Mission: The collective goal in the Department of Ecology and Evolutionary Biology (EEB) is to enlighten students, professional colleagues, and the general public through excellence in scholarly research and education, and to strengthen our position nationally and internationally. Members of our department explore:

- Systematic and phylogenetic relationships of organisms, living and extinct;
- Behavioral, developmental, genetic, and physiological processes yielding variation within and among species; and
- Ecological and biophysical processes that govern relationships between organisms and their environment.

Research in EEB addresses theoretical and empirical questions, at multiple hierarchical levels from molecules to individual organisms, populations, species, communities, ecosystems, and the biosphere.

Faculty: At 37 tenure-tenure-track faculty members, EEB is one of the largest academic units in the College. However, 60% of those individuals hold joint appointments in other campus units (41% in the Biodiversity Institute, 14% in the Kansas Biological Survey, and 6% in another administrative unit). EEB is “top heavy” with an average age of 56, 20 full professors, 13 associate professors and 4 assistant professors. Over the past dozen years, we have hired 14 new faculty members. Since coming to KU, all 14 have acquired external funding for their research and all those eligible have been promoted and tenured. After a hiring hiatus of 3 years, this year we have hired 2 new faculty members who will join us in fall 2013, and are in continuing negotiations with a third potential new colleague.

EEB is a national leader in the areas of Evolutionary Mechanisms, Global Change, and Biodiversity. Our rankings indicate that we have a number of active and strong research programs within EEB. Because of the highly integrative nature of research being performed in EEB, the Department is well poised to form strategic alliances with other departments and centers at the University (e.g., IGERT C-CHANGE, Environmental Studies, Engineering, Computing, Office for Diversity in Science Training, and a number of other departments at KU). This is especially important in light of ongoing efforts to strengthen "synergistic" approaches to research within the University. EEB faculty members have contributed substantially to the development and implementation of the Strategic Initiatives of the University that will involve substantial investment over the long-term. The vast majority of funding for faculty research is from the National Science Foundation, accounting for 76% of total grant funds. We also hold grants from the National Institutes of Health (NIH), the Department of Energy (DOE), the Center for Disease Control (CDC), the U.S. Geological Survey (USGS), the U.S. Department of Agriculture (USDA), the Department of Defense (DOD), the Environmental Protection Agency (EPA), NASA, private corporations, and the state of Kansas.

Bachelor’s Degrees: EEB does not formally offer any undergraduate degrees. However, faculty and graduate students in EEB partner with those in the Department of Molecular Biosciences to offer undergraduate degrees within the integrative Undergraduate Biology Program, the largest undergraduate major in the College with nearly 1500 majors across 11 segregate BA and BS degrees.

Graduate Degrees: EEB offers three different MA and Ph.D. degrees; in Botany, Entomology, and Ecology & Evolutionary Biology. Admission is competitive. Each applicant must have a faculty sponsor and selection of applicants is based on letters of intent by the student, letters of recommendation, evidence of research scholarship, and fit with faculty research as well as GPA and standardized test scores. Typically, students who are accepted and attend have GPAs greater than 3.3, GRE scores (verbal and quantitative) greater than 1850, excellent letters, and
statements of intent that hold promise for excellence in teaching and research. Approximately 50% of Master’s applicants and 20% of Ph.D. applicants are offered admission.

We ranked highly in the 2010 National Research Council Data-Based Assessment of Research Doctorate Programs that was released in the fall of 2010. This assessment was based on approximately a decade of research and educational data. Our highest ranking occurs in the overall regression-based rankings, where we rank 5th among public institutions out of a total of 94 (only UC Davis, Indiana University, UC Berkeley, and Michigan State rank higher). Specifically, we excel in the areas of graduate student support, number of Ph.D. students produced, and representation of female faculty.

Master’s students have the option of thesis (30 hour) or non-thesis (36 hour) Master’s degrees. Thesis candidates are required to present publicly a significant research project. About 60% of EEB MA graduates over the past decade have continued on to Ph.D. degrees, either at KU or at other institutions.

Coursework requirements for EEB doctoral students are identified during the student’s Preliminary Advisory Committee meeting. Students are expected to complete graduate-level courses (or have equivalent knowledge) in the disciplines of ecology, evolution, and systematics. A student’s advisory committee may add course requirements to a student’s degree program during annual meetings.

A recent placement assessment (2010) indicates that 37% of EEB Ph.D. graduates proceed to post-doctoral positions, 26% to faculty positions, 30% to technical positions and other EEB-related positions, and 5% to non-EEB-related positions. This information indicates that EEB has been highly successful in placing its graduates within academic and decision-making positions, and that EEB education has been sufficient to avoid underemployment of its graduates.

**Changes as a Result of the Review Process:** As detailed in the included report, we have made significant progress in addressing the goals recommended by the External Review Report we have:

- modified our departmental structure,
- updated and streamlined our bylaws and voting procedures,
- built more responsive annual evaluation procedures,
- enhanced mentoring of early career faculty members,
- established new methods for graduate student recruitment,
- promoted greater consistency and stronger mentoring oversight of graduate education.

