Review – Department of Zoology
Oregon State University

7 NOVEMBER 2011

Overall Recommendation

The Department of Zoology has a tradition of leadership in teaching, research, and service; and this Department is thus a ‘point of pride’ for Oregon State University. However, the Department’s ability to maintain and to extend those traditions urgently requires expanded and redirected resources. We recommend:

• that the program (faculty and graduate students) be expanded
• that GTA stipends be increased substantially,
• that the infrastructure be improved and modernized.

Further, ongoing planning for the reorganization and integration of the Department into a School of Life Sciences within the College of Science should proceed in a manner that provides efficiencies and opportunities for collaboration, but does not compromise the high quality of the existing Zoology program.

Executive Summary

We live in The Century of Biology, and the various disciplines of the biological sciences have direct environmental, biomedical, and economic impact on Oregon. OSU’s Department of Zoology is a world-class department. It provides exceptional leadership and service to biological education, research, and outreach and thus effectively serves the community, State of Oregon, and Nation. The Department encompasses all levels of biological organization (molecular to evolutionary), and it actively promotes research and teaching that cross and integrate these disciplinary levels. Its goals mesh tightly with the University’s mission. It is central to the University’s and Oregon’s future.

The Department’s success and strong reputation trace directly to its prestigious faculty, who bring broad disciplinary strength in fields such as marine ecology, conservation, evolutionary biology, physiology, and genomics. Recent hires (junior, mid-career) are superb and promise continued leadership, despite pending retirements. Faculty run high-profile programs (PISCO and COMPASS) that have positive ecological and economic impacts on the State and region. Museum
collections (arthropod, amphibians & reptiles, bird, mammal, fish) are important resources for the region and maintain a long commitment to natural organisms; this is especially important given that no state natural history museum serves this function.

The graduate program attracts excellent students, as evidenced by high percentage of fellowship awardees, and generally serves them well, as evidenced by placement in postdoctoral and faculty positions. The undergraduate program in Biology is staffed mainly by Zoology faculty and effectively serves large numbers of students with diverse career trajectories. The graduation rate is equivalent to OSU’s graduation rate.

A new Chair has revamped departmental governance. These new approaches are promising.

Primary and conspicuous concerns include the lack of a strategic plan, appallingly low stipends for graduate students, inadequate advising for undergraduates, OSU’s inappropriate diversion of grant overhead to subsidize the educational responsibilities of the University, the lack of central planning to modernize research and teaching spaces, and the need of the Department to take a more proactive role in defining its own identity and in directing new hiring initiatives.

**Participants and Order of Events**

Off-campus participants include **Dr. Margaret Harmon** (ScienceMedia, Inc.), **Dr. Raymond B. Huey** (Professor, Department of Biology, University of Washington), and **Dr. Kenneth P. Sebens** (Director, Friday Harbor Laboratories and Professor of Biology, University of Washington). On-campus participants include **Dr. Gary Beach** (Office of Academic Affairs and International Programs), **Dr. Katharine Field** (Associate Professor, Microbiology, and Director, BioResource Research Interdisciplinary Biosciences Major), **Dr. Theresa Filtz** (Associate Professor, College of Pharmacy), **Dr. Martin Fisk** (Associate Dean, Graduate School), **Dr. Jack Higginbotham** (President, Faculty Senate, Professor of Nuclear Engineering and Radiation Health Physics), and **Dr. Brenda McComb** (Dean, Graduate School).

The Review commenced with a dinner meeting on the evening of 6 November 2011. The full Review team was present. The next day we met sequentially with **Dr. Virginia Weis** (Chair, Department of Zoology), **Dr. Vincent Remcho** (Associate Dean for Research, Graduate Studies & Administration, College of
Science), the chairs of key Program Committees, representative undergraduates and graduates, Zoology faculty, and again with Chair Weis. In addition we toured Oregon State Arthropod Collection, several faculty labs, and the Human Anatomy and Physiology teaching labs.

Summary of Areas Needing Support from the School, College, and Provost

- Decouple funding of the research and educational missions. Specifically, educational programs should be funded from the E&G budget, not from research overhead.

- Immediately work with the Department to increase graduate stipends (see below).

- Ensure that funds generated by faculty efforts (e.g., summer and e-campus courses, grant-generated returned overhead, building use credits) are available to the Department to foster self-directed initiatives.

