological Society (1): 2010: Alejandro Rico-Guevara
Schwenk/Northeast alliance mentoring fellowship (1): 2007. Roberta Engel.
American Museum of Natural History, Theodore Roosevelt Memorial Award for Graduate Student Research (1): 2005.

INTRAMURAL AWARDS (56)
Outstanding Scholar Fellowships (7)
2006 Suegene Noh
2007 Vanessa Boukili
2009 Alyssa Borowske
2010 James Mickley, Jessica Rack
2012 Michael Hutson, Cera Lawrence

Outstanding Multicultural scholar Fellowship (2)
2012 Dustin Ray, Diego Sustaita

Multicultural Fellowships (4)
2006 Maria Pickering
2007 Laura Cisneros.
2009 Andre Felton
2011 Holly Brown

Schwenk Graduate mentor Fellowship-CLAS (2)
Tobias Landberg (2008)
Roberta Engel (2008)

Center for Environmental Sciences and Engineering:
Graduate Student Research Fellowships (**16**):
Jenica Allen (2008); Vanessa Boukili (2010); Laura Cisneros (2009, 2010), Jeff Divino (2011), Brian Klingbeil (2010), Cory Merow (2007, 2008, 2009, 2010, 2011), Nancy Ross (2007), Jon Velotta (2009), Amanda Wendt (2010), Adam Wilson (2008, 2010)

Appendix D2 (continued)

Multidisciplinary Environmental Research Award (**8**):
Hugo Martinez (2008), Alejandro Rico-Guevara (2009), Kathryn Theiss (2008), Amanda Wendt (2011), Adam Wilson (2007, 2008, 2009, 2010)

Center for Conservation and Biodiversity Grant (3)
2008 Nic Tippery
2009 Laura Cisneros
2011 Elizabeth Timpe

Center for Conservation and Biodiversity Silander Endowment (1)
2011 Lily Lewis

Doctoral dissertation award (11):
2007 Jang Kim, Nic Tippery
2008 Suegene Noh
2010 Jessica Budke
2011 Vanessa Boukili, Cory Merow, Kathryn Theiss, Frank Smith
2012 Kelli Kuhn, Jenica Allen, Jon Velotta

President summer research award (2):
2010 Juan Carlos Villarreal
2011 Cory Merow

SOCIETAL AWARDS (64)

1. American Archanology Society: Roberta Engel (2005)
2. American Microscopical Society: Jessica Budke (2009)
3. American Museum of Natural History Chapman Grant: Trina Bayard (2008)
4. American Ornithologist's Union Research Award: Alejandro Rico-Guevara (2010)
5. American Philosophical Society (Lewis and Clark Grant): Vanessa Boukili (2009)
6. American Society of Mammalogists: Laura Cisneros (2009, 2010), Brian Klingbeil (2010)
7. American Society of Plant Taxonomists: Nic Tippery (2008)
8. Animal Behavior Society Student Grant: Trina Bayard (2007)
9. Bat Conservation International: Laura Cisneros (2010), Amanda Wendt (2009)
10. Botanical Society of America: Jessica Budke (2009)
11. Caudata.org grant: Elizabeth Timpe (2010)
12. Richard Evans Schultes Award, Society for Economic Botany: Nancy Ross (2007)
13. Connecticut NASA Space Grant Graduate Fellowship: Adam Wilson (2008-2009)
14. Connecticut Sea Grant: Jon Velotta (2009)
15. Cooper Ornithological Society Mewaldt-King Award: Trina Bayard (2007)
16. Explorers Club Grant: Kelli Kuhn (2010)
17. Francis M. Peacock Schshp for Native Bird Habitat: Alyssa Borowske (2012), Trina Bayard (2007)
18. Furniss Fellowship from American Orchid Society: Kathryn Theiss (2006-2009)
19. Garden Club of America Award in Tropical Botany: Vanessa Boukili (2010), Kathryn Theiss (2008), Amanda Wendt (2009)
20. Helminthological Society of Washington: Maria Pickering (2012)
21. International Association of Bryologists (Stanley Green Award): Jessica Budke (2009); Juan Carlos Villarreal (2007)

Appendix D2 (continued)

22. International Association of Plant Taxonomists: Juan Carlos Villarreal (2008)
23. Museum of Comparative Zoology (Harvard; "Ernst Mayr travel grant"): Geert Goemans (2009)
24. Neotropical Ornithological Society: Alejandro Rico-Guevara (2011)
25. Northeast Biological Graduate Students Conference: Roberta Engel (2008)
26. Organization for Tropical Studies Post-course Grant: Vanessa Boukili (2008), Kelli Kuhn (2008)
27. Organization for Tropical Studies Pilot Grant: Kelli Kuhn (2009)
28. Organization for Tropical Studies Research Fellowship: Vanessa Boukili (2009, 2011), Laura Cisneros (2010), Kelli Kuhn (2010, 2011), Amanda Wendt (2008)
29. Phycological Society of America: Molly Letsch (2006); Jang Kim (2008)
30. Phycological Society of America, Hannah T. Croasdale Award, Molly Letsch (2006)
31. Quebec-Labrador Foundation for the Environment: Trina Bayard (2008)
32. Sigma Xi: Susan Herrick (2006-2007); Kelli Kuhn (elected to Full Member 2010), Suegene Noh (2008), Brigid O'Donnell (2005), Chris Owen (2010), Jessica Rack (2011), Alejandro Rico-Guevara (2012), Frank Smith (2010), Jon Velotta (2009), Beth Wade (2010).
33. Smithsonian Tropical Research Institute: Juan Carlos Villarreal (2008-co-Pi)
34. Society for Systematic Biology: Chris Owen (2009)
35. Society for Systematic Biology (MiniPeet): Roberta Engel (2006)
36. Society for Economic Botany (Schultes Award): Nancy Ross (2007).
37. Society for Integrative and Comparative Biology Division of Vertebrate Morphology (D. Dwight Davis award): Diego Sustaita (2007)
38. Society for Systematic Biologists Graduate Student Research Award: Maxi Polihronakis (2005)
39. Society for the study of Evolution (Rosemary Grant Award): Frank Smith (2010)
40. Southern Appalachian Botanical Society: Juan Carlos Villarreal (2009)
41. Systematic Research Fund [SRF] of The Linnean Society of London & The Systematics Association: Geert Goemans (2009-2010), Chris Owen (2009-2010)
42. Wilson Ornithological Society Paul A. Stewart Award: Trina Bayard (2008)
43. World Aquaculture Society: Jang Kim (2008)

BEST STUDENT PRESENTATION AWARDS AT NATIONAL CONFERENCES (18):

1. American Association of Ichthyologists and Herpetologists (Stoye Award): Justin Davis (2010)
2. American Bryological and Lichenological Society (Sharp award): Juan Carlos Villarreal (2010)
3. American Society of Mammalogists (Elizabeth Horner Award for the best graduate proposal): Brian Klingbeil (2009)
4. American Society of Plant Taxonomist: Chris Martine (2005)
5. Botanical Society of America: Jessica Budke (Katherine Esau award: 2010), Hugo Martinez (best poster: 2008), Kerri Mocko (Best poster: 2009)
6. Entomological Society of America (President's Prize): Nicola Plowes (2007)
1. Entomological Society of America, annual meeting: President's Prize in Systematics, Evolution and Biodiversity: Suegene Noh (2008)
2. International Biogeography Society: Cory Merow (2011)
3. Northeast Algal Society (Robert T. Wilce Student Award): Molly Letsch (2010)
4. Society for Economic Botany (Edmund H. Fulling Award): Nancy Ross (2008).
5. Society for Integrative and Comparative Biology, Division of Systematics and Evolutionary Biology: Maxi Polihronakis (2005)

Appendix D2 (continued)

6. Society for Integrative and Comparative Biology, Division of Vertebrate Morphology (D. Dwight Davis award): Diego Sustaita (2007)
7. Society for the Study of Amphibians and Reptiles (Henry Seibert Award): Nirvana Filoramo (2005)
8. Wilson Ornithological Society (Lynds Jones Award): Jason Hill (2007)
9. Northeast Biological Graduate Students Conference: Roberta Engel (2008)
10. Wilson Ornithological Society-Association of Field Ornithologists' Joint Meeting: Alejandro Rico-Guevara (2009), Jason Hill (2009).

TRAVEL AWARDS (10)

1. American Society of Parasitologists: Carrie Fyler (2008), Maria Pickering (2010), Veronica Bueno (2012)
2. American Society of Plant Taxonomists: Hamid Razyfard (2012)
3. Botanical Society of America (Vernon I. Cheadle Award): Kerri Mocko (2010), Jessica Budke (2011)
4. International Biogeography Society Travel Award: Cory Merow (2011); Adam Wilson (2010)
5. North American Ornithological Conference Travel Award: Diego Sustaita (2012).
6. Phycological Society of America, Hoshaw Travel Award: Jang Kim (2008); Karolina Fučíková (2011).
7. Society for Integrative and Comparative Biology: Roberta Engel (2006)
8. Society for the Study of Evolution International Travel Award: Beth Wade (2008 but declined)

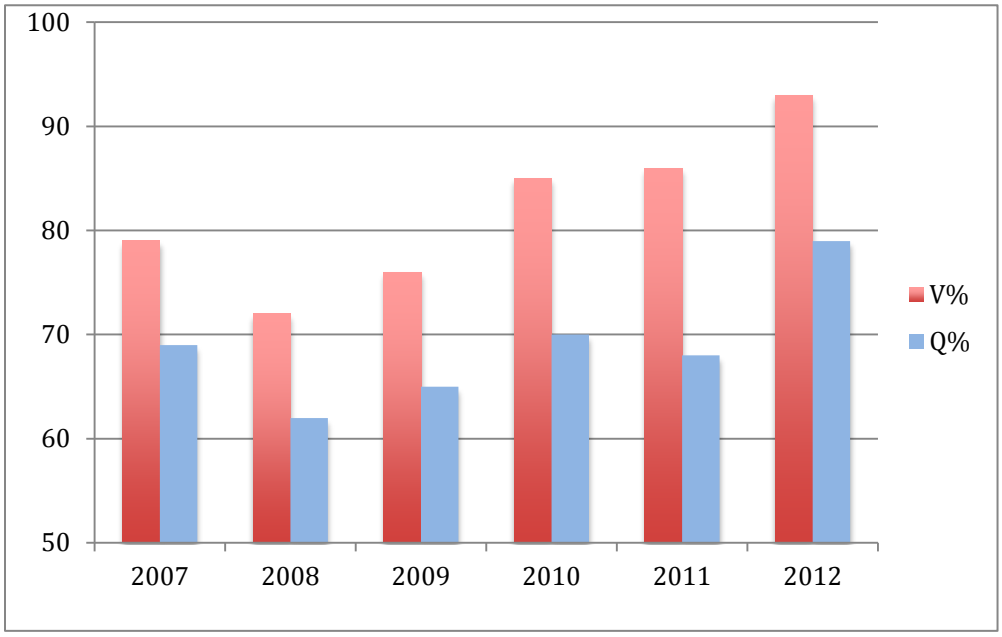
Appendix D3: Graduate course offerings per semester (with lab = Bold).