**Overall Evaluation:** Most EEB graduate students pursue MA or PhD degrees in Ecology and Evolutionary Biology, but we continue to offer more specialized degrees in Botany and Entomology. Although small in number, some of our most successful students seek these specialized degrees. We continue to consider Botany and Entomology MA and PhD programs to be “very good,” whereas both because of the number of graduates and the quality of the students, our EEB MA and PhD programs should be considered “exceptional.” Because the EEB faculty and degree programs contribute in highly valued and significant ways to the College of Liberal Arts and Sciences, KU, and the success of our institution as an internationally recognized research and graduate education destination, this program will be continued.
Highlights: Department of Ecology and Evolutionary Biology

Members of the Department of Ecology and Evolutionary Biology (EEB) have made significant contributions to the College and to KU in undergraduate teaching, graduate student mentoring, and research arenas. As documented in our departmental annual report, in 2011 alone, EEB faculty members:

- Published 195 peer reviewed publications in more than 100 national and international journals;
- Served as editors or on editorial boards of 53 journals;
- Faculty members authored 3 books and 10 book chapters;
- Delivered 179 presentations in the US as well as in 17 countries including Austria, the Philippines, Germany, Saudi Arabia, Kuwait, England, Mexico, Chile, and Germany;
- Are supported by 102 continuing extramural grants totaling more than $39 million.

Not to be outdone, in 2011 EEB graduate students:

- Published 69 peer reviewed papers;
- Competed successfully for 26 external grants, including an amazing 6 National Science Foundation Doctoral Dissertation Research Improvement Awards; and
- Made 67 presentations at national and international meetings in countries including Italy, Greece, Germany, the Philippines, and Israel.

In the teaching realm, although EEB has no independent undergraduate program, EEB faculty members and graduate students contribute to the education of nearly 1500 biology majors through the Undergraduate Biology Program, the largest number in a single undergraduate program at KU.

To recruit the best graduate students, 12 years ago, EEB began reducing its graduate student population to be able to guarantee 2 years of support for all M.A. students and 5 years for all Ph.D. graduate students. Up to 50% of that support can come from teaching assistantships, but faculty mentors must agree to provide the other half of the support for their graduate students. For the past decade, we have been able to use this benefit to attract top students and give them the physical and intellectual tools they need to succeed.

The Ph.D. program in EEB is currently ranked in the top 10 among the 94 Ecology and Evolutionary Biology programs reviewed by the National Research Council in 2010. The current EEB graduate student population includes 66 students, including the following underrepresented groups: 45.5% women, 25.8% Asian, and 6.1% Hispanic.

Apparently unique at KU, EEB has acted to assure that its faculty mentors provide the best guidance to their students, particularly as faculty progress through careers toward retirement. As a result, in 2010 EEB initiated a faculty mentorship evaluation program. Basically, the department holds faculty advisors accountable to the highest standards of mentorship of graduate students, by tracking faculty success in (1) seeing students through to graduation in their originally planned degree programs, (2) in graduating on time, and (3) in meeting funding expectations agreed upon a priori with the department chair.
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Executive Summary
The KU Department of Ecology and Evolutionary Biology (EEB) seeks the insights of external reviewers to strengthen its position as a center for research and education. With 40 faculty members (excluding three recent hires), 10 postdoctoral fellows, and 80 graduate students, EEB is a large department with a wide range of interests and agendas. The product of the merger of three formerly independent departments (Botany, Entomology, and Systematics & Ecology), EEB is subdivided into four programs: Ecology & Population Biology; Entomology; Plant Biology; and Systematics, Macroevolution, & Biodiversity.

EEB faculty members are productive and successful, publish in high-impact journals, and garner major external funding. Both the rate of publication and success in obtaining external funding have increased during the past five years. EEB has successfully attracted its first choice in each of the 10 most recent faculty searches. Since joining the Department, those pre-tenure faculty members have been awarded 14 major external grants as PIs. EEB faculty members attract and mentor high-quality graduate students. Admission to the graduate program is competitive (20% of Ph.D. applicants gain admission); graduate students are active contributors to the research mission of the Department, and most graduates obtain positions that advance their careers. (Approximately 30% of doctoral students move directly to faculty positions, 29% to postdoctoral positions, and 23% to non-faculty research positions.)

EEB faculty and Graduate Teaching Assistants are actively engaged in graduate and undergraduate education and have obtained numerous awards for their contributions. The Undergraduate Biology Program is the largest undergraduate program at KU and is administered through the Division of Biological Sciences, which includes EEB and the Department of Molecular Biosciences.

We have obtained data from seven EEB departments at comparable state institutions. These data provide opportunities for reviewing our status and for considering alternative mechanisms to govern our programs, benefit our pre-tenure faculty, and improve our graduate education. Based on this self-study document and in an effort to improve our position at the forefront of integrative research in the fields of ecology and evolutionary biology, we pose the following overarching questions. Corollaries to these key issues are included at the end of each major section of the self-study.

1) Is the current departmental structure and governance effective in serving the needs of EEB in terms of research and teaching?
2) How will the current space and facilities problems in EEB affect future research and education?
3) How can we improve graduate student and postdoctoral recruitment, support, and training?
4) What is the optimal mechanism for making decisions regarding selection of future positions?
5) How can we enhance faculty mentoring and retention?
6) How can we facilitate research productivity and acquisition of externally funded research grants for current and future faculty members?
**Departmental Vision**
The collective goal in the Department of Ecology and Evolutionary Biology at KU is to strengthen our position nationally and internationally through excellence in scholarly research and education. Members of our department explore:

- systematic and phylogenetic relationships of organisms, living and extinct;
- behavioral, developmental, genetic, and physiological processes yielding variation within and among species; and
- ecological and biophysical processes that govern relationships between organisms and their environment.

Our broad expertise enables us to examine biological problems at multiple scales of inquiry from a variety of perspectives. Research in EEB addresses questions from the theoretical to the empirical, at multiple hierarchical levels ranging from molecules to individual organisms, populations, species, communities and ecosystems, and to the biosphere. Our ability to apply creative, integrative approaches is critical for two, interlinked reasons: (1) Organisms are constrained by their phylogenetic history and governed by their evolutionary response to the challenges presented by their changing environments, and (2) ecosystem function is determined by interactions of organismal, physical, and chemical processes through time and space.