- Evaluate and pursue options to renovate Cordley Hall to ensure that needed infrastructural upgrades can support modern research and animal-care requirements, and that instructional laboratories will be sufficient to meet the needs of growing numbers of undergraduates. Begin evaluating the need for a new building, given Cordley’s age and condition.

- Develop centralized assessment of educational activities and of successes. In particular, collect post-graduation data (job placement) for BS, MS, and PhD students.

- Continue to work with the Department to support mid-career and spousal hires. OSU and the Department have a strong record here.

- Ensure that endowment income is being used only for its stated purposes and not diverted to centralized programs.

Summary of Areas Needing Support from the Department

Substantially increase graduate stipends and bring them at least to parity with peers in related units. The viability of the graduate program (and the ability to bring in and retain top faculty) is in doubt unless the Department does this.
Solving this problem will probably involve either increased support from the College, or reducing the number of stipends provided, *even if this requires reducing the undergraduate educational mission*. The Department must take the lead here.

Develop a comprehensive and quality strategic plan with particular attention to planning for and leading faculty hiring initiatives.

The Department urgently needs to develop a comprehensive strategic plan that defines its scope, strengths, identity, and mission. The plan should also develop explicit goals and justifications for hiring initiatives (see below). This plan can help the Department to *anticipate* retirements of highly influential senior faculty as well as to foster expansion into emerging disciplines. We encourage annual and targeted retreats that focus discussions on an immediate to decadal time frame, as appropriate.

As part of its strategic plan, Zoology should proactively plan and guide new hiring initiatives rather than passively responding to initiatives developed by the upper administration. Of course, Zoology has prospered from some initiatives (e.g., Dee Denver from the CGBI cluster hire in 2005). Even so, Zoology should take advantage of its national prominence and drive the development of new initiatives for group hires.

Make expansion of the diversity of the faculty and of graduate students an explicit goal of the strategic plan.

As part of its strategic discussions, the Department should consider transitioning into a Biology Department that can better encompass contemporary dimensions of integrated biological research (see below). This will require both development of a clearer mission and identity, and coordination with other departments. It is also desirable that the transition does not cause the Department’s and its students’ strong current identification with Zoology and organismal biology to be lost.

Continue and expand recent initiatives to improve and streamline faculty governance and activities.

The graduate program is strong but needs true graduate lecture courses, as this will enable faculty to share their expertise at a high level. The Department must

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1 Faculty who develop and teach a new graduate–lecture course should of course
make sure that graduate seminars (Z507) are offered regularly (or reduce requirements in this area), and that graduate “career skills courses” are available (career development, ethics, research tools and techniques). Survey current graduate students to gauge their needs and desires with respect to graduate course offerings.

Enhance the Departmental seminar series. Add periodic faculty “mini-symposia,” in which three or four faculty give short talks. This is cost effective and can help promote Departmental cohesion and integration.

Pursue opportunities (training grants, individual grants) that can provide more research assistantships for graduate students, many of whom teach excessively during their graduate careers.

Without delay, implement required training for graduate students in the ethical conduct of research and teaching.

Hire professional undergraduate advisors for upper-division students. Thus use faculty as career and research advisors, and not as program advisors. This will not only enhance the advising, but also reduce workloads on faculty. Given the number of Zoology students, the E&G budget should pay for these advisors.

Provide space for an undergraduate meeting place (lounge) to foster collegiality.

Increase opportunities for undergraduate students to gain needed writing skills (e.g., research papers, theses, proposals).

Provide centralized career, internship, research and employment advice for undergraduates. Provide career guidance into fields that do not require a post-graduate degree.

Develop an undergraduate capstone class that promotes the professional development of students.

General Notes on the Undergraduate Program

1. Quality of Students: Average SAT scores and high school GPAs of undergraduate students entering Zoology are higher than the overall OSU receive some relief from undergraduate duties.
averages, in some cases substantially so (for example, Verbal and Writing SAT scores). Enrollments are growing much faster in Zoology than overall at OSU.