EEB 5215 (see also EEB 4215)	Physiological Ecology of Animals	Fall
EEB 5369	Current Topics in Biodiversity	Fall
EEB 5894	Seminar - Introduction to Natural History Collections	Fall
EEB 6481	Seminar in Biodiversity	Fall
EEB 5203 (see also EEB 3203)	**Developmental Plant Morphology**	**Alternate Falls**
EEB 5204 (see also EEB 3204)	**Aquatic Plant Biology**	**Alternate Falls**
EEB 5250 (see also EEB 3250)	**Biology of the Algae**	**Alternate Falls**
EEB 5254 (see also EEB 3254)	**Mammalogy**	**Alternate Falls**
EEB 5310	Conservation Biology	Alternate Falls
EEB 5333	Evolutionary Developmental Biology	Alternate Falls
EEB 5335W	Vertebrate Social Behavior	Alternate Falls
EEB 5347	**Principles and Methods of Systematic Biology**	**Alternate Falls**
EEB 5348	Population Genetics	Alternate Falls
EEB 5449	Evolution	Alternate Falls
EEB 5370	Current Topics in Conservation Biology	Spring
EEB 5200 (see also EEB 4200)	**Biology of Fishes**	**Alternate Springs**
EEB 5220 (see also EEB 3204)	Evolution of Green Plants	Alternate Springs
EEB 5221 (see also EEB 3221)	Evolution of Green Plants Laboratory	Alternate Springs
EEB 5240 (see also EEB 3240)	**Biology of Bryophytes and Lichens**	**Alternate Springs**
EEB 5265 (see also EEB 3265)	**Herpetology**	**Alternate Springs**
EEB 5271 (see also EEB 3271)	**Systematic Botany**	**Alternate Springs**
EEB 5301	Population and Community Ecology	Alternate Springs
EEB 5302	Organisms and Ecosystems	Alternate Springs
EEB 5307 (see also EEB 3307)	African Field Ecology and Renewable Resource Management	Alternate Springs
EEB 5349	Phylogenetics	Alternate Springs
EEB 5350	Molecular Systematics	Alternate Springs
EEB 5360	Functional Ecology of Plants	Alternate Springs
EEB 5372	Computer Methods in Molecular Evolution	Alternate Springs
EEB 5375	Evolution and Ecology of Communities	Alternate Springs
EEB 5452 (Required 2 week field trip in May)	Field Ecology	Alternate Springs
EEB 5895	Special Topics - Biogeography	Alternate Springs
EEB 5895	Special Topics - Paleobiology	Alternate Springs
EEB 5889	Research	Every Semester
EEB 5891	Graduate Internship in Ecology, Conservation or Evolutionary Biology	Every Semester
EEB 5899	Independent Study	Every Semester
EEB 6480	Seminar in Vertebrate Biology	Every Semester
EEB 6482	Seminar in Spatial Ecology	Every Semester
EEB 6483	Seminar in Marine Biology	Every Semester
EEB 6484	Seminar in Plant Ecology	Every Semester
EEB 6485	Seminar in Comparative Biology	Every Semester

Appendix D3 (continued)

EEB 6486	Seminar in Systematics	Every Semester
EEB 5269 (see also EEB 3269)	Social Insects	Variable
EEB 5371	Current Topics in Molecular Evolution and Systematics	Variable
EEB 5445	Advanced Invertebrate Zoology	Variable
EEB 5447	Mathematical Ecology	Variable
EEB 5463	Plant Ecology	Variable
EEB 5477	Insect Phylogeny	Variable
EEB 5894	Seminar - Ferns and Friends	Variable
EEB 5894	Seminar - Speciation	Variable
EEB 5894	Seminar - Bayesian Regression Analysis	Variable
EEB 5894	Seminar - Symbiosis	Variable
EEB 5894	Seminar - Statistical Methods	Variable
EEB 5894	Seminar - Morphometrics	Variable
EEB 5894	Seminar - Ecol Theory & Struct Equat Modeling	Variable
EEB 5894	Seminar - Entomology & Invertebrate Conservation	Variable
EEB 5894	Seminar - Mass Extinction	Variable
EEB 5894	Seminar - Ethics & Communication	Variable
EEB 5894	Seminar - Ecosystems & Biogeochemistry	Variable
EEB 5894	Seminar - Science Communication	Variable
EEB 5894	Seminar - Assess Monit of Envir Services	Variable
EEB 5894	Seminar - Invasive Species Biology	Variable
EEB 5894	Seminar - Quantitative Animal Ecology	Variable
EEB 5894	Seminar - Ecology & Conservation of Tidal Marshes	Variable
EEB 5894-1	Seminar - Speciation and Hybridization	Variable
EEB 5894-10	GIS Cyberinfrastructure	Variable
EEB 5894-11	Climate Modeling	Variable
EEB 5894-12	Modeling Biodiversity Patterns and Ecological Processes	Variable
EEB 5894-13	Specimen-level Databases	Variable
EEB 5894-14	Developing Online Databases and Serving Biological Research Data	Variable
EEB 5894	Cyberinfrastructure	Variable
EEB 5895	Special Topics - Behavioral Endocrinology	Variable
EEB 5895	Special Topics - Biology of Marine Algae	Variable
EEB 5895	Special Topics - Biostatistics	Variable
EEB 5895	PhyloMath	Variable
EEB 5895	Special Topics - Protist Evolution and the Origin of Eukaryotes	Variable
EEB 5895	Special Topics - Animal Models and Human Evolution	Variable
EEB 5895	Special Topics - Law and Ecology	Variable
EEB 5895	Special Topics - Applications of Next-generation Sequencing in Ecology & Evolutionary Biology	Variable
EEB 5895-5	Special Topics - Ecology and Evolution of Ecosystem Services	Variable
EEB 6487	Seminar in Parasitology	Variable
EEB 6490	Seminar in Behavioral Ecology	Variable

Appendix D4. Mean Verbal and Quantitative GRE percentiles for enrolled graduate students 2007–2012



Appendix D5. Mean applicant pool numbers and overall program percentages for 2007–2012.

	Mean number	Applicant %	Enrolled %	Current %	2006* %	2000** %
# Apps	62					
Male	25	41	44	40	44	60
Female	37	59	56	60	56	40
Minority	4	7	9	10	4	12
International	9	14	17	17	17	14
Offers made	15 (23% of applicants)					
Offers accepted	9 (65% of offers and 15% of applicants)					

* NRC figures; ** previous review

Appendix D6: Placements of graduates 2005-2012

Ph.D. students graduating 2005-2012

Student	Advisor	Grad. year	Current title	Where placed
Lubertazzi, D.	Adams	2005	Postdoctoral Fellow	Museum of Comparative Zoology, Harvard University
Young, C. A.	Anderson	2005	Chief Executive Officer	Ministry of Energy, Science, Technology and Public Utilities, Government of Belize
Shannon, R. K.	Anderson	2005	Associate Professor	West Virginia Wesleyan College
Barber, K.	Caira	2005	Co-owner	Greengate Family Farm, Missouri
Hooker, B.	Cardon	2005		Department of Earth & Environment, Mount Holyoke College
Richmond, J.	Jockusch	2005	Herpetological Geneticist	U. S. Geological Survey, Western Ecological Research Center
Moody, M.	Les	2005	Assistant Professor	Department of Biological Sciences, University of Texas at El Paso
LaPlante, L.	Schultz	2005	Assistant Professor	Saint Anselm College, Department of Biology
Citron-Pousty, S.	Silander	2005	Software Developer	Redhat OpenShift, Mountain View, CA
Leicht, S.	Silander	2005	Adjunct Professor	University of Rhode Island
Martine, C.	Anderson	2006	Assistant Professor	Burpee Endowed Chair in Plant Genetics, Bucknell University
Healy, C.	Caira	2006	Curator of Invertebrates	Royal Ontario Museum, Toronto, Canada
Packauskas, R.	Schaefer	2006	Associate Professor	Department of Biology, Fort Hays State University
Engelmann, K.	Schlichting	2006	Assistant Professor	Department of Biology, University of Bridgeport
Herron, P.	Cardon	2007		
Sezen, U.	Chazdon	2007	Postdoctoral Fellow	Botany Department, University of Georgia
Wickett, N.	Goffinet	2007	Conservation Scientist/Assistant Professor	Genomics and Bioinformatics, Chicago Botanic Garden; and Northwestern University
O'Donnell, B.	Jockusch	2007	Assistant Professor	Department of Biological Sciences, Plymouth State University
McManus, H.	Lewis,L.	2007	Assistant Professor	Department of Biological Sciences, LeMoyne College
Yanega, G.	Rubega	2007	Visiting Assistant Professor	Pacific University