As a department in a Research I university, our vision for the future focuses on maintaining and expanding our research strengths. We anticipate that future faculty hires will include traditional ecological and evolutionary disciplines, as well as emerging interdisciplinary fields. We will also promote activities that enhance research opportunities across the department, improve our graduate and undergraduate education programs, and continue to provide service to the scientific community, the university, and to individuals and organizations on the local community, state, national, and international level.

**Departmental Description**
The Department of Ecology and Evolutionary Biology currently has 40 faculty members: 39 tenured or tenure-track faculty members (11 Assistant Professors, 10 Associate Professors, and 18 Professors) and one non-tenure-track assistant professor, 10 postdoctoral fellows, and 80 graduate students (67 Ph.D. candidates and 13 M.A. candidates). Three new faculty members were recently hired and will be arriving over the next two years. In addition, there are 6 emeritus faculty members who maintain active research programs, and dozens of adjunct (no KU salary) and courtesy (KU salaried position but not in EEB) department members. Although the number of tenure-track/tenured faculty is relatively large, 60% of the faculty members hold less than 100% appointments in EEB resulting in only 26.75 FTE in the Department. Partial appointments in EEB range from 10–75%, and include jointly appointed faculty, faculty-curators or faculty-research scientists in the Biodiversity Research Center (16 faculty members), the Kansas Biological Survey (4 faculty members), the Environmental Studies Program (2 faculty members), the Department of Molecular Biosciences (1 faculty member) and the Indigenous Nations Studies Program (1 faculty member). In addition, 6 faculty members have reduced EEB appointments owing to administrative positions within the University.

EEB is one of two departments in the Division of Biological Sciences at KU, the other being the Department of Molecular Biosciences. The Division provides opportunities for fiscal flexibility in the biological sciences and helps to foster departmental interactions. The Undergraduate
Biology Program is also under the Division umbrella, and both departments contribute to the undergraduate biology teaching mission.

EEB is the result of departmental mergers, in 1998 between the Department of Botany and the Department of Systematics and Ecology, which were joined by the Department of Entomology in 2000. The four programs that constitute our internal departmental structure reflect this merger: Ecology and Population Biology (12 faculty, 7.25 FTE), Entomology (9 faculty, 7.5 FTE), Plant Biology (7 faculty, 5.8 FTE), and Systematics, Biodiversity and Macroevolution (12 faculty, 6.2 FTE). Programs develop hiring priorities, make recommendations to the Department, and play a significant role during the process of choosing which candidates to hire.

EEB Faculty Overview
Of the 40 faculty members in EEB, 12 are women (30%) and two are ethnic minorities (5%). Of the three new hires, one is female, and one is an ethnic minority. The diversity of our faculty has increased in recent years, as six of the last ten hires have been women. In the past five years we have hired 10 faculty members at the Assistant Professor rank, successfully recruiting our first choice candidate in each case. New faculty members are offered competitive start-up packages and salaries. Prior to application for promotion, new hires are provided with a single semester free of teaching to allow time to establish their research program. The normal EEB expectation is two 3-credit courses per year for a faculty member with a 1.0 FTE appointment in the department.

Each year all Assistant Professors in EEB work with the Department Chair to select a different Associate or Full Professor faculty mentor. The two meet at least once a semester and the mentor also reviews teaching materials and attends one or more of the pre-tenure faculty member’s lectures. The Chair meets individually with each pre-tenure faculty member every year to discuss his/her annual faculty evaluation. Pre-tenure faculty members undergo a third-year-review process that includes most of the elements that will be part of the required promotion and tenure process (normally occurring in the 6th year). Third-year-review documents are assembled by the candidate, and forwarded to the departmental Promotion and Tenure Committee (PTC), which develops written evaluations of the candidate’s teaching, research and service activities for the Chair. Together with the Chair’s recommendation, all material is forwarded to the College Committee on Appointments, Promotion, and Tenure (CCAPT). The result of this progress towards tenure review is a letter from the CCAPT to the pre-tenure faculty member commenting critically on his/her progress.

Promotion with tenure from the rank of Assistant to Associate Professor normally occurs in the sixth year after hiring; early and late exceptions are defined by University regulations. The candidate assembles all documents, and the Department solicits letters from six external reviewers familiar with the candidate’s research but not directly associated with him/her. The departmental PTC evaluates materials assembled by the candidate, and the dossier is made available to all faculty members prior to a faculty meeting to discuss and vote on the candidate’s application for promotion. The PTC recommendations, faculty vote, a letter from the EEB Chair, and the candidate’s dossier are forwarded to the CCAPT, and finally to the University Committee on Promotion and Tenure (UCPT). Recommendations developed by the UCPT are forwarded to the Provost and ultimately the Chancellor, who makes the final decision on promotion and tenure. In the past five years, each of the four faculty members recommended for promotion to Associate and two to full Professor rank has been successful.
The Department strives to retain successful, productive faculty. The College has been particularly cooperative in providing resources and incentives to retain faculty who are being actively recruited by other institutions. Such efforts include salary enhancements, expansion of research space, reduction of teaching responsibility, additional research funds, spousal accommodation, and the promise of additional hires in specific research areas. These efforts have been successful in some cases, but not in others (in the past 5 years 4 faculty have left KU for other academic positions).

**Faculty service:**
Faculty members perform a variety of service activities within the Department, the University, and for the research community at large. Faculty members serve on at least one, and often more, departmental committees. Committee appointments are made by the Chair in consultation with the individual faculty member and the Chair of the committee under consideration. EEB bylaws state that at least one faculty member from each program must be present on every committee. Faculty members are expected to serve on standing or ad hoc College or University committees.