2. Curriculum Strength: Students strongly identify themselves as “Zoologists”, and feel that Departmental courses are excellent. However, they identified several issues (below) that can be solved by having professional advisors and by revising aspects of the curriculum:

   a) Lack of timely information prevents students from taking advantage of all the Department has to offer. Some upper classmen stated that they were unable to take some advanced courses because they hadn’t taken the prerequisites in time. [Whether this reflects a structural or advising problem, or bad planning by students, is unclear.] As a result, students take some courses that were available to them rather than those that met their interests and needs. The department should consider means to making the path to upper level Zoology courses easier to navigate. This could involve clarifying prerequisites on the checklist of courses, using professional advisers, and training advisors on the dynamics of sequential scheduling. Courses that fulfill more than one requirement could increase scheduling flexibility and help students to get the most from their tuition dollar. Every student we spoke with had credits far in excess of requirements for graduation; taking excess credits should be a choice, not a necessity.

   b) Writing skills should be emphasized whenever possible. Most of the undergraduates that we met had never written a term paper in their discipline. The intent of the Writing Intensive Curriculum (WIC) at OSU to provide opportunities to write within the discipline is not being fulfilled with the current use of History of Science courses to meet the Zoology students WIC requirements. Providing students with opportunities to write in their major field is crucial to their future success. We recognize that new writing assignments will add a burden on teaching staff, but more appropriate WIC courses must be developed in Zoology.

   c) Lack of options: Students felt that their intellectual and career development needs would be better served if more focused options were available within their major.

3. Level and Quality of infrastructure: Cordley Hall is very old, and the facilities are inadequate for contemporary biological research and for modern laboratory instruction. Noted were the “brownout instructions” on laboratory doors and the loss of valuable materials during recent power outages (e.g. freezer failures). The two Anatomy and Physiology teaching labs run approximately 12
hours a day, and additional space is needed to meet increasing demand for this important course. The long-term solution will be to build a new. A short-term solution could be achieved by renovating and expanding teaching lab space, adding backup generators, providing climate control, renovating and expanding collection space, and providing space for small-group teaching initiatives.

4. **Productivity, level and quality of student performance**: Many undergraduates in Zoology have participated in research, but they seem to find research opportunities fortuitously (e.g., from interactions with TAs) or from other departments (e.g., Fisheries and Wildlife). Professional advisors could serve as gateway for research, internships, scientific meetings, and employment opportunities, which will help prepare undergraduates for their careers.

5. **Viability of the scholarly community**: Some students do not feel part of the Zoology community. Various clubs are available to them but are not Zoology specific. In addition some students feel too over-committed to participate in club activities, such that their current sense of connectivity to the Zoology Department comes mainly from working in labs or taking classes. Several steps could address this problem:

   a) Have an undergraduate lounge that will promote informal learning, interactions, and collegiality. Ideally, the lounge would be located in an accessible area and would have seating, bulletin and white boards, and cooking facilities (microwave). Suitable models are lounges in the Honors College and in the Fisheries and Wildlife Department.

   b) Many departments help foster a sense of community by offering an introductory (100-level, 1-credit) class that highlights faculty programs and interests, introduces advisers, builds skills such as library research, and promotes professional and experiential opportunities, such as clubs and international experiences.

6. **Outcomes, professional viability of graduates**: Undergraduates feel that their degree will help them enter post-graduate programs (biomedical, biological) but not pursue other careers. Professional advisers could provide such career counseling, and the availability of options would help students plan their paths.

7. The department has fallen behind in conducting peer evaluations of teaching. Such evaluations are crucial for promotion and tenure dossiers. **Without delay, the department needs to implement teaching evaluation and program-assessment practices.**
8. Enhance student and alumni tracking: The ability of departments to appreciate and respond to changing student needs requires (in part) quantitative data from surveys of graduating seniors and of recent alumni. However, the response rate of current surveys is very low and needs to be improved.

General Notes on the Graduate Program

1. Quality of the students, admissions selectivity, student performance, and professional viability: Students admitted to the graduate program have a very high average undergraduate GPA (3.7 average) and GRE scores in 60 to 90th percentile. Admissions selectivity appears excellent but the data are not fully available to gauge how accepted students compare to matriculated students. While in the program, students win many awards and NSF fellowships and are productive with publications.