Filoramo, N.	Schwenk	2007	Assistant Professor	Biology Department, Worcester State University
Nelson, M.	Wagner	2007	Scientist	Natural Heritage and Endangered Species Program, Massachusetts Division of Fish & Wildlife
Plowes, N.	Adams	2008	Postdoctoral Fellow	School of Life Sciences, Arizona State University
Connolly, B.	Anderson	2008	State Botanist	Massachusetts
Ross, N.	Anderson	2008	Assistant Professor	Department of Biology, Drake University
Reyda, F.	Caira	2008	Assistant Professor	Biological Field Station, SUNY Oneonta
Letcher, S.	Chazdon	2008	Assistant Professor	Department of Environmental Studies, Purchase College
Richmond, M.	Henry	2008	Manager	UCSD Drosophila Stock Center, University of California, San Diego
Skogen, K.	Holsinger	2008	Research Scientist	Chicago Botanic Garden
Ridge, G.	Schaefer	2008	Agricultural Scientist	Department of Entomology, Connecticut Agricultural Experiment Station
Wall, M.	Schaefer	2008	Vice President of Research and Public Programs	Department of Entomology, San Diego Natural History Museum
Latimer, A.	Silander	2008	Assistant Professor	Department of Plant Sciences, University of California, Davis
Rota, J.	Wagner	2008	Postdoctoral Fellow	Department of Entomology, Natural History Museum of Denmark
Arroyo, P.	Chazdon	2009	Postdoctoral Fellow	Geography Department, McGill University
LaFleur, N.	Rubega	2009	Lecturer	Kean University
Smith, C.	Schwenk	2009	Assistant Professor	Biology Department, Wofford College
Rangel, T.	Colwell	2010	Assistant Professor	Departamento de Ecologia, Universidade Federal de GoiÃ¡s
Bayard, T.	Elphick	2010	Director for Conservation	Audubon Washington
Noh, S.	Henry	2010	Postdoctoral Fellow	Division of Biology, Kansas State University
Prunier, R.	Holsinger	2010	Assistant Professor	Department of Biology and Environmental Sciences, Western Connecticut State University
Martinez-Cabrera, H.	Jones	2010	Postdoctoral Fellow	Canada
Tippery, N.	Les	2010	Assistant Professor	Department of Biological Sciences, University of Wisconsin-Whitewater
Letsch, M.	Lewis,L.	2010	Visiting scientist	EEB, University of Connecticut
Landberg, T.	Schwenk	2010	Postdoctoral Fellow	Biology Department, Murray State University

Fyler, C.	Caira	2011	Founder and President	Moonrise Media, Marta's Vineyard
Fucikova, K.	Lewis, L.	2011	Postdoctoral Fellow	EEB, University of Connecticut
McPherson, T.	Colwell	2011	Imaging and Databasing Technician	Torrey Herbarium, UConn
Budke, J.	Goffinet	2011	Postdoctoral Fellow	Plant Biology, University of California
Villarreal, J. C.	Goffinet	2011	Postdoctoral Fellow	Institute of Systematic Botany and Mycology, Ludwig-Maximilians-Universität München
Engel, R.	Jockusch	2011	Postdoctoral Fellow	Department of Biological Sciences, University of Notre Dame
Benoit, L.	Les	2011	Postdoctoral Fellow	EEB, University of Connecticut
Fan, D.	Lewis, P.	2011	Postdoctoral Fellow	M. D. Anderson Cancer Center, The University of Texas
Pereira, J.	Schultz	2011	Fisheries Biologist	National Marine Fisheries Service, Milford Laboratory
Hurme, K.	Wells	2011	Lecturer	Department of Ecology and Evolutionary Biology, University of Connecticut
Theiss, K.	Holsinger	2012	Postdoctoral Fellow	Department of Biology, Willamette University
Wilson, A.	Silander	2012	Postdoctoral Fellow	Yale University

MS students graduating 2005-2012

Student	Advisor	Grad. year	Current title	Where placed
Weiss, A.	Les	2005		
Hill, K. B.R.	Simon	2005	Researcher	Department of Ecology & Evolutionary Biology, University of Connecticut
Hax, N.	Goffinet	2006		
Fried, H.	Schultz	2006	Science Teacher	Science Department, Lyme-Old Lyme High School
Tabak, N.	Silander	2006	GIS and Land Resources Analyst	Center for Biodiversity and Conservation, Scenic Hudson
Lambert, S.	Jones	2007		
Hill, J.	Elphick	2008		Research Unit, Pennsylvania Cooperative Fish and Wildlife
Komiskey, E.	Jones	2008		
Meiman, S.	Elphick	2011		Project Leader for the Institute for Wildlife Studies? San Clemente Sage Sparrow project.

BS/MS students graduating 2005-2012

Student	Advisor	Grad. year	Current title	Where placed
Boiteau, K.	Les	2005		
Goupil, B.	Schultz	2005	Resident in Veterinary Anatomic Pathology	Veterinary Anatomic Pathology, University of Minnesota
Britton, D.	Elphick	2006	Director of Operations	Sunlight Solar Energy
Rogers, K.	Rubega	2006		Department of Pathobiology, University of Connecticut
Cann, C.	Schlichting	2006		Sequoia and Kings Canyon N.P.
Bowerman, L.	Chazdon	2007	Middle School Math and Science Teacher	Hilton Head, SC
Struble, S.	Schultz	2007	Biology Teacher	Department of Biology, Glastonbury High School
Hamler, C.	Schwenk	2007		
Levasseur, K.	Silander	2007	Graduate Student	715 Sumter Street, University of South Carolina
Fisk, K.	Wells	2007		
Achilli, J.	Schwenk	2008	Teacher	
Steeves, T.	Rubega	2009	Lab and Project Manager	Yale University
Sanders, M.	Schultz	2009	Student	College of Veterinary Medicine, Purdue University
Sulkowski, J.	Schwenk	2009		
Krauss, R.	Simon	2009	Field Validation Specialist	Department of Science, NEON Project
Catanese, K.	Thorson	2009		
Barozi, W.	Chazdon	2010	Environmental Biologist	Enforcement Division, Bureau of Air Management, DEEP
Grabowski, Z.	Chazdon	2010	Ph.D student	IGERT program, Portland State University
Hovorka, S.	Rubega	2010		
Defrancesco, A.	Chazdon	2011	Farmer	Family farm
Tardiff, K.	Rubega	2011		
Barbieri, L.	Schultz	2011	Naturalist	Seaside Nature Center, Cape Henlopen State Park
Jones, L.	Schwenk	2011		
Payne, S.	Jones	2012	Seasonal Resource Assistant	DEEP
Roehm, R.	Urban	2012	Environmental consultant	Houston, TX

Appendix F1: Partial list of notable, recent and ongoing EEB outreach activities (exclusive of online outreach; see appendix F3&4)

1. Conservation

John Silander is involved in multiple grass-roots conservation efforts, including in Madagascar, South Africa and Chile. He pursues multi-level endeavors that focus on training, education, capacity building, and grassroots, community-based conservation (as well as research). These efforts are in collaboration with former students, e.g. J. Ratsirarson in the tropical wet forests and grasslands of Madagascar, with funding from the MacArthur Foundation, and with R. Rozzi in Cape Horn Region in Chile, working on sustained conservation initiatives conducted with the direct involvement of disenfranchised locals in conservation policy and management. With Rozzi, he has worked with the most southerly Native American groups in the world in developing a new (June 2005) UNESCO World Biosphere Reserve.

Bernard Goffinet is promoting (ecotourism) awareness about the hidden/inconspicuous biodiversity in Patagonia through books, lectures and training. Examples include:

Goffinet B., R. Rozzi, L. Lewis, W.R. Buck and F. Massardo. 2012. Miniature Forest of Cape Horn/Los Bosques en Miniatura del Cabo de Hornos. Ecotourism with a hand lens/Ecutourismo con lupa. University of North Texas Press (Denton, TX) & & Ediciones Universidad de Magallanes (Punta Arenas, Chile).

Rozzi, R., L. Lewis, F. Massardo, Y. Medina, K. Moses, M. Ménendez, L. Sancho, P. Vezzani, S. Russell & B. Goffinet. In press. Ecotourism with a Hand Lens in the Omora Park. Photography by Adam M. Wilson and collaborators. Sub-Antarctic Biocultural Conservation Program, Universidad de Magallanes - University of North Texas Ediciones Universidad de Magallanes.

2. K-12 education, stem learning activities
Outside of K-12 Schools:

Donald Les & Robert Capers, Herbarium: The George Safford Torrey Herbarium has worked with Connecticut science teachers to develop lesson plans so the state's high school students can use the herbarium's plant database in their biology lab exercises (http://bgbaseserver.eeb.uconn.edu/database.html) in concert with their NSF-funded herbarium database project. (See: http://bgbaseserver.eeb.uconn.edu/Teacher_website/index1.html)

One of the lesson plans allows students to see how invasive species have increased in abundance over time and how they have spread in space. Another leads students through the process of analyzing whether plants are flowering earlier than they did in the past because of climate change. Still another asks students to use the database to determine if some species have become more rare and then to test ideas about why that has occurred. The exercises all draw on the 140,000-specimen database of plant specimens that the herbarium maintains and continues to expand. For details, see: Capers, R. S. and D. H. Les. 2010. Website promotes plant data as a novel educational resource. Connecticut Journal of Science Education 47(2): 35–38.

Robert Capers, Herbarium: Collaborated with the New York City Urban Barcode Project by providing plant material for analysis by high school students in New York.

Appendix F1 (continued)

Jane O'Donnell, Invertebrate Collections Manager: Is mentoring a female Hispanic high school student, who began interning in the Invertebrate Collections under Dr. O'Donnell as a middle schooler.

Goffinet Lab group: Developed a power point presentation for high school biology teachers on allelopathy using mosses as an example: Swanson, J., J. M. Budke & B. Goffinet. 2012. Powerpoint presentation on allelopathy in plants, using Sphagnum mediated acidification as a model. Available through the Botanical Society of America.

Charles Henry & Marta Wells: Mentored John Foster, then a senior at Glastonbury High School, in an independent study project entitled "Evolutionary song convergence in intercontinental lacewing species." Student worked 3-6 hours per week in the Henry lab, eventually producing a poster that he entered into the Connecticut Science Fair (Spring, 2011), for which he received honorable mention. He also presented the results of his project in front of an audience at his high school in the late Spring of 2011. John is now attending UConn at the Storrs campus and majoring in Engineering.

Cindy Jones: Developed summer science camp program for K-12 students. As part of UConn's Kids Are Scientist Too (KAST) program, the *Amazing Biodiversity* and *Botany from Basic to Bizarre* units gave students entering grades 5th through 10th an opportunity to explore areas of science in a hands-on and "learning by doing" environment at a university setting.

