

Department of Biology
Annual Report – FY 2012-13
June, 2013

1. Develop and retain quality faculty and staff

- a. Develop recruiting strategies to attract top faculty candidates
- b. Orient and mentor early-career faculty
- c. Support CELTSS and other faculty development resources
 - o Margaret Carroll joined the CELTTS team to review faculty proposals.
 - o Rebecca Shearman presented a talk, “The Scholarly Teacher) to the CELTSS sponsored first-year mentorship program for new faculty.
- d. Provide the tools and equipment to support faculty work
 - o Purchased Vernier lab equipment to assist data collection in both lab and field student exercises.
 - o Updated Herpetology laboratory to address electrical requirements.
 - o The Biology, Chemistry and Food Science, Physics and Earth Science and Geography Departments collaborated to hire a full-time administrative assistant for Hemenway Hall.
- e. Strengthen academic community
 - o Dr. Ishara Mills-Henry was hired as a new tenure-track faculty member. Her position is shared with the Chemistry and Food Science Department. She brings expertise in Cell Biology and Genetics to the Biology Department.
 - o Dr. Amy Knapp was hired as a new tenure-track faculty member. She brings expertise in muscle physiology and will assist with increased enrollments in the Anatomy & Physiology classes.

2. Strengthen new student preparation, induction and early academic success

- a. Align readiness skills with college expectations
- b. Improve orientation, first-year and transitional programs
 - o Margaret Carroll, Richard Beckwitt, Brandi Van Roo and Gene Muller took first year Biology students (in BIOL 160) on a weekend retreat to Cape Cod where they experienced field sampling and community building. The trip included a sampling protocol that was used to assess species diversity within various habitats.
- c. Build connection/community on campus
 - o The Biology, Geography and Physics and Earth Science departments organized the Environmental Science working group.
 - o Stephen Dinkelacker launched the Herpetology website to promote student awareness of research opportunities in his laboratory.
- d. Strengthen assessment, advisement and placement
 - o Rebecca Shearman served as a member of the Assessment Advisory Group and the AAG liaison to the College Curriculum Committee.

- Rebecca Shearman is a member of the group of faculty and administrators from Framingham State University and MassBay Community College working on a grant (Advancing a Massachusetts Culture of Assessment) which aims to align assessment work at FSU and MassBay.
- e. Monitor and foster systematic and progressive preparation for graduation
 - Implemented prerequisites (increased rigor of math prerequisites) for first-year general biology classes and began collecting data for assessment.

3. Pursue excellence and engagement in the academic experience

- a. Increase student-faculty collaboration
 - Stephen Dinkelacker continued a summer research program along the outer banks of North Carolina which incorporated four undergraduate students. Their research investigates the distribution and abundance of reptiles and amphibians in Nags Head Woods Ecological Preserve, Kill Devil Hills NC.
- b. Increase experiential learning opportunities
- c. Strengthen citizen engagement opportunities
 - The Aspiring Health Professionals club collected books for the World-wide Book Drive. The AHP collected “a ton” (2,000 lbs) of books and was recognized with a Gold Award from the World-wide Book Drive organization.
 - Rebecca Shearman served as advisor for the Green Team student organization.
 - Charlotte Zampini served as a member of the Board of Directors of the Massachusetts Chapter of the American Chestnut Foundation. Her affiliation with ACF has provided research and internship opportunities for our students.
- d. Grow honors and academic enrichment opportunities
- e. Assess and document student learning and personal growth
 - Aline Davis worked with Education Technology Office to:
 1. pilot a multi-device mobile interface for in-lecture student response (clikers). They hope to establish a campus-wide system.
 2. set-up and ran an audio-lecture and audio/video lecture capture exercises.
- f. Enrich university community with diversity
 - Dr. Ishara Mills-Henry position as a Diversity Fellow position was converted to tenure-track. The position is a joint appointment between the Biology and Chemistry and Food Science departments.

4. Prepare students for global citizenship and competitiveness

- a. Expand global awareness through new majors and programs
- b. Integrate and grow world language programs
- c. Support student international experiences
- d. Grow and manage FSU partnerships with international universities

5. Strengthen and expand STEM programs and student success in STEM areas

- a. Expand STEM majors, centers and research and policy analysis
- b. Improve STEM preparation and readiness
 - o The concentration in Biotechnology and Biomedical Science (UBIM) was changed to Biotechnology to better reflect the course content of the concentration and to remove confusion by prospective students inquiring about a concentration in Biomedical Engineering.
 - o The Biology – Preprofessional concentration (UBIP) was changed to Pre-Health concentration. Also, requirements for the concentration were refined to better reflect needs of students preparing for the MCAT exams.
 - o Course requirement within the Wildlife and Environmental Biology concentration were changed to better prepare students for possible certification by The Wildlife Society.
 - o New courses (BIOL 233 Comparative Vertebrate Anatomy and BIOL 123 Wildlife Specimen Preparation Techniques) were presented that strengthen the General Biology and Wildlife and Environmental Biology concentrations.
- c. Increase student interest, enrollment and degrees awarded in STEM majors.
 - o Data provided by the Registrars' Office shows that there has been a significant recent increase in the number of majors in Biology; this is an approximately 37% increase in students over 5 years.

