A Focus on Academic and Career Advising
Spring 2016
Department of Biology

Part One. Analysis of the Current Landscape

The Biology Department has an advising office that is open and available to students on weekdays year round. Students can make an appointment to meet with an advisor by calling or visiting the office. Walk-ins can meet with an advisor if one is available; otherwise they make an appointment to return later. In-person meetings with students are supplemented by occasional group advising sessions run by faculty. Email exchanges between advisors and students are abundant. In addition, the Department provides three faculty advisors for our substantial population of students who are members of Commonwealth Honors College (~300 students).

The bulk of face to face advising is provided by a single non-tenure system faculty member who serves as Undergraduate Program Coordinator and also has other responsibilities. In addition, a staff member whose primary job is not related to advising provides considerable part-time help during the peak advising periods in the fall semester, and somewhat less help during peak periods in the spring semester (when other responsibilities reduce her availability). During the main course registration periods in April and November, advising capacity is supplemented by a group of 6-7 mostly non-tenure-system faculty members who each spend ~2 hours per week in the advising office, meeting with students.

Biology majors are encouraged to seek advising, but advising is not mandatory. Given the size of our major and current staffing levels, we are unable to provide all majors with advising. As a result, not all Biology majors receive face to face advising. Instead, the majority of our advising effort is concentrated on a self-selected group of students who seek advising; these tend to be a more motivated and engaged subset of Biology majors. We also provide substantial advising to our least academically successful students, who are funneled into the advising system by the academic discipline process. Our students that receive the least amount of advising tend to be those that have at least modest academic success, but are less assertive or unmotivated to seek advising.

Although issues pertaining to career advising arise during academic advising sessions, the Biology Department does not have a staff member devoted to career advising. Our departmental career advising expertise is also very limited in scope as none of our advisors are professional advisors and most have spent their careers in academia. To address this need, our one-credit course, "Life After Biology", which is part of our General Education Integrated Experience (IE) requirement, addresses career issues, although we recognize it is not a substitute for one-on-one career advising. Nevertheless, students have reacted positively to this class and appreciate the information provided.

Experiential opportunities in Biology are available but are limited and securing one requires significant student effort and motivation. The proportion of our students that reported working on a research project with faculty was much higher than the campus average (58% to 32%), and higher than for the average department in our college (49%). Because the level of student interest in pursuing research opportunities overwhelms our available slots on Biology research labs, many of our majors seek experiential learning opportunities outside of the Biology Department.

We utilize an on-line system called BURA (Biology Undergraduate Research Apprentice) where life science faculty post descriptions of research opportunities and students apply. Students like this system because they can learn about the range of research opportunities and get involved. These posted positions are usually quite competitive and all interested students are not served. Students can also enroll in a for-credit Independent Study "Teaching Practicum" in which they assist a faculty member in a course as an undergraduate Teaching Assistant. In the Practicum students learn how to teach other undergraduates and to answer questions during office hours. The Biology Department has a limited number of Summer Research Fellowships (3 for summer 2016), and an Undergraduate Travel Award program to provide limited funding for attending meetings and conferences. Unfortunately, there are far more students than research opportunities.

By many measures, Biology majors' satisfaction with their advising experience is low compared to their peers in other majors. Weaknesses in the current advising system fall into two broad categories: quantity of advising and quality of advising.

Quantity – As noted above, our advising effort does not reach all of our majors (at least in terms of in-person advising). Although some unadvised students may not want or need advising, it is likely that most members of the unserved group would benefit from advising contact. We would expect that more effective advising would improve the coherence of the curricula student follow and progression through the major, the four year Biology major graduation rate, and the transition into and from the Biology major into other majors.

Quality – Relative to our vision of ideal, effective advising for the students that we do reach, it is clear that we fall short in career advising, in establishing deep mentoring relationships with students, and, to a lesser extent, in providing complete and accurate information to all advisees. Based on impressions gathered from interactions with students, we suspect that these aspects of advising are also the ones that contribute most to student dissatisfaction with advising. However, we cannot be certain that our impressions are accurate because we lack high-quality, granular data on student opinion about advising.

- *Careers*. We do not provide effective career counseling or job/internship placement. Students would certainly benefit from such services, but we currently lack in-house expertise and staff time to provide it. Many other Life Science majors would benefit from the same services.
- *Mentoring*. For most students, we do not provide a deeply personal mentoring relationship between student and advisor. The ratio of students to advisors is too high, and the duration of advising meetings too short for advisors to develop in-depth knowledge of and acquaintance with most of the students advised. An exception is advising for Honors students; these students are assigned a faculty advisor and additionally are mentored by the faculty member who supervised their Thesis research.
- *Information*. Although our main advisors are very knowledgeable with respect to the range of information required for effective advising, the same is probably not true for the faculty that help out on an occasional basis. This arises, in part, because Biology is an extremely diverse discipline, and with our current system, the expertise of faculty is not matched to the interests of the student. As a result, some students probably receive inaccurate or incomplete information.

The goal of increasing student satisfaction with advising is complicated by several issues:

- Student perception of and satisfaction with advising is affected by factors that are not a function of the advising experience. In particular, students may be frustrated by overcrowding in the Biology major, which results in limited access to many courses and to positions in research labs. Because advisors are not able to provide solutions to these structural problems, some students may come to view advising as ineffective.
- Students have widely varying and often unrealistic expectations of what the advising process can provide. Failure of the advising system to meet unrealistic expectations may foster dissatisfaction.
- It has proved very difficult to get students who do not currently seek advising to voluntarily participate. Repeated efforts over the years (email outreach, group events, targeted workshops, referrals from College mandatory meeting) have not induced the nonparticipators to participate.

The University (umass.edu/oir-dept-review) provides information in specific metrics related to student satisfaction. For 2013-14 Biology students reported low satisfaction (1 S.D. below the college mean) in Access to classes in major, Career preparation and guidance in major, Writing preparation in your major, and Connections to the rest of your academics in your major. This is not an isolated observation – similar overall dissatisfaction was measured from 2007-2013. As mentioned in our Environmental scan Fall 2014, student dissatisfaction is likely to be highly correlated with the large size of the major: we have a high student to faculty ratio and our majors earn more than 60% of their credits in classes >100. Thus it is clear that Biology faces a challenging task to improve student satisfaction – and improvements in advising are an important component.

In summary, the Biology Department has one faculty member who handles, in addition to other duties, academic advising for ~1400 majors. He is assisted by faculty members during peak periods and by a staff member who provides considerable assistance each semester. Formal career advising is not available. Low satisfaction likely results from our inability to provide adequate and personalized advising to the large number of students. At the present time, we do not have a system in place to analyze and track the advising process.

Part Two. Goals for Academic and Career Advising and the Student Experience

Clearly, the number of Biology majors and our capacity for advising are at odds, and we argue, a contributing factor in student dissatisfaction. Our goals for advising are:

Academic Advising:

Our goal is to provide greater access to high quality advising. To accomplish this, we propose two solutions: implement a peer advising system and hire a full-time professional advisor. Peer advising is utilized by many departments at the University and many students find the assistance of peers welcome, useful, and non-threatening. Peer advising may attract some current nonparticipants who prefer to meet with a student rather than a faculty or staff member. The major challenges are to 1. Identify appropriate students; 2. Train the peer advisors so that the

information they provide is accurate and high quality; 3. Provide