All faculty members are expected to evaluate manuscripts for publication in peer-reviewed journals, as well as grant proposals for Federal (and other) funding agencies. All faculty members are encouraged to participate in service activities at the state, national, and international level, and to influence science policy when possible. Such activities include service on grant panels for federal, and other national, funding agencies, serving as an officer of a professional scientific society, or acting as an editor for a scientific journal.

**Documentation of faculty activities:**
Each year faculty accomplishments (grants submitted/received, presentations, publications, courses taught, student mentoring, and service activities) are collated and highlighted in an “Annual Report,” which is distributed to the faculty (see Appendix IX for the 2005/2006 version). The information collected for this document is reviewed by the Chair and the Executive Committee. Subsequently, faculty members receive a letter from the Chair detailing their annual evaluation, and providing suggestions for improvement. The faculty information collected provides the basis for faculty salary increases. At KU all salary increases are merit-based, and raises for individual faculty are determined on the basis of their accomplishments relative to the EEB faculty as a whole.

**EEB Faculty Accomplishments**
Current and emeritus faculty members in EEB have won prestigious research, teaching, and service awards, both within the University, and at the national and international level; details of these are provided in the CVs of individual faculty members and in Appendix III. Two are members of the National Academy of Sciences, three are Distinguished Professors at KU (1 current, 2 emeritus), and many others have been awarded national and international honors. More than half of EEB faculty members have served as officers for scientific societies and/or as editors, or on editorial boards. In 2005, for example, 44 journals had EEB faculty members in these positions. EEB faculty members are active in national agencies (e.g., NSF, NIH, USDA), major national science initiatives such as NSF’s NEON (National Ecological Observatory Network), and have worked closely with diverse international groups. EEB has been successful at hiring excellent pre-tenure faculty members (6 of 11 are women), who, since joining EEB, have been awarded 14 major external grants totaling more than $5.3 million.
EEB faculty members collectively published more than 100 peer-reviewed publications in 2005. Between 2001 and 2005, each faculty member authored an average of 2.8 peer-reviewed publications per year, and this average has climbed steadily (Fig. 1). There is considerable variation in publication rate among faculty members: for example, in 2005, the median (2.0) was less than the mean, and the number of publications ranged from 0–21 per faculty member. These publications appear in specialist journals, society journals (e.g., *American Naturalist, Evolution, Genetics, Ecology*), as well as high-profile journals (*Science, Nature*, and *Proceedings of the National Academy of Sciences*). Given the number of EEB publications, and the broad spectrum of journals in which EEB faculty members have published, it is unclear how to assess the overall quality of our published work. Nonetheless, the average impact factor of the journals in which EEB faculty members has published has remained relatively stable since 2001 at 3.14 (not including the 30% of papers appearing in journals not recognized by Thomson ISI).

EEB faculty members present their research on posters, in talks and seminars at conferences (regional, national, and international), and through presentations at other academic units and institutions. EEB faculty members give well over 100 presentations each year.

EEB and affiliated units (the Natural History Museum/Biodiversity Research Center and the Kansas Biological Survey, both described in appendices) have secured both state and federal funding. Here we consider fiscal years 2001–2005 (Fig. 2). Federal money consistently comprises 90% or more of the funding coming into EEB, with state money generally contributing less than 5%. The total amount of funding received by EEB (as measured by faculty expenditure) has increased from $4.4 million in 2001 to $5.8 million in 2005. In large part this increase is the result of inflation and the escalating cost of scientific research. Within EEB, the amount of funding held by faculty members varies. This reflects a number of issues, such as the diversity of research conducted by EEB faculty, and differences among faculty in their level of research activity. Nevertheless, each year since 2002 at least 75% of EEB faculty members have held a federallyfunded grant as either PI or co-PI.
Departmental Program Descriptions
The faculty and their graduate students in EEB are distributed among four programs whose designations and membership reflect a combination of faculty interests and departmental histories (listing of faculty by program in Appendix II). Each faculty member is a “primary member” of only one program and may be a “secondary member” of other programs. Primary members participate in all discussions and decisions and vote on all program issues. Secondary members participate in all discussions and decisions and vote on all issues except those relating to the determination of new faculty hires for the program. Secondary members are encouraged to attend all program meetings including those in which future directions of the program are discussed, but primary members make the ultimate decisions on aspects related to new faculty hires. In practice, few faculty members attend meetings outside of their primary affiliation.

Ecology and Population Biology (EPB): EPB faculty members have a strong reputation in both empirical and theoretical research programs. Research strengths include (1) investigations of genetic and ecological patterns and processes in populations and (2) analyses of community and ecosystem structure and function. Program faculty encompass breadth in both taxa and scale of study, performing research ranging from the individual organism to ecosystem level, on microbes, plants, and animals, in both terrestrial and aquatic systems. Four EEB faculty members enjoy joint appointments with the Kansas Biological Survey (KBS). Multiple faculty members in EPB benefit from research opportunities at KU’s Field Station and Ecological Reserves (administered by KBS).

Entomology: The entomology program at KU is unusual in that, unlike other entomology programs, it is not part of an agriculture school, but is integrated into the liberal arts and sciences. Research in entomology has long maintained an admirable vertical integration, with research in insects at several levels of organization. Research conducted by the entomology faculty is especially strong in systematics, but also embraces issues, such as the evolution of sociality and behavior. There is synergism between the systematists interested in evolution of behavior and those studying ethology and behavioral ecology.

Plant Biology: Members of the plant biology program take a broad and integrative approach to studying plants as whole organisms, and the plant biology faculty members have earned an international reputation. Core strengths include: developmental genetics, ecophysiology, paleobiology, and systematics and evolution. The anticipated future of plant biology research at KU builds on these strengths and focuses on understanding how plant and fungal systems are shaped by their phylogenetic histories, interactions with their environments, as well as their interactions with other organisms.