Kurt Schwenk: Developed a comparative anatomy teaching module with local 4th grade teachers to meet State curriculum demands. Students visited the comparative anatomy teaching lab every year for experience-based learning about anatomy and complex topics, such as the evolutionary 'homology' concept (e.g., what is meant by the 'same' bone in different animals). Schwenk also works with an advanced science teacher at Glastonbury H.S. to teach students about the nature and pursuit of original research, the primary literature, etc., and is helping the class to establish a digital particle image velocimetry (DPIV) system for demonstrations and student projects.

Presentations at K-12 Schools (partial list; many* are repeated annually):

- Annie Vinton Elementary School; all 3rd Grade Classes*
- Mansfield Middle School Career Day
- Cathedral School, Greensboro, NC; 6th grade
- East Hampton High School
- Lebanon Middle School
- Tolland Middle School Career Day*
- Birch Grove Primary School (Tolland)
- Glastonbury High School*
- Windham Clinical Day Treatment Program*

3. Minority recruitment activities

Elizabeth Jockusch's support of undergraduate research by underrepresented minorities has included numerous undergraduate researchers in her lab, including 5 African Americans, 1 Latino (1

Appendix F1 (continued)

through LSAMP + NSF REU, 2 through Northeast Alliance to Enhance Minority Participation, 4 of 6 also or instead did independent study).

John Silander has secured funds from NSF RET and RAHSS (minorities) programs to integrate undergraduates from underrepresented groups into his conservation research and training in South Africa. (since 1990).

Michael Willig participated in UConn's Northeast Alliance for Graduate Education & the Professoriate (NEAGEP) Program, as a mentor to Jacqueline McComb on a research project entitled "A Comparison of Forest-Edge and Forest-Interior Bird Species Using Automated Acoustic Monitoring". This program is specifically directed toward transitioning students from historically underrepresented groups into doctoral programs in science and engineering.

Eric Schultz: *Member of The John and Valerie Rowe Health Professions Scholars Program Steering Committee. This group advises The Rowe Scholars Program, an endowment-funded program designed to provide opportunities for Connecticut residents from underrepresented and/or economically disadvantaged backgrounds who desire to pursue a career in the health professions.

*Member, STRONG-CT Steering Committee. Although not 'named personnel' on the five-year NSF grant that gave rise to the STRONG-CT program in STEM education for underserved minorities, Schultz assisted in proposal preparation, suggested the program's name, and met with principal and co-principal investigators to review the program's progress. He regularly participated in events for STRONG-CT students. 2005-2011.

4. Greenhouse activities

Because the EEB Greenhouse Facility is used in teaching and research, and centrally located at the north end of campus, public outreach is a key component of its daily operations; we list it separately here to highlight the extent and breadth of outreach activities associated with the greenhouse. Formal tours are the most visible form of outreach with 728 tours provided to nearly 12,500 visitors over the past 8 years. Drop-in guests are common most days in the facility although no formal record is kept of visitors. Greenhouse staff present talks & demonstrations to groups outside of the greenhouse both on their own time and during the regular work-day when schedules permit. All three professional staff members play an active role in outreach. Ms. Dana Ozimek has taken a lead role in reinventing the outdoor garden spaces to create a welcoming invitation drawing casual visitors in to explore the greenhouse collections. She was also featured in a recent UConn promotional video that was aired on national television and included brief glimpses into the greenhouse. Manager Clinton Morse was featured in a 2007 episode of CPTV's Positively Connecticut program and he was awarded the Provost's Award for Excellence in Outreach and Public Engagement later that year. Mr. Morse promotes the public aspect of the greenhouse facilities via television, radio and print outlets whenever the opportunity arises. All three staffers provide regular social media content through our Facebook page and via our extensive public website.

Due to the exceptional scope and quality of the EEB living collections, our facility is a recognized source of hard to find plant material to other institutions around the country. 896 specimens have been sent to 273 different recipients during this period.

Appendix F1 (continued)

5. Exhibits, art and conferences

Kent Wells: created the exhibit 'Charles Darwin—The Legacy of a Naturalist', at the Dodd Library. The exhibit ran from Feb-May 2009, in celebration of the 200th anniversary of the birth of Darwin in Feb. 1809. The exhibit included rare books by Darwin and some of his associates, specimens such as mounted fancy pigeons to illustrate his work on domesticated animals, barnacles to illustrate his work on barnacle systematics, etc. It also included graphic material, including newspaper cartoons about Darwin, and postage stamps from around the world with Darwin's image or some of the animals and plants he worked on, such as Darwin's finches in the Galapagos Islands.

6. Recent press coverage of EEB research

Charlie Yarish was featured on National Public Radio's Morning Edition (http://www.npr.org/blogs/thesalt/2012/10/12/162728509/kelp-for-farmers-seaweed-becomes-a-new-crop-in-america) for his research and work promoting seaweed farming.

Michael Willig was interviewed by local radio host Wayne Norman about climate impacts, mitigation, and adaptation for WILI-AM (Spring 2012).

Ph.D. student Alejandro Rico-Guevara's May 2011 PNAS publication (with Rubega) was covered by the New York Times, Nature and Science, and featured on over 300 web pages, in 19 languages, in over 70 countries. A single one of these, a feature story on the Wired.com site, received more than 44,000 unique page views within the first 3 days after publication, with an average time on page of four and a half minutes, 122% higher than the average TOP for a page on Wired Science. The UConn YouTube channel posting on this study also received 80,000 hits.

Margaret Rubega was featured on NPR's Science Friday, (http://www.sciencefriday.com/segment/05/27/2011/examining-the-hummingbird-tongue.html) about hummingbird feeding mechanics. In the last 5 years, she has also been interviewed about her research on NPR's Living on Earth, Field Notes (local NPR affiliate WFCR) 3 times, local radio (WILI) and the Canadian Broadcasting Service's science program, Quirks and Quarks.

Chris Elphick starred in an episode of a children's TV show AquaKids, focused on his tidal marsh bird research, in May 2011.

Chris Simon was Interviewed for two 20 min. stories that explored the biology of NZ cicadas and aired on the weekly science program, "Our Changing World" on Radio NZ, 18th and 25th March 2010.

Robin Chazdon presented at the Symposium on the Tropical Extinction Crisis at the Smithsonian in January 2009; afterward her talk was covered in in Nature News, Discover News, and Mongabay and was featured in over a dozen blogs.

Louise Lewis was interviewed for a feature story on algae, "Ode to Pond Scum," by Laurie Sanders for the program Field Notes, WFCR Public Radio Station (88.5 FM) (2005).

Appendix F1 (continued)

Bernard Goffinet was interviewed by Susan Milius for Science News for his collaborative work on the dung mosses (Nov. 2011).

Kurt Schwenk published a paper on how horned lizards incapacitate venomous ants with mucus that engendered press reports in ScienceNow (online), Natural History Magazine, the Journal of Experimental Biology and a lengthy segment on the 'Daily Planet, a popular Discovery Channel (Canada) television show; Another Daily Planet segment ('Slo-Mo Tuesdays') featured more of his research. Schwenk was interviewed by the NY Times about a recent finding suggesting that Komodo dragons are venomous (http://www.nytimes.com/2009/05/19/science/19komo.html); his comments were picked up by dozens of science blogs. He was also interviewed for the in-house blog, 'UConn Today' (http://today.uconn.edu/blog/2011/04/snakes-lizards-and-tongues/)

7. Citizen science activities: involving the public in research

David Wagner * Directed 2005 (East Hartford), 2007 (Middletown), and 2009 (East Hartford), Connecticut State BioBlitzes, which served several hundred citizens each year, many of which represented underrepresented groups. (Connecticut's BioBlitzes have always targeted urban populations.) Because at the CT-BioBlitz was the largest in the nation through 2009, it enjoyed attendance from across the region, and widespread radio and newspaper coverage. All Bioblitzes included organized (and funded) commitment to science and environmental education, especially to the host school.

John Silander's USDA grants on Invasive Plant Species were aimed at developing an interactive web-site that focuses on education and public outreach: http://www.IPANE.org/ which averages over 2000 hits/day. As part of this project they train 900+ volunteers in Invasive Species inventory methodology and mapping. They have also developed geo-referenced, relational databases and interactive GIS web mapping that is being used by many state and national GOs and NGOs. 2001-Present

Jane O'Donnell's Connecticut Butterfly Atlas Project (published in 2007) involved thousands of hours of data collection (voucher specimens and photographs) by volunteers of all ages to document the presence and distribution of the state's butterflies.

Bernard Goffinet's lab group developed a brochure on the miniature forest of New England:
Swanson, J., J. M. Budke & B. Goffinet. 2011. A visit to the miniature forest. Insights into the biology and evolution of Bryophytes in Northeastern Connecticut. Printed at the University of Connecticut. 2nd edition (2012) available through the Botanical Society of America.

Andrew Bush assisted Eagle Scouts at Powder Hill Dinosaur Park, Middlefield, CT, by reviewing Exhibit Content for accuracy (2009)

Carl Schlichting has included 4 lay volunteers on his South African research trips over the last 5 years.

David Wagner worked with lay volunteers on EarthWatch expeditions to Southwest Research Biological Station during research on "Climate Change and Caterpillars," 2009-2012.

Appendix F1 (continued)

Eldridge Adams has conducted a state-wide search for the invasive ant *Myrmica rubra* in Massachusetts, including an e-mail campaign to parks, wildlife preserves, and related organizations. This work includes collecting and identifying stinging ants reported by the public, and reports to MassAudubon and Massachusetts State Parks about the distribution of this ant on their properties.

8. Writing for the public

David Wagner * Authored *Caterpillars of Eastern North America: A Guide to Identification and Natural History* (Princeton University Press), which has gone into a new printing each year since its publication, sold more than 28,000 copies, won a national book award. It is used in classrooms and environmental education centers, by small armies of naturalists, and has found much use in the tropics and elsewhere.

Schwenk, K. 2006. Evolution illustrated. Letter to the Editor, Hartford Courant [uses recently published newspaper article on antibiotic resistance to illustrate the reality and significance of evolution in everyday life].