The graduate program has an excellent internal and external reputation. The graduate students are very positive, interactive, and productive. They consider the Department’s program to be excellent and are very pleased with their experience. Faculty stated that they limit the number of graduate students they supervise so they can offer support and nurture the students. Graduate students said that their field and laboratory experiences have been extensive and productive, and that they often have the chance to travel for research and to present papers at national and international meetings. Many have been strongly supported through the PISCO program and have become important contributors to marine ecology. The graduate students were less pleased with their overall preparation to enter the job market, although they said that Zoology PhDs have successfully obtained postdoctoral and faculty positions.

2. Level of student financial support: The initial offer of five years of support for incoming graduate students is very positive and attractive, and many other departments do not do this. However, the GTA stipends (discussed above) are so low that they hamper the recruitment of some top students, as many prospective students do not even bother to apply after learning about the low stipends. In addition, faculty should increase their efforts to provide GRAs and training-grant positions, so that students need to TA less often than many currently do.

3. Curricular strength and viability of the scholarly community: Graduate students stated that graduate seminar offerings were insufficient, given that they are required to take several Zoology seminars. Indeed, the number of graduate
seminars has declined over the past five years, and no seminars are available in some terms. In response, faculty noted that lots of seminars are offered across campus. However, these types of seminars do not seem to meet the degree requirements. Moreover, graduate students want to attend seminars presented by Zoology faculty and to interact more with and be taught by the nationally renowned researchers. The Department should review the Zoology graduate-seminar program (degree requirements, offerings) to remedy this situation.

The students also wanted more dedicated graduate-level courses. Currently, they are forced to take mostly 400/500 level courses (upper-level courses that require an additional project from graduate students). They noted that these courses are not taught at a graduate level, and do not foster interactions among graduate students. This paucity of dedicated graduate courses is unfortunate, given the high quality of the Department’s faculty. Faculty responded that some graduate-level classes they have offered have not been taught because of under-enrollment, and that the ever increasing demands of undergraduate teaching may not allow them time to design and teach additional graduate-level courses. [As noted above, this could be ameliorated by reducing the undergraduate load of participating faculty.] Graduate-level courses in grant preparation, writing and other basic skills are provided and are popular and commendable.

4. Adequacy and quality of faculty personnel: The quality of Zoology faculty is high, and the faculty includes National Academy members, have active grant support, and strong international reputations. OSU obtains high rankings nationwide among ecology graduate programs—despite not having an ecology program—partly based on the reputation of Zoology faculty. Unfortunately, faculty lines have been lost to retirement over the last 10 years, and the department will struggle to maintain status in the future if this trend continues.

The undergraduate drain on graduate teaching and diminishment of faculty lines is not unique to this department, and needs correction. We suggest that the department ensures that every Zoology faculty member teach both graduate (at least periodically) and undergraduate classes. This would provide better balance of educational efforts and enhance morale. Creating an inter-departmental Ecology and Evolution graduate program, or other inter-departmental programs, might also enhance the availability of graduate-level courses — this approach apparently works well in the cell and molecular area (MCB). In addition, creation of a first-year required course series, which could include ethics and professional skills, would foster interactions among graduate students. We suggest that strategic planning (further elaboration below) be utilized to ensure continuing and future success and reputation of the department.
5. Level and quality of infrastructure and organizational support: See undergraduate program notes above.
Need for Strategic Planning

The Department has not developed a strategic plan, such that planning for future hires and directions appears undirected and thus problematic. Moreover, faculty felt that recent hiring trajectories were guided by higher-level initiatives, and not by the Department’s needs.

We strongly encourage the Department to develop a clearer mission and identity, which will allow them to formulate a strategic hiring plan for the next decade. This is especially important given the pending retirement of key senior faculty. We recognize that any decadal plan must be general and flexible. Even so, the Department should be able to establish broad priorities and then seek the resources necessary for implementing their priorities. Increases in tuition revenues should open opportunities for new hires, but the Department needs to become more pro-active in guiding hiring initiatives.

Given the forthcoming reorganization at the College level, the Department needs to articulate how it wants to be integrated into the new structure. This will require both development of a clearer mission and identity, and coordination with other departments. Becoming a “Biology” department could be more attractive to students than the narrower and now less common “Zoology”. Becoming an “Integrative Biology” Department is another option. However, any transition should be structured so that the students and faculty are able to maintain their strong programs in zoology, organismal biology, animal biology, ecology, and physiology.