Systematics, Macroevolution and Biodiversity: The SMB program is unique relative to similar programs because it emphasizes collection-based and theoretical systematic research in a university setting across a broad range of disciplines. Research opportunities are enhanced by joint appointments of faculty between EEB and the Biodiversity Research Center (BRC) and Kansas Biological Survey (KBS). Research programs include invertebrate zoology, parasitology, ornithology, mammalogy, ichthyology, herpetology, and vertebrate paleontology. The diversity of skills represented by persons in these disciplines includes theoretical and empirical systematics, biogeography, biodiversity informatics, predictive biodiversity modeling, comparative and developmental morphology, evolutionary developmental biology, and molecular systematics.
Issues raised regarding current programmatic structure and membership:

- EEB has both taxonomically and discipline-focused programs. As a result, there are systematists in Entomology and Plant Biology, and faculty in the Ecology and Population Biology Program who do all or most of their research on plants. Further, we have hired faculty in new research areas such as evolutionary genetics, evolutionary developmental biology, biodiversity informatics, behavior, and global climate change who do not fall neatly within the four existing programs. Thus, the research interests of numerous faculty members are not exclusive to their home program and some faculty members are in programs that do not adequately represent their research areas. We recognize three options:
  - Maintain current programmatic structure
  - Eliminate all substructure
  - Change the number and/or identity of the subunits (note: Any restructuring of the department must consider that two of our programs [Plant Biology and Entomology] are linked to M.A. and Ph.D. degrees)

- According to our Bylaws, all Departmental committees require representation from each program. Because some of the programs are small and/or include individuals with heavy non-departmental service commitments, these appointments can be taxing.

Departmental Governance

The Chair of EEB (currently Professor Craig Martin) creates several standing and ad hoc committees that focus on a variety of departmental issues. Nearly all committees include one faculty member from each program and an EEB graduate student. These committees initiate most departmental activities and recommendations, and final decisions are made by a simple majority vote at departmental meetings (aside from changes to the bylaws that requires a two-thirds majority). Graduate students vote on most departmental decisions (20% of the total vote cast), although as of spring 2007 graduate students are not permitted by KU regulations to vote on any personnel-related issues. The four faculty directors of the programs (who are elected by majority vote of the program members) also serve as an Executive Committee that works with the Chair on issues such as annual faculty evaluations. Three administrative staff members (Office Manager, Graduate Coordinator, and Receptionist) work closely with the Chair, faculty, and students.

Departmental Buildings and Research Facilities

Faculty members and students are provided offices in five buildings. These include Haworth Hall (shared with the Department of Molecular Biosciences), Dyche Hall (Natural History Museum/Biodiversity Research Center), the Biodiversity Research Center West Campus facility (Snow Entomological Collection, Division of Entomology, Public Safety Building), Bridwell Hall on West Campus (McGregor Herbarium), and the Higuchi Building (Kansas Biological Survey, on West Campus.) See Appendix V for a full description of research facilities in these buildings. All faculty members are provided with individual office and laboratory space. There are also shared-equipment rooms. Office space for graduate students and postdocs depends on the particular research building. For example, most students in Haworth Hall have separate office space, whereas students in Dyche Hall have office space integrated with research space.

Allocation of space in Haworth Hall is handled by the Chair, whereas space concerns of faculty members and students in Dyche Hall and Higuchi are dealt with by the Directors of the NHM/BRC and KBS, respectively. Currently, all but two EEB-controlled laboratory/office
spaces in Haworth Hall are occupied, and one of these is co-administered by the Department of Molecular Biosciences. This latter space is reserved pending the appointment of a second joint (50:50) faculty member in the two departments. Barring the release of space through retirement or faculty departures, only two more EEB faculty members can be added to Haworth Hall. Dyche Hall is similarly constrained, whereas Higuchi can accommodate several more researchers. The BRC-West facility, which houses the Entomology collection, will accommodate two more faculty members. There are no realistic plans at this point in time for adding additional space on the KU campus for use by EEB faculty.

**Research facilities issues:**

- **How will the current space limitations in Haworth Hall and Dyche Hall affect future hiring and/or the expansion of current research programs in EEB?**
- **The University of Kansas is well behind on its maintenance of key infrastructure. Sections of buildings occupied by EEB faculty are badly in need of remodeling to meet the demands of changing research. Structural problems also abound in Dyche Hall.**
- **In addition to building maintenance, specific concerns include:**
  - **Haworth has reached the maximum number of emergency power outlets that are available to faculty. This means that vital instruments (e.g., freezers, incubators) are not on emergency backup supply.**
  - **The supply of distilled water to Haworth Hall continues to be irregular despite the absolute necessity of an uninterrupted supply for some research labs.**
  - **Some of the core research facilities are chronically understaffed and struggle to meet demands of faculty (e.g., the Molecular Systematics Laboratory and the DNA Core Sequencing Facility in Dyche Hall and the Kansas Field Station and Ecological Reserves)**
  - **There is no alternate power source in Dyche or Higuchi halls (housing 14 EEB faculty members)**

**EEB Graduate Program**

EEB offers three different MA and Ph.D. degrees; in Botany, Entomology, and Ecology & Evolutionary Biology. Admission is competitive. Each applicant must have a faculty sponsor and selection of applicants is based on letters of intent by the student, letters of recommendation, evidence of research scholarship, and fit with faculty research as well as GPA and standardized test scores. Typically, students who are accepted and attend have GPAs greater than 3.3, GRE scores (verbal and quantitative) greater than 1850, excellent letters, and statements of intent that hold promise for excellence in teaching and research. Typically 50% of Master’s applicants and 20% of Ph.D. applicants are offered admission. There are 80 graduate students in the program, 67 are Ph.D. candidates, 13 are MA students. Of these, 52% are women, 4% are ethnic minorities, and 30% are international students. All graduate students are required to maintain a GPA of 3.0. There are only two “core” courses required of all graduate students, a graduate-level course in statistical analysis and attendance of the departmental colloquium and graduate orientation during their first semester.