Turchin P. 2006. War and Peace and War: The Life Cycles of Imperial Nations. Pi Press. See it at Amazon.com

Rubega, M.A., S. Kearney, and T. Steeves. *In press*; Chimney Swifts. In: *Connecticut State of the Birds* (M. Bull, ed.) Connecticut Audubon Society.

Elphick, C.S., J. Hill, M.A. Rubega. 2008. Saltmarsh sharp-tailed sparrow. In: *Connecticut State of the Birds*. (M. Bull, ed.) Connecticut Audubon Society.

Schwenk, K. Aristotle's ghost. Wild River Review [http://www.wildriverreview.com]. Online reprint of 2002 article published in Creative Nonfiction No. 19.

9. Advisory boards/committees

John Silander: Vice-Chair of the Board of Trustees, Connecticut Chapter of The Nature Conservancy, 2002-2009.

Jane O'Donnell; Taxonomic Advisory Committee for Invertebrates, CT DEEP Endangered Species Program.

David Wagner: * Board Member for Connecticut State Museum of Natural History, 1988-present.
* Trustee of the Connecticut Chapter of the Nature Conservancy, 2004-2010.
*Vice President and Board Member, Discover Life in America, steering entity for the "All Taxa Biological Inventory," of the Great Smoky Mtns. National Park (Board Member: 2001-2007; Vice-president: 2003-2007).

Margaret Rubega: *CT State Ornithologist: since 1998, providing information and technical advice to state government (e.g., Office of the Chair of the State Senate's Environment Committee; Dept. of Environmental Protection), NGOs (e.g., Connecticut and National Audubon, The Nature Conservancy, Connecticut Ornithological Association), birding organizations (e.g., Hartford and New Haven bird clubs) the media (e.g., migratory bird report on NPR station at: http://www.wfcr.org/fieldnotes.html), and the public (including 3 - 5 programs yearly for elementary/middle school children). Serves, in this capacity, on the Technical Review

Appendix F1 (continued)

Committee, National Audubon Society Important Bird Areas Program for Connecticut; the Connecticut Grassland Conservation Working Group; and the Connecticut Department of Energy and Environmental Protection Endangered Species Advisory Committee for Avian Species.

*Board of Trustees, Robert and Patricia Switzer Foundation, which provides fellowships and professional development support to environmental problem-solvers. 2006 – present.

Eric Schultz: *Environmental Policy Advisory Council. Founding member of a large faculty and staff committee that met multiple times a semester to advise the Director of Environmental Policy, launching and coordinating University environmental policy programs. Membership on the EPAC included a seat on the Environmental Outreach Subcommittee/Environmental Literacy Workgroup, which was devoted to environmentally-oriented educational programs. 2001-2010.

*American Society of Ichthyologists and Herpetologists Board of Governors. "[Has] ultimate authority, fiscal and policy; responsible for conduct of all society business except those functions explicitly delegated to [named officers and committees]." 2005-2008.

*Connecticut Fishery Advisory Council. 2004-present.

Greg Anderson *Chair of a State of Connecticut Legislative Task Force on Fuel Diversification.

*Member, planning commission for higher education
*Member, AIBS ad hoc panel on 'Taxonomy Services'.

Peter Turchin is a founding member and Vice President of the Evolution Institute, whose main goal is to connect the world of evolutionary science to the world of public policy formulation: http://evolution-institute.org/

Mark Urban participated in European Platform for Biodiversity Research Strategy E-Conference on Evolution and Biodiversity, which developed recommendations for protecting biodiversity in the European Union (2009).

Elizabeth Jockusch provides input to state (California) and Federal (USFWS) bodies on the conservation status of amphibians.

Robin Chazdon: *Serves on the founding board of a binational foundation (Costa RIca-USA Foundation) that funds sustainable development projects in Costa Rica, attending meetings twice a year in Costa Rica.

*As part of Pablo Arroyo Mora's Doctoral Dissertation Improvement grant, in 2008 organized a workshop at La Selva BIological Station to promote use of forest management plan data to tree biodiversity in tropical forests. The workshop involving government agencies and professional forestry organizations in Costa RIca as well as NGOs involved in forest management and conservation.

Appendix F1 (continued)

Kurt Schwenk serves as a member of the CT State Endangered Species Scientific Advisory Committee, Amphibians and Reptiles (CT DEEP)

Kentwood Wells serves as a member of the CT State Endangered Species Scientific Advisory Committee, Amphibians and Reptiles (CT DEEP)

10. Presentations, lectures to public groups

Michael Willig and Greg Anderson developed ***Climate Impacts, Mitigation, and Adaptation (CIMA)*** and were leaders in a University-wide initiative to heighten the awareness of students, faculty members, staff members, and the general public of the consequences of climate change to coupled human and natural systems (Spring 2012). The program developed by the CIMA Organizing Committee included a week of activities including

- Signing by UConn President Herbst of the "University's Sustainability Commitment";
- Presentation by the Commissioner of the Department of Energy & Environmental Health (Dan Esty) on Connecticut's commitment to sustainability in light of climate change;
- Presentation by National Academy Member and Professor of EEB (Gene Likens) on the role of the university community in affecting sustainable practices;
- Presentations by renowned journalist, Mark Hertsgaard on "How 'Generation Hot' Can Fight Climate Change … and Win" and "Inspiring Our Communities To Fight Global Warming";
- Hosting of a "Climate Impact Expo: Actions for Cool Communities" for students and staff;
- Hosting of a Workshop on science, agriculture, and industry from the perspective of "Sustainability: What UConn Students Should Know";
- Mini-symposium of research finding by UConn students and faculty members concerning climate change;
- Hosting an Interactive Town Discussion on "Local and Regional Climate Adaptation Strategies"
- Presentation by University Provost Nicolls on "UConn's Academic Plan and the Environment";
- Presentation by internationally renowned climate scientist, Michael Mann, entitled "The Hockey Stick: on the Front Lines in the Climate Wars".

Kurt Schwenk gave invited public lectures for the CT State Museum of Natural History (The vertebrate skull) and the Mansfield, CT, Center for Learning in Retirement ('Amphibians and Reptiles of Mansfield' and 'Aristotle's ghost—diversity and vertical thinking')

Tours (including Greenhouses, Collections, and Labs)

- Alumni & Family Weekend Tours
- Local K-12 school groups
- Statewide Early College Experience high school biology
- Homeschool groups
- CT Junior Science & Humanities Symposium
- Numerous classes from non-CLAS departments – Plant Science, Art School, etc
- Annual Parent Orientation Program
- Visiting guests & lecturers
- UConn Branch Campuses
- Statewide Garden Clubs & Senior Groups
- Area magnet schools
- Specialist plant societies (meetings occasionally hosted at UConn)
- Local scouting groups, including both Boy and Girl Scout troops.

Talks & Demonstrations, outside of schools

Partial list of organizations/groups faculty have presented to;
*many are annually repeated with a changing topics

- CT State Museum of Natural History: total of 34 presentations in the last 8 years to public audiences (adults & kids) through public lectures, workshops and other museum programs*
- Stephen Trumbo is the Co-coordinator of the Waterbury Campus Science Lecture Series for OLLI (Osher Lifelong Learning Institute) Program for older/retired members of the public
- Association of Educational & Research Greenhouse Curators*
- Bird Clubs across the state (many)*
- Garden Clubs across the state (many)
- Groton Open Space Association
- Student Teacher Demo (UConn MS Science Education)
- Eastern Cactus & Succulent Conference
- Connecticut Cactus & Succulent Society*
- Connecticut Ornithological Association
- Childrens Museum, West Hartford
- Manchester Perennial Planters
- Connecticut Orchid Society*
- New England Carnivorous Plant Society*
- Connecticut Flower & Garden Show*
- CT State Museum of Natural History*
- Boston Flower Show
- Tower Hill Botanic Garden
- UConn Horticulture Club*
- Connecticut Botanical Society
- Elizabeth Park, Hartford
- KAST Botany Camp*
- Cactus and Succulent Society of America
- Master Gardener Adv. Certification Class
- Philadephia Cactus & Succulent Society
- Cactus & Succulent Society of Massachusetts*
- Pioneer Valley Water Garden and Koi Club
- CPTV Family Science Expo*
- International Carnivorous Plant Society
- Massachusetts Hobby Greenhouse Assn
- Simsbury Flower & Garden Show
- Newport Flower Show

Tours (including Greenhouses, Collections, and Labs)

- Alumni & Family Weekend Tours
- Local K-12 school groups
- Statewide Early College Experience high school biology
- Homeschool groups
- CT Junior Science & Humanities Symposium
- Numerous classes from non-CLAS departments – Plant Science, Art School, etc
- Annual Parent Orientation Program
- Visiting guests & lecturers
- UConn Branch Campuses
- Statewide Garden Clubs & Senior Groups
- Area magnet schools
- Specialist plant societies (meetings occasionally hosted at UConn)
- Local scouting groups, including both Boy and Girl Scout troops.

Appendix F2: EEB living plant collections: Greenhouses

The EEB Greenhouse Collection comprises 2,500 species representing all major groups of land plants currently housed in a 13,500 sq ft facility. This is the largest collection of species held at a public institution in New England, representing a living library of ~270 plant families from all continents except Antarctica. Greenhouse materials are used extensively in teaching and as exchanges with other institutions for research and teaching.

Facility: Two greenhouse facilities serve the needs of EEB. The EEB Collections Greenhouse (3 small glass houses are joined by a common headhouse, with a total of 10,400 sq ft under glass) support the living collections that are used primarily in teaching, but also in outreach and research. These collections are all on ground floor level and attached to the Torrey Life Science Building. These were built in 1960 and have had no upgrades since that time except for emergency repairs. They are currently in a deplorable state, with the glazing and the electrical system not compliant with current code. Controls for raising and lowering the roof vents failed long ago and this critical climate control feature is now done manually with a ladder. In part in response to safety concerns, and in an effort to retain our top-flight greenhouse manager, the Provost's office and the Dean's office each committed to providing $500,000 for greenhouse renovation. The renovation process has been "fast-tracked." We have had an initial meeting with the architects and will meet again in two weeks to discuss various options. Because the state of decline is even more severe than originally thought, even necessary renovations to bring the greenhouse into compliance with current safety standards are likely to exceed our funding, but we at least anticipate replacing the glazing.