Recent history of the number of Biology students

Department	2008	2009	2010	2011	2012
Biology	128	149	142	184	175

- o The Biology Department increased the number of sections in the introductory Biology classes to accommodate this increase in enrollment.
- d. Improve STEM career readiness among FSU graduates
 - o Aline Davis conducted a year-long investigation of iPads versus ThinkPads use in Biology courses. Results should begin to become available in fall of 2014
 - o Stephen Dinkelacker continued his research program in coastal North Carolina where he and student undergraduate researchers (Michael Gosselin, Colin Mettey, Adam Parlin and Ryan Tibbert) conducted a mark-recapture study of alligators in an effort to determine population parameters (population size, body size, gender ratios, growth and survivorship). Travel was assisted by funding from CELTSS.
 - o Renee McDonough (Methods project student of Brandi VanRoo) presented a talk "*Ejection Strategies for the Removal of Parasitic Cowbird Eggs by a Host Species, the Warbling Vireo (Vireo gilvus)*" describing her Biology methods data at the North East Natural History Conference, Springfield, MA April 13-15, 2013.

- Adam Parlin (Methods project student with Stephen Dinkelacker) presented a poster “*Do Habitat Characteristics Prevent the Occupancy of Barrier Islands in North Carolina by American Alligators?*” at the Massachusetts Undergraduate Symposium.
 - Kylee Dunham (Independent research student with Stephen Dinkelacker) presented a poster “*A stage-based population model for American Alligators (*Alligator mississippiensis*) in northern latitudes*” at the Massachusetts Undergraduate Symposium.
 - Michael Gosselin (Methods project student with Stephen Dinkelacker) presented a poster “*Reptile and Amphibian Diversity of Nags Head Woods Ecological Preserve, Kill Devil Hills, North Carolina*” at the Massachusetts Undergraduate Symposium.
- e. Link STEM programs to the regional scientific and technology community
- Stephen Dinkelacker initiated collaboration with colleagues at the Capron Park Zoo, Attleboro, MA.

6. Respond to labor market trends in academic program and center development

- a. Connect regular, systematic assessment of labor market trends to program review and development
- b. Develop and maintain dialogue with major area employers
- c. Systematize the preparation of students for graduate and professional programs
- d. Develop combined degree programs and new graduate programs in response to the needs for the Commonwealth
 - Amanda Simons prepared a program document for a new Professional Science Masters degree which should go to the Department of Higher Education in the near future. In addition, Amanda met with area professionals from the biotechnology industry to assess the needs and merits of the proposed program.

FY 2013 Budget Initiatives

Part-time Lab Technician: The Biology Department was provided funding to hire a part-time technician to assist with lab preparation, but the department did not conduct the search and will make the search a priority this year.

Freshman Retreat: The September retreat to Cape Cod with first-year was successful. Drs. Margaret Carroll, Richard Beckwitt, Brandi Van Roo and Gene Muller took first year Biology students (in BIOL 160) on a retreat to Cape Cod for a weekend where they experienced field sampling and community building. The trip included a sampling protocol that was used to assess species diversity within various habitats. These data were utilized later in the semester as an example to test hypotheses in community ecology.

Biology Department Assessment Plan

The Biology Department wrote a Five-year Assessment Plan during the Spring, 2013. We will begin the assessment process in Autumn 2014 by collecting lab reports from students enrolled in BIOL 160 and final reports from students in BIOL 407. In addition, a diagnostic exam will be written that will be administered to students enrolled in BIOL 160 and BIOL 407 in Autumn, 2014.

Program Review

The Biology Department reviewed the program and prepared a document for external appraisal. Academic Affairs had difficulty securing external reviewers, so the process will be completed in Autumn, 2014.

APPENDIX

Other Items of Faculty Involvement

Brandi Van Roo organized a session on Breeding Ecology of Songbirds at the data at the North East Natural History Conference, Springfield, MA April 13-15, 2013.

Walter Lambert served as Vice President of the Massachusetts Marine Studies Consortium. The Consortium offers our students a diverse array of marine science courses that we would be unable to offer because of our small size.

Publications:

Aline Davis published information on enhancing undergraduate biology courses with technology with co-authors from IT.

Davis, A; Waterbury, C; Robinson, RS (2012) *Technology Enhancement Tools in an Undergraduate Biology Course*. EDUCAUSE Review.

<http://www.educause.edu/ero/article/technology-enhancement-tools-undergraduate-biology-course>.

Stephen Dinkelacker submitted two papers with student co-author for publication:

Michael S. Gosselin, Stephen A. Dinkelacker, Aaron McCall, Adam Parlin, Colin Mettey, and Ryan Tibbert. *SUBMITTED*. Reptile and Amphibian Diversity of Nags Head Woods Ecological Preserve, Kill Devil Hills, North Carolina. Herpetological Conservation and Biology.

Adam Parlin, Steve Dinkelacker, and Aaron McCall. *SUBMITTED*. Do Habitat Characteristics Prevent the Occupancy of Barrier Islands in North Carolina by American Alligators? Southeastern Naturalist.

Both of these papers describe data collected as part of the students' Biology methods experience.

Walter Lambert published three papers:

Walter J. Lambert, Elise Corliss, Jasper Sha, and Jaquay Smalls. 2012. *Trematode Infections in Littorina littorea on the New Hampshire Coast*. Northeastern Naturalist. Vol 19 pp. 461-474. This paper was co-authored with students and describes information collected during their Biology methods projects.

Walter J. Lambert. 2013. *Population biology of an intertidal dorid nudibranch (Onchidoris muricata) in the southern Gulf of Maine (USA): Changes in phenology due to an invasive prey?* American Malacological Bulletin. Vol 31 pp. 1-7.

Jennfier A..Dijkstra, Walter J. Lambert and Larry G. Harris. 2013. *Introduced species provide a*

novel temporal resource that facilitates native predator population growth. Biological Invasions. Vol 15: pp. 911-919. This paper was co-authored with colleagues from the University of New Hampshire.