Master’s students have the option of thesis (30 hour) or non-thesis (36 hour) Master’s degrees. Both degrees require students to show proficiency through a Master’s Comprehensive Examination. Non-thesis aspirants are required to complete a small research project, typically based on little or no experimental data, whereas thesis candidates are required to present publicly a significant research project.
Coursework requirements for EEB doctoral students are identified during the student’s Preliminary Advisory Committee meeting. Students are expected to complete graduate-level courses (or have equivalent knowledge) in the disciplines of ecology, evolution, and systematics. A student’s advisory committee may add course requirements to a student’s degree program during annual meetings. Doctoral students must complete a foreign language/other research skills (FLORS) requirement. Options include: (1) exhibiting reading knowledge of two foreign languages, (2) exhibiting fluency in a foreign language, (3) exhibiting reading knowledge of one foreign language and fulfilling the requirements of one “other research skill,” or (4) fulfilling the requirements of two “other research skills” that are approved by the EEB graduate committee. After course work requirements, the student submits a Dissertation Proposal and completes a Comprehensive Examination administered by five faculty members, including one from outside the Department. Completion of the program terminates with successful completion of a Doctoral Dissertation, including a public defense of the dissertation.

EEB guarantees support for Ph.D. students for a period of 10 semesters through any combination of Graduate Teaching (GTA), Graduate Research (GRA), and Graduate Curatorial (GCA) assistantships and scholarships. Typical matriculation in the program is 5 or 6 years, although students entering with Master’s typically complete their programs in 3 years. Master’s students are not guaranteed Departmental support but are eligible for Research Assistantships, scholarships and, if available, Graduate Teaching Assistantships. Our students have been successful in obtaining the limited number of University-wide scholarships that are available, including Honors, Dissertation, Minority, and Self graduate fellowships. During the past 5 years, approximately 40% of doctoral students were supported by GTAs, 16% by scholarships, and 32% by GRAs/GCAs. During the same period, 40% of master’s students were supported by GTAs and 24% by GRAs/GCAs.

EEB considers students to be colleagues-in-training and promotes research, teaching, and service as part of the graduate experience. Graduate students publish 41-98 peer-reviewed papers per year, both as individuals and with their mentors. This figure does not include papers published after graduation. Students are encouraged to attend national and international meetings and to present results of their research at such venues (the average number of presentations is 113 presentations per year). They are also encouraged to seek both internal and external grant funding to support their research. Graduate student service is encouraged to provide experience to future roles in academia. Each Departmental committee (except P&T) has a graduate student representative. Graduate students have their own Graduate Student Organization and may vote on departmental policies not involving personnel decisions or by-laws.

EEB graduate students have won numerous awards, including national recognition from groups such as the Ecological Society of America, the American Geophysical Union, the American Society of Ichthyologists and Herpetologists, the Herpetologists’ League, and the American Malacological Society. Each year, three or four EEB graduate students are honored with Division of Biological Sciences teaching awards.

We have been successful in the placement of our students after graduation. Approximately 30% of doctoral students move directly to faculty positions, 29% to postdoctoral positions, and 23% to non-faculty research positions. A total of 14% pursues non-research positions. Among
master's students, 43% move to doctoral programs, 14% move to teaching positions, and 27% enter research and other EEB-related careers (e.g., with government agencies).

Issues raised regarding the graduate program:

• No guaranteed funding for master's students. Our present structure and available funding does not allow for a guarantee of master's student support. Some faculty members prefer our current system, which gives priority to Ph.D. students for GTA's. Other faculty members think that we should award GTA's strictly on quality of the student, not on the degree that the student is seeking.

• There currently is little summer support offered for graduate students, except for funds solely for the use of the Entomology and Plant Biology programs. Students not within these programs lack summer funding unless they secure RA funds or one of the limited number of available GTAs.

• The department never has had an IGERT or other training-related grant to assist the department in recruiting and funding excellent students.

• Support for meetings, workshops, and fieldwork is limited.

• Obtaining more research fellowship opportunities will be critical for attracting the best students.

• Although we have good representation of women and international students, ethnic minorities are underrepresented.

• There is little or no proactive departmental recruitment of highly qualified graduate students, such as a department recruitment weekend.

• The University does not provide tuition support for GRAs funded through faculty NSF and NIH grants. In these cases, tuition must be written into the grant.

Undergraduate Biology Program

The KU Undergraduate Biology (KUUB) Program is an interdepartmental unit serving about 1400 majors with 12 degree options. For each of the degree options, faculty from the Departments of EEB and MB teach courses and mentor undergraduate students in independent research. Because this program is coordinated at the Division level, it provides opportunities for students to benefit from the expertise and diversity of disciplines across all biology faculty. Further, several of our core undergraduate courses are jointly taught by faculty members from both departments, facilitating faculty interactions beyond research.

Students seeking a degree in undergraduate biology may choose a BA in Biology, Biochemistry, or Microbiology or a BS in Biochemistry, Cell Biology, Ecology & Evolutionary Biology, Genetics, Microbiology, or Organismal Biology. In addition, KUUB coordinates the Human Biology degree program, which offers concentrations in several areas (Biology, Applied Behavioral Science, Anthropology, Psychology, and Speech-Language-Hearing) and includes courses outside biology, and the Molecular Biosciences degree program that is offered only on the Edwards Campus in Kansas City.