EEB also manages a newer greenhouse that functions in support of research for EEB and other departments (MCB, Plant Science, generally 20-25 projects/year). This rooftop greenhouse comprises 6,000 sq ft of growing space and were completed in 2003. They are modern facilities with automated climate control.

The dilapidated headhouse associated with the ground floor greenhouse provides material support for all of the needs of the ground-floor greenhouse and 60% of the needs for the roof top greenhouses.

An outdoor garden on the south end of the ground floor greenhouses is planted in summers as a demonstration garden of heirloom vegetables and flowering plants of all sorts; a small section of this garden has been dedicated as the Leslie J. Mehrhoff that will specialize in exhibiting native plants for horticulture.

Personnel: One permanent fulltime greenhouse manager (Clinton Morse) and two horticulturists (Matt Opel and Dana Ozimek) oversee all greenhouse operations. Their efforts are supplemented by work-study students and student labor. Other than problems with coverage during weekends and holidays, the system of hiring students works fairly well. The permanent staff, Morse, Opel and Ozimek form an extraordinarily talented, knowledgeable and dedicated team and it is because of their efforts that the plant collection does as well as it does in the current facility.

Administrative structure: Greenhouse manager Morse oversees all daily operations of both greenhouses. Major decisions are made in consultation with the faculty head of the Greenhouse Committee (Dr. Cynthia Jones) and infrequently by the whole committee. The manager handles all plant acquisitions, deaccessions and exchanges (125-150 specimens sent to educational institutions each year). Daily operations are posted and reported on a greenhouse website designed by Morse that records all decisions for each individual plant in the collection. Use of biological controls has resulted in nearly "pesticide free" facilities. Jones, in consultation with the department head, provides the annual performance review for Morse, and Morse provides them for Opel and Ozimek.

Extramural Funding: Over $1,000,000 in grant funding has been received by faculty whose projects utilize the greenhouses to both large and small extents. PIs are requested to include funding to

Appendix F2 (continued)

support greenhouse use in their grant budgets, but unfunded projects are also facilitated when space is sufficient.

Budget: In addition to the three professional salaries, the EEB department allocates approximately $16,000 annually as an operating budget. 25-35% of this budget is allocated to hiring student help, a substantial portion goes toward repairs and modest upgrades with the balance being used for consumable supplies for both the general collections and research projects.

Endowment: The collections endowment is a joint endowment shared by all EEB collections (see description under part A). Greenhouse contributions include donations from visitors as well as proceeds from paid greenhouse tours.

Service to the department and UConn: The greenhouse collections provide material that is used in approximately 30 courses annually, in which 300-600 plants are transported to classrooms. In addition, roughly 1,800 students in Introductory Biology for non-majors, Principles of Biology for Majors, and General Ecology tour the facility or use the facility in a laboratory exercises. The facility is also regularly used for art courses.

Outreach: The EEB Collections Greenhouse is open to the public from 8:00 am - 4:00 pm Monday through Friday. Each year, several hundred UConn students and other visitors wander through the collections. The collections are arranged by biome. Guide sheets detailing the highlights and plant features in particular rooms are available at the main entry and signage throughout the greenhouses provides information on ecology, economic importance and names of specific plants. In addition, 50-60 tour groups ranging local garden clubs to school classes of all ages tour the Collections greenhouse on an annual basis. Greenhouse tours are also offered during UConn's Alumni Weekend and other special occasions. Most years, Morse, Opel and Ozimek staff an EEB Greenhouse display at the Connecticut Flower & Garden Show, a venue that draws 100,000 visitors over a four-day period in February.

ON TARGET AND BEYOND:

Over the last 8 years, the rooftop greenhouses have fluctuated between 60% and 100% occupancy, but it is likely that with increased activity of recent years and the addition of a new plant genomics faculty member (Dr. Yaowu Yuan, beginning Sept. 2013), the demand for these facilities will exceed capacity, in which case we will develop a policy for determining priority.

The ground floor greenhouses are scheduled for renovation in summer, 2013. The greenhouse staff is currently in the process of temporarily down-sizing (both in scope& physical accession size) in anticipation of the need for relocating during renovations. Morse, in consultation with Jones, has devised a scoring system for each plant in the collection that allows him to assess the "value" of individual plants. This metric takes into account plant rarity, use in courses, taxonomic representation, ease of replacement, pest susceptibility, etc.

Long term plans for the renovated ground floor greenhouses involve establishing a docent program that will allow us to open the greenhouses to the public on the weekends, train in volunteers to offer tours, and train interested volunteers in aspects of greenhouse management.

Greenhouse Outreach Component

Public outreach is an integral component of the daily operations of the EEB Greenhouse facility. Formal tours are the most visible form of outreach with 728 tours provided to nearly 12,500 visitors over the past 8 years. Drop-in guests are common most days in the facility although no formal record is kept of visitors. Additionally, greenhouse staff present talks and demonstrations to groups in classes and off campus, during the regular work-day when schedules permit as well as on their own time.

Appendix F2 (continued)

All three professional staff members play an active role in outreach. Ms. Dana Ozimek has taken a lead role in designing, reinventing, and maintaining the outdoor garden spaces to draw visitors to tour the grounds and explore the greenhouses behind Torrey Life Science. She was featured in a recent UConn promotional video that was aired on national television and included brief glimpses into the greenhouse collections. Dr. Matt Opel speaks regularly to specialist societies at meetings throughout the northeast region as well as blogging about interesting UConn greenhouse subjects on his plant blog. Manager Clinton Morse promotes the public aspect of the greenhouse facilities via television, radio and print outlets whenever the opportunity arises. He was featured in a 2007 episode of CPTV's Positively Connecticut program and was awarded the Provost's Award for Excellence in Outreach and Public Engagement later that year.

Greenhouses Online

The EEB Greenhouse collections have maintained a comprehensive online presence for over 15 years, beginning with a pre-www gopher server that pre-dates the main uconn.edu website. All of the plants in the public collection have established web pages with plant information, photos, and more. A telling metric of its website success is that doing a Google search for most plant species in the collections will yield an EEB-Greenhouse-page hit in the top 10 (first page) of Google results. This is a result of stability, longevity, and quality content found within these pages. The EEB Greenhouse website also has a version optimized for mobile devices. The Greenhouse website utilizes multiple Google calendars to present an up to date staffing schedule (full-time and student) as well as tour scheduling to facilitate outside groups in coordinating their visits to the facility.

Greenhouse staff utilize a separate database website which enables real-time updating and management of the collections, frequently via mobile devices. Although this website is not available to the general public, the information updates are automatically assimilated into the public website via overnight processing routines. Portions of this website are utilized by departmental users (faculty, TA's etc) to facilitate course and lab set-ups and documentation of plant usage in courses.

The EEB Greenhouses maintain an active social media presence on Facebook with well over 600 'fans'. This venue is where we highlight new plants, activities and other information of interest to the general public. All three staff members contribute to the content delivered via Facebook and we strive to get a couple of posts up each week to maintain interest in the greenhouses.

Mr. Morse also applies his cyberspace skills volunteering as webmaster for the AERGC, an international professional organization dedicated to the management of research and educational greenhouse facilities.

The greenhouses are fully wired for WI-FI access on the UConn networks for both public and secured users.

Partial list of talks and Demonstrations to Groups since 2005 (* annual events, with changing content)

- Association of Educational & Research Greenhouse Curators*
- Garden Clubs across the state (many)
- Student Teacher Demo (UConn Ms Science Education)
- Eastern Cactus & Succulent Conference

Appendix F2 (continued)

- Connecticut Cactus & Succulent Society*
- Children's Museum, West Hartford
- Manchester Perennial Planters
- Connecticut Orchid Society*
- New England Carnivorous Plant Society*
- Connecticut Flower & Garden Show*
- CT State Museum of Natural History*
- Boston Flower Show
- Tolland Middle School Career Day*
- Tower Hill Botanic Garden
- UConn Horticulture Club*
- Connecticut Botanical Society
- Elizabeth Park, Hartford
- KAST Botany Camp*
- Cactus and Succulent Society of America
- Master Gardener Adv. Certification Class
- Philadelphia Cactus & Succulent Society
- Birch Grove Primary School (Tolland)
- Cactus & Succulent Society of Massachusetts*
- CPTV Family Science Expo*
- International Carnivorous Plant Society
- Massachusetts Hobby Greenhouse Assn
- Simsbury Flower & Garden Show
- Newport Flower Show*

Partial list of Outreach – Tours since 2005

- Alumni & Family Weekend Tours
- Local K-12 school programs
- statewide Early College Experience high school biology
- homeschool groups
- CT Junior Science & Humanities Symposium
- numerous classes from non-CLAS departments – Plant Science, Art School, etc
- Annual Parent Orientation Program
- visiting guests & lecturers
- UConn Branch Campuses
- statewide Garden Clubs & Senior Groups
- area magnet schools
- specialist plant societies (meetings occasionally hosted at UConn)
- local scouting groups

Appendix F3: EEB Biodiversity Research Collections

The **EEB BIODIVERSITY RESEARCH COLLECTIONS** include the preserved specimens housed in the Biology/Physics building (treated here) and the living plant collection. The preserved collection comprises approximately 1,000,000 specimens, contributed by EEB researchers and scientists from around the world. The breadth of the collection spans invertebrates, parasites, vertebrates (dried and fluid preserved) and plants (herbarium and fossils). EEB's collections reflects the richness of the world's biodiversity and are unique in their comprehensive coverage of the diversity of shark parasites, Amazonian army ants and their guests, Connecticut birds and butterflies, Paraguayan mammals and the New England flora.

EEB's biodiversity collection contributes resources essential to scientific research here at UCONN and at other national and international institutions, and serves to document the biodiversity of Connecticut through time. It also provides research and training opportunities for undergraduate and graduate students, and offers a unique platform to reach out to precollege students and their teachers and share our knowledge on local and global biological diversity.

Facility: EEB's preserved collections were consolidated into a state-of-the-art facility completed as part of UCONN2000 in December 2001, and equipped with compactors through funding from the National Science Foundation. The space consists of the storage facility for dry specimens with an independent humidity control system and a room for fluid preserved specimens. The storage space is complemented by a central preparation area, a walk-in fridge and freezer, offices for each collection manager and for visiting scientists, a conference area, and a library housing the Storrs Olson library, a collection of literature spanning 250 years of research on bryophytes.

Personnel: curatorial activities are led by two full time collection managers (Dr. Robert Capers for plants and Dr. Jane O'Donnell for invertebrates) and one part-time collection manager (0.2 FTE; Susan Hochgraf for vertebrates). Managers oversee specimen acquisition, curation, databasing and processing for loans. They also guide tours for classes and alumni, assist visiting scientists, graduate students and postdoctoral researchers and supervise undergraduate students.

Administrative structure: the daily operation and strategic plans for each collection are developed by the collection managers and their respective faculty curatorial directors (plants: Dr. Don Les), invertebrates (Dr. Janine Caira) and vertebrates (Dr. Margaret Rubega), with the facility being headed by overall director (Dr. Bernard Goffinet).

Extramural funding: The infrastructure for the state of the art facility combining all systematic collections was developed based on an NSF grant ($ 440,876; DBI 9876793: 1999–2004). Furthermore, funding from NSF was secured ($430,130; DBI 08047111: 2008-present) to database the entire collection of preserved plant specimens, an effort further promoted through 4 supplementary annual awards from NSF ($45,909; DBI 0943027, 1027190, 1112470 & 1137615).

Budget: In addition to the salary for the collection managers, $6,000 is allocated annually by EEB, to sustain essential curatorial operations.

Endowment: the endowment in support of the collection was established in 2006. It has grown, primarily through faculty and staff donations, to $36,271 by the end of FY 2012. The spendable portion was cumulated and used to offer three summer student internships in 2009 and four in 2012.

Service to Department and UCONN: the EEB collections serve 12-15 courses in EEB annually, and provide material for the main introductory biology classes.

Collections course: collections staff offer an annual course (EEB 5894) on natural history collection, which is a prerequisite for interns and work-study students, and provides basic training in the curation of natural history collections.

Appendix F3 (continued)

Training: all three collections offer numerous opportunities for internships, independent study or work study for students in EEB, BIO and other academic units within the University. Over the last 3 years alone, the EEB biodiversity collections offered training opportunities to 26 independent study students and 28 work study students and provided research experiences to an additional 16 undergraduates. Furthermore, 43 graduate students and postdoctoral research associates have used the collections.

ON TARGET AND BEYOND

All collections are actively growing through continuous research projects led by EEB faculty, staff and students, gaining in scientific value through exceptional curation and preservation in our state of the art facility and reaching an broadening community of national and international researchers through databasing and on-line dissemination of specimen information.

Progress in the curation of the plant collection has been spectacular, catalyzed by significant funding from NSF (nearly $500K) for digitizing and databasing the entire vascular plant collection. To date 140,000 specimens (± 70% of the entire collection) are included in the on-line database. This collection also has the highest growth rate.

The entomology collection continues to grow with significant regional representation of groups of current conservation concern, especially moths, butterflies and bees. With over 1,000 paratype slides of tapeworms from elasmobranchs globally, the parasite collection now ranks among the world's top 3 collections.

The vertebrate collection, despite operating with only a part-time manager, using student labor, has been databasing around 1000 specimens per year, and replacing outdated jars and storage media for about 25% of each taxonomic group yearly, while also accessioning new specimens.

The abilities of the collections to meet their mission of preserving historical biological records of biodiversity and training students in collection management could be strengthened by:

- expand the vertebrate collection manager position to a full time position
- increasing the annual departmental budget allocation
- building the endowment essential to summer student internships
- seeking further extramural funding

Appendix F4: EEB Online and Social Media Use for Outreach to Audiences Outside Academia

A. Blogs

Kent Holsinger's blog, Uncommon Ground: Reflections on academics, the environment, and biodiversity (http://darwin.eeb.uconn.edu/uncommon-ground/) is written for a mixed audience of policy makers, academics and the public. He addresses climate change, environmental policy, teaching, mentoring graduate students, science communication, and the practice of science. Initiated in 2007, it has steadily built a following, and had more than 20,000 unique pages views in 2012. Holsinger also tweets (@keholsinger).

Peter Turchin's blog, Social Evolution Forum (http://www.socialevolutionforum.com) started as an outgrowth of his research evaluating human culture and social systems with tools from population biology. It is aimed at promoting communication, discussion, and collaboration on diverse topics related to human society, and written for researchers and policy makers. Turchin established the blog in April 2012, and has already had 30,000 page views to date.

Jessica Budke, a Postdoctoral Research Associate, blogs at Moss Plants and More (http://mossplants.fieldofscience.com), where she provides "Commentary on All Things Bryological". She has been blogging since her 2007 participation (as a graduate student) in Rubega and Holsinger's Science Blogging seminar; writing for a general audience, she highlights and interprets bryophyte biology, describes the research process, and provides field identification guidance. Through the blog, she has responded to students looking for information on mosses for their coursework and gardeners interested in learning more about the mosses in their yard. She also aims to publicize the research of fellow scientists in order to share it with a wider audience and increase the public's knowledge of these small organisms. Recent features include a monthly downloadable "Calender" page consisting of a high quality image of a moss or other bryophyte formatted and suitable for use as a computer monitor background.

Brigette Zacharczenko, a Ph.D. student, blogs at CaterpillarBlog: Larval Adventures (www.caterpillarblog.com) Written for a general audience, but of interest to other entomologists, her focus is on accessible, lively writing about her research on the caterpillars of the genus Acronicta, featured through photos, illustrations, SEM, and videos. She also shares stories of caterpillar rearing in the lab, collecting trips, and teaching in the entomology courses; a recent post featured details of the Insect Banquet she conducted in her field entomology course. Special categories include "Word of the day" from the Torre Bueno Glossary of Entomology, and "LOLCATerpillars". She also maintains a Flickr Photostream for UConn's General Entomology class (http://www.flickr.com/photos/86216499@N04)

B. Twitter:

Kent Holsinger (@kholsinger) tweets links to his blog postings, as well as commentary and insight on conservation, biodiversity, climate change, environmental policy, and university research and education.

Jessica Budke (@mossplants; Postdoctoral Researcher) tweets links to her blog postings.

Margaret Rubega (@ ProfRubega) began using a Twitter-based class exercise in her EEB 4260 Ornithology course in 2009, which requires students to use Twitter to post observations of birds outside the classroom, and connect what they see to course content (using the #birdclass hashtag). She tweets to students during the course, and year round on avian biology, conservation, and research. Students have taken the assignment far past simple observations,

Appendix F4 (continued)

into connections to literature, to post poetry and hip hop lyrics, to teach members of the public about bird biology and identification, to engage in biogeography games by guessing a poster's location by the species of birds tweeted about, and to engage in simple experiments, then tweet about them. This use of social media to teach has been featured three times in the NY Times (see: http://dotearth.blogs.nytimes.com/2011/05/05/on-birds-twitter-and-teaching/) and Rubega has been invited repeatedly in the last four years to present her method at national meetings and workshops (for example, see: http://www.aou.org/student/docs/AOU_wkshop_2009_Rubega.pdf

Appendix F5: Websites maintained by EEB faculty.

A. DEPARTMENTAL SITES:

EEB biodiversity research collections: http://www.biodiversity.uconn.edu/BRC.html. A portal providing access to invertebrate, vertebrate, and plant collections and research. By Caira, J., Les, D. & Rubega, M.

EEBedia. http://hydrodictyon.eeb.uconn.edu/eebedia/index.php/Main_Page. A supplementary web resource for the Ecology and Evolutionary Biology Department of the University of Connecticut. By Lewis, P.

EEB greenhouse. http://florawww.eeb.uconn.edu/. A resource for greenhouse plant collections and research. By Morse, C.

B. FACULTY SITES:

Caira Lab Websites:

Caira, J. N., K. Jensen, and E. Barbeau 2012. The Planetary Biodiversity Inventory site (http://tapeworms.uconn.edu) serves as a portal to the Global Cestode Database and its associated host databases, as well as a diversity of tapeworm resources, including an Illustrated Glossary of Tapeworm Terminology and links to our previous NSF Biotic Surveys and Inventories (BS&I) and PEET project websites.

Colwell Lab Websites:

Colwell, R. 2012. Biota: The Biodiversity Database Manager. http://viceroy.eeb.uconn.edu/Biota/ Biota 3, a very useful program, can be downloaded from this website.

Colwell, R., J.T. Longino, P. Naskrecki. Project ALAS: Arthropods of La Selva**.** http://viceroy.eeb.uconn.edu/ALAS/ALAS.html. An in depth look at the ALAS expeditions to La Selva detailing sampling methods, collection localities, and arthropod diversity found.

Elphick Lab Websites:

Field, C.R., C.S. Elphick. 2012. CTBirdTrends. http://ctbirdtrends.org/CTBirdTrends.html. Outlines trends in the populations of Connecticut birds in the form of interactive charts.

Elphick, C. 2012. Conservation Biology in the News. http://hydrodictyon.eeb.uconn.edu/eebedia/index.php/Conservation_biology_in_the_news. A source for interesting conservation articles.

Elphick, C. 2012. Ornithology in the News web site http://hydrodictyon.eeb.uconn.edu/eebedia/index.php/Ornithology_in_the_news. A source for relevant and up to date ornithology articles.

Hodgman, T., C. Elphick, B. Olsen, G. Shriver. 2012. Saltmarsh Habitat & Avian Research Program. http://www.tidalmarshbirds.org/. Provides information on a large scale study of tidal marsh birds involving researchers at multiple universities, agencies, and NGOs.

Appendix F5b (continued)

Goffinet Lab Websites:

Goffinet, B., W. R. Buck& A. J. Shaw. Classification of mosses. http://www.eeb.uconn.edu/people/goffinet/Classificationmosses.html. On-line classification system for mosses updated periodically based on ongoing systematic and phylogenetic research.

Villarreal J. C. (and collaborators): Classification of hornworts. http://www.eeb.uconn.edu/people/goffinet/Classificationhornworts.html. On-line classification system for hornworts updated periodically based on ongoing systematic and phylogenetic research

Les Lab Websites:

Elatine, R.H. 2011. Razifard H. Elatine Website. http://www.eeb.uconn.edu/people/razifard/# Details Razifard's PHD work.