The KUUB program has a professional staff that includes an Assistant Director and an Administrative Assistant, four Laboratory Directors, who oversee different segments of the laboratory offerings, and four Laboratory Educational Technicians, who work for the Laboratory Directors in preparing materials used by students in the laboratories. There are also part and full-time non-tenure-track lecturers who teach service courses (primarily human anatomy and human physiology lectures and laboratories) and coordinate the Edwards Campus degree program.
KUUB administers undergraduate funds associated with teaching including GTA salaries, course and laboratory budgets. GTA assignments are based on departmental recommendations.

Faculty in EEB are expected to contribute to KUUB by teaching introductory (majors and non-majors) and core courses (those required of majors) including lectures and laboratories in genetics (BIOL 350 and 405), ecology (BIOL 414 and 415), physiology (BIOL 408 and 409), and developmental biology (BIOL 417 and 418) and lecture courses in evolution (BIOL 412), diversity (BIOL 413), biostatistics (BIOL 570), and systematics (BIOL 550).

The KUUB program has grown steadily during the past decade and currently is the largest undergraduate degree program on campus. KUUB has been recognized for its excellence and innovation in student advising. The faculty and graduate students who contribute to this program are responsible for the success of the undergraduate majors who have ranked among the highest average ACT scores on campus, and also ranked among the best in time to degree completion.

EEB faculty members advise undergraduate majors and mentor undergraduate research projects. The latter occurs through independent study credit, through Division of Biological Sciences and University Honors programs, and through numerous other programs offered by the University and Haskell Indian Nations University, Lawrence, KS. Many of these programs focus on providing research experiences for minority students. EEB also obtained funds for and administered a NSF Research Experiences for Undergraduates Program from 2001–2006; each summer, the program comprised 10 weeks of full-time research and educational activities for 10 undergraduates. Students were recruited from across the nation, and from Haskell Indian Nations University. The program was highly successful as measured by student publications and presentations, students entering graduate school programs, and other indices.

Issue raised regarding undergraduate teaching:
- Is the relationship between EEB and KUUB optimal to cover the teaching needs of the Department?

Allocation of Departmental Funds
In general, faculty members support their research programs by applying for funds from external agencies. The sole exception is the General Research Fund (GRF), which provides the department with slightly more than $50,000 each year. These funds are used as “seed money” to help faculty members generate preliminary data to be used in subsequent grant proposals to extramural agencies. Because the budgets of the submitted proposals greatly exceed the available funds, proposals are evaluated by faculty colleagues at KU, and only about one half to two thirds of GRF proposals are funded. Failure to submit extramural grant proposals jeopardizes future funding from the GRF allocation. In their first two years at KU, new faculty members are eligible to apply for a one-time allotment of $8000 (“New Faculty GRF”) to assist them with establishing their research program. All faculty members receive money from the “Miscellaneous Expenses” fund to cover postage, photocopying, and other basic expenses. These funds provide $200 per faculty member, plus an additional $100 for each graduate student advisee, up to three students, unless the faculty member has a fractional FTE in the department. Funds are then allocated according to their FTE equivalent.

The formulae for recovering indirect costs from extramural grants are complex. The simplest case is the following. For a grant with a sole PI who has a 1.0 FTE in EEB, and who has
submitted the proposal through EEB (as opposed to through KBS, BRC, or the Higuchi Biosciences Center, HBC), the department receives 5% and the PI recovers 4% of the indirect costs. These numbers decrease for proposals submitted via a research center (e.g., KBS, BRC or HBC), for faculty with joint positions, and for the inclusion of co-PIs with appointments outside of EEB.

Graduate students receive few research funds directly from the department. The chair does use the operating budget from the College to provide $200 to approximately 24 students per year to assist with the expenses of travel to meetings and conferences. Graduate students in the Biodiversity Research Center and the Entomology and Plant Biology programs have access to additional endowment funds established by generous donors; these funds are used for research, summer support, and attendance at meetings.

**Future Faculty Hires**

Future faculty hires is the single most important issue affecting the future direction of any academic department. In EEB, hiring foci are developed within programs, following which the directors of the four programs (the Executive Committee) propose a set of hiring priorities that are voted upon by the full department. Although this process allows the programs to focus positions on particular disciplinary needs, choosing from among a wide range of positions and goals is challenging and it is difficult to generate a consensus view of a long-term departmental hiring strategy. As currently parsed among the programs, the hiring goals of the department are as follow:

**Ecology and Population Biology:** To build on current strengths and expand our research program, we are hiring an ecosystem ecologist (fall 2007). Proposed future hires include: (1) a microbial ecologist, (2-3; currently unranked, depends on outcome of current search) an ecologist focusing on species interactions and an ecosystem/global ecologist with an emphasis on biosphere/atmosphere interactions, and (4) a behavioral/physiological ecologist. Distinct from the above list, EPB recommends hiring a Director for KU’s Field Station and Ecological Reserves (KSR). This is a critical hire for KSR’s continued development as a renowned, world-class facility and for furthering the excellence of scholarly activity in multiple units across KU. This position could be linked to an additional need for a vertebrate aquatic ecologist.

**Entomology:** Future hires will build on strengths in systematics and behavior and address emerging research programs. (1) Complementing our strength in systematics, Entomology seeks an individual to develop a strong program in insect biodiversity, including faunal surveys, phyleogeography, conservation, responses of insects to global climate change, and the role of insects in ecosystems. (2) Through two hires in the areas of the genetic basis of social behavior and behavioral adaptations, KU can become a national leader in insect behavior. (3) To sustain the mission of the program Entomology seeks an insect physiologist and a specialist in aquatic entomology.