Schwenk Lab Websites:

Schwenk, K. Classic works in evolutionary biology. http://hydrodictyon.eeb.uconn.edu/eebedia/index.php/Classic_Works_in_Evolutionary_Biology and http://hydrodictyon.eeb.uconn.edu/eebedia/index.php/Classic_Works_in_Evolutionary_Biology—The_List_With_Links. An annotated list with links to classic books and papers in the field targeted to students and interested members of the public.

Schwenk, K. Why do snakes have forked tongues? http://hydrodictyon.eeb.uconn.edu/eebedia/index.php/Why_do_snakes_have_forked_tongues%3F .Provides an accurate answer to a popular online question

Silander Lab Websites:

IPANE: Invasive plant atlas of New England. http://www.IPANE.org/. A comprehensive database of invasive and potentially invasive plants in New England. An important tool for rapid detection and response to new invasions.

Simon Lab Websites:

Cooley, J.R. Magicicada.org.

Background information, Research maps, Crowd-sourced reports and mapping of periodical cicadas with Twitter Feeds and Facebook page.

Cooley, J. R., D.C. Marshall, K.B.R. Hill, and C. Simon. 2012. Cicada Central. http://hydrodictyon.eeb.uconn.edu/projects/cicada/cc.php. A comprehensive web resource and data base for cicada species, broods, and taxonomy.

Cooley, J.R. and C. Simon. Auchenorrhyncha Peet Portal http://hydrodictyon.eeb.uconn.edu/projects/cicada/simon_lab/peet_pages/index.html. A resource for teaching about the hemipteran order.

Marshall, D.C. and K.B.R. Hill. Insect Singers. http://www.insectsingers.com/100th_meridian_cicadas/western_species.html. Song

Appendix F5b (continued)

recordings, photos and maps, of many of the cicada species of the western United States and Canada.

Simon, C., J. R. Cooley, K.R.B. Hill, D.C. Marshall, and B. Goupil. 2003. Selected New Zealand Cicada Species. http://hydrodictyon.eeb.uconn.edu/projects/cicada/sp_pages/species_NZ.html#New_Zealand. Electronic field guide to the cicadas of New Zealand.

Urban Lab Websites:

Urban, M. 2012. Amphibian Tracker. http://hydrodictyon.eeb.uconn.edu/people/urban/tracker.html Tracks the 2012 amphibian migration

Wagner Lab Websites:

Haber, B., D.L., Wagner. 2012. Dragonflies and Damselflies of Ecuador (Order Odonata): **http://bdei2.cs.umb.edu/~whaber/Odonata_of_Ecuador/index.html.** Comprehensive field guide for Odonata species.

Wagner. D.L. Dragonflies and Damselflies of La Selva [Costa Rica] http://ghostmoth.eeb.uconn.edu/laselvadragons/. A field guide for the many Odonata species found in La Selva

Wagner. D.L. The Moths of La Selva, Costa Rica: http://ghostmoth.eeb.uconn.edu/moths/. A field guide for moth species found in La Selva

Wagner. D.L. The Odonata Fauna of Connecticut: http://ghostmoth.eeb.uconn.edu/dragons/

Yarish Lab Website:

Yarish C. (with N. Dryden and S. Cudiner &). *Benthic Marine Algal Herbarium of Long Island Sound Digital Collection* Database; http://www.algae.uconn.edu, A digital database of images of seaweeds from Long Island Sound.

Appendix F6: Nature & The Environment: The Edwin Way Teale Lecture Series (2005–2012)

2004–2005

Sept. 22 Rosina Bierbaum (Dean, School of NRE; Uni. of Michigan)
Oct. 21 Tom Lovejoy (Director of the Heinz Center; Center for Science, Economics and the Environment)
Nov. 17 Barry Lopez (National Award Winning Author)
Feb. 24 William Hooke (Director of Atmospheric Policy Program; Am. Meteorological Society)
Mar 17 Carl Jones (Int. Research Fellow; Durrell Wildlife Conservation Trust; Scientific Director, Mauritian Wildlife)
Mar 24 Char Miller (Trinity University, TX)
Apr 21 Pedro Sanchez (2002 World Food Price, Director of tropical agriculture and co-chair of project hunger task force, Columbia University Earth Institute)

2005–2006

Sept. 29 Sharon Matola (Belize Zoo and Tropical Education Center)
Oct. 12 Robert A. Benner (A.M. Bateman Prof. Geology and Geophysics, Yale Uni.)
Nov. 3 James Gustave Speth (Dean School of forestry and Environmental Studies; Yale Uni.)
Feb. 2 Vicki Been (Director of Furman Center for real estate and urban policy, NY Uni. Law School)
Feb. 16 Paul Robbins (Uni. of Arizona)
Apr. 20 Jeremy Jackson (W.E. & M.B. Ritter Professor, Director of Geosciences Research Division Scripps Institution of Oceanography; Uni. Of California, San Diego)

2006–2007

Sept. 14 Carl Jones (Int. Research Fellow; Durrell Wildlife Conservation Trust; Scientific Director, Mauritian Wildlife)
Oct. 19 William Nordhaus (Sterling Prof. of Economics; Yale University)
Nov. 9 Jerry Mander (Former President of International Forum on Globalization)
Feb. 1 Mark Klett (Regents Professor of Art, Arizona State University)
Mar. 22 Richard Somerville (Distinguished Professor, Scripps Institution of Oceanography)
Apr. 22 David Allen Sibley (Author)

2007–2008

Sep. 20 Geoffrey Heal (Paul Garrett Professor of Public Policy and Business Responsibility, Columbia University)
Oct. 4 Michael J. Bean (Attorney, Chair of the Wildlife Program, Environmental Defense Fund)
Nov. 15 Ariel Lugo (Director, International Institute of Tropical Forestry)
Feb. 7 Ivette Perfecto (Professor of Natural Resources, University of Michigan)
Mar. 20 Roger Gottlieb (Professor of Philosophy, Worcester Polytechnic Institute)
Apr. 10 Joseph Bruchac (author)

2008–2009

Oct. 16 J. B. Ruhl (Matthews and Hawkins Professor of Property Law, Florida State Uni.)
Nov. 20 Don Scavia (Professor and Michigan Sea Grant Director; Uni. of Michigan)
Feb. 5 Bud Ward (Editor, The Yale forum on Climate Change and the Media)
Mar. 5 Catherine Potvin (Professor, McGill University)
Apr. 2 Michael Mares (Presidential Professor, Uni. of Oklahoma, Distinguished Research Curator of Mammals, Sam Noble Oklahoma Museum of Natural History)

Appendix F6 (continued)

2009–2010

Sept. 24 Kerry Emanuel (POAC Director of Massachusetts Institute of Technology)
Oct. 22 John Elder (Middlebury College)
Nov. 19 Stephen Polasky (Fesler-Lampert Professor of Ecological and Environmental Economics, Uni. Minnesota)
Mar. 4 Robert J. Glennon (Morris K. Udall Professor, Uni. of Arizona)
Apr. 22 Peter Kareiva (Chief Scientist and director of Science: The Nature Conservancy)

2010–2011

Sept. 23 Gene Likens (Distinguished Professor Senior Scientist, Ecologist, Founding Director and President Cary Institute of Ecosystem Studies)
Oct. 21 Peter B. Reich (Regents Professor and Distinguished McKnight Professor, Uni. Of Minnesota)
Nov. 11 Andrew Revkin (Senior Fellow, Pace University's Pace Academy for Applied Environmental Studies)
Dec. 9 Philip Kitcher (J. Dewey Professor of Philosophy, Columbia Univ.)
Feb. 17 Rick Bass (Author)
Mar 31 Ruth S. Defries (Denning Professor of Sustainable Development, Columbia University)
Apr. 28 Nancy Grimm (Professor, Arizona State Univ.)

2011–2012

Nov. 17 Naomi Oreskes (Professor, Uni. California, San Diego)
Dec. 8 Daniel Esky (Commissioner of the CT Dept. of Energy and Environmental Protection)
Feb. 23 Sir Peter Crane (Dean, Yale School of Forestry and Environmental Studies)
Mar 1 David Gessner (Uni. of North Carolina)
Mar. 29 Michael Mann (Professor & Director, Earth Systems and Science Center, Penn State)

Appendix H1: Indirect costs returns to EEB from extramural grants 2005–2012.

	% of indirects	Amount
2004-2005	5	$23,136
2005-2006	5	$27,513
2006-2007	5	$23,536
2007-2008	5	$27,352
2008-2009	5	$27,160
2009-2010	10	$66,713
2010-2012	10	$53,237
Total		**$248,647**

Appendix H2: Departmental endowed accounts and awards made

Appendix H2a. Endownment accounts and their market value. Shaded accounts are used to distribute research awards to graduate and undergraduate students.

	2005	2012
Ecology and Evolutionary Biology	22,840	25,114
Biodiversity Research Collection	10,419	$32,271
Center for Conservation Biology	0	23,220
Introductory Biology Teaching Assistantship award fund	6,138	5,723
Judith Humphries Shaw (parasitology)	102,832	$162,869
Ronald Bamford Endowment (botany)	291,662	250,115
George Clark, Jr. Endowment (ornithology)	5,377	14,112
Henry N. Andrews Endowment (botany)	17,377	15,141
Russell and Betty DeCoursey Endowment (entomology)	2,705	3,507
Jerauld Manter Endowment (ornithology)	8,269	7,176
Lawrence R. Penner Endowment (parasitology & invertebrate zoology)	27,588	27,748
John Rankin, Jr. Endowment (marine sciences)	5,381	6,474
James A. Slater Endowment (entomology)	18,632	16,282
Francis R. Trainor Endowment (aquatic ecology)	15,541	20,174
Ralph M. Wetzel Endowment (vertebrate biology)	19,001	22,767
Walter R. Whitworth Endowment (fishes)	3,084	4,707
Schaefer fund for student research	0	15,520
Total	**$566,796**	**$661,920**

Appendix H2b. Grants awarded to EEB students since 2005

Year	# of Awards	Total Amount Funding
2005	26	$17,625
2006	35	$19,978
2007	28	$13,918
2008	28	$13,805
2009	13	$8,062
2010	31	$14,171
2011	20	$17,249
2012	24	$14,095
Totals:	**205**	**$118,903**