**Plant Biology:** The future of plant biology research at KU builds on current strengths in understanding how plant and fungal systems are shaped by their phylogenetic history and interactions with other organisms and the environment. To develop this research portfolio plant biology seeks the following key hires; (1) a senior-level plant evolutionary geneticist to bridge our current strengths in plant macro- and microevolutionary research, (2) a researcher who focuses on understanding organismal symbioses using ecological, historical, or molecular genetic
approaches, and (3) a researcher working at the species and population level to resolve relationships and decipher processes of diversification in plants.

**Systematics, Macroevolution and Biodiversity:** To maintain the strength of the program, the following hires are necessary; (1) lower vertebrate paleontology, for which a vacancy has existed for nearly 15 years, (2) building on recent hires in the evolutionary developmental biology of plants and cnidarians, a complementary researcher in developmental biology of vertebrates should be sought, (3 and 4) retirements are imminent in Ichthyology and Mammalogy, (5) an emerging strength of the SMB Program would be solidified by the addition of a second theoretical systematist to complement a recent hire, (6) aside from insects, our invertebrate specialists are limited to cnidarians and tapeworms. A specialist in nematodes, mollusks, crustaceans, or another large, non-insect invertebrate group would add critical mass to this aspect of the program, and (7) we should strengthen our teaching and research in the areas of biomechanics and functional morphology.

**Issues raised regarding hiring strategies:**
- According to EEB bylaws, each program prioritizes its future hiring goals. The directors of each program, who constitute the Executive Committee, discuss these positions and propose a departmental set of priorities. These recommendations are brought to the full department for discussion and voting. Although this approach allows individual program needs to be addressed, prioritizing the different types of positions is challenging.
- As the disciplines represented by faculty in EEB evolve, more and more research areas do not fit into the current program structure (discussed in the previous section), and therefore may not emerge as hiring priorities for the existing programs.
- The Department has not developed an integrated long-term hiring plan.
- The Department has not been effective in recruiting and hiring minority faculty.

**Summary of Survey of other EEB Departments**
In January 2007 the chair of our department surveyed seven other EEB or EEB-like departments from state-funded schools that the external review committee regarded as equivalent to, or one notch better than EEB. The results of this survey are shown in Appendix I and summarized here. In a number of areas EEB compares favorably. A large fraction of our faculty is pre-tenured, suggesting that we are expanding and bringing new areas of research into the department. Compared to similar departments, we have done well in recruiting and retaining women faculty (given that half of our pre-tenure faculty are women), and our starting salaries are relatively high, especially given the low cost of living in Lawrence.

**Issues raised by the survey:**
- **Departmental organization:** About 50% of EEB faculty members have appointments in other units. Such interdisciplinary affiliation can both constrain and benefit EEB. Are there ways to insure that the benefits outweigh the constraints as the department entertains future hires and governing mechanisms?
- **Teaching responsibilities:** At one 3-credit course/semester/1.0 FTE, teaching expectations for EEB faculty are equal to or higher than those of most other programs. Should we develop mechanisms and/or policies to reduce the teaching responsibilities, especially for research active faculty and pre-tenure faculty?
• **Graduate student fellowships**: Although the graduate stipends are high relative to cost of living, many of the surveyed programs do more to support their graduate students through university fellowships and summer salaries.

• **Graduate student research assistantships**: The number of students supported from RAs equals only slightly more than half the faculty, which is low compared to the other departments surveyed. Given that a large proportion of EEB faculty members are not supporting their students through RAs, cost-sharing for tuition or limiting the number of TAs/faculty member could provide incentives for increasing the number of RAs from individual faculty grants.

• **The master’s program**: Of the surveyed departments that offer admissions for a terminal Master’s degrees, only EEB does not guarantee funding for Master’s students. Re-evaluation of admission for a terminal Master’s degree, and guaranteed support if such students are admitted, should be considered.

• **Postdoctoral training**: Postdocs are fundamental to many research programs, and some faculty members think we may wish to implement a teaching postdoctoral fellowship in EEB.

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**Strategic Planning**

Building on the departmental assessment included in this self-study we anticipate developing a strategic plan for EEB that will capitalize on feedback provided by the external reviewers. Goals for this strategic plan may include:

1. Generating a faculty recruitment plan that integrates across the department
   a. builds on existing strengths
   b. draws on the hiring priorities identified by the programs
   c. reflects the next generation of research questions.
2. Enhancing our graduate student recruitment plan so that EEB increases its share of the best graduate student applicants nationally.
3. Working with and for graduate students to
   a. seek an increase in department resources for graduate student professional development
   b. support students for 12 months
   c. develop greater transparency and feedback in the evaluation of graduate student performance and progress.
   d. explore how to strengthen the graduate curriculum.
   e. provide faculty release to submit an IGERT proposal designed to enhance graduate training in an emerging area of departmental strength.
4. Identifying and reducing barriers to efficient and effective submission of proposals to competitive federal programs (e.g., NSF and NIH). Promoting creative ways to increase our ability to hire postdocs and RAs (e.g., cost sharing graduate student tuition).
5. Increasing opportunities for mentoring pre-tenure faculty, particularly in terms of grantsmanship, and developing a set of best-practices guidelines leading to tenure.
6. Emphasizing opportunities for faculty members to modify their professional profile and enhance or reduce research, teaching, or administrative activities.
7. Exploring REU options and enhancing research possibilities for undergraduate majors.
8. Building collaborations with other departments, nationally and internationally, to increase the outreach of KU’s EEB activities.
Appendices:
I. Results of questionnaire to other departments
II. Listing of faculty members by program
III. Faculty awards and achievements
IV. Biosketches
V. Additional research facilities and associated units
VI. Bylaws
VII. Graduate student handbook
VIII. Statement from graduate students
IX. Annual report of the department from last year
X. Full CVs (provided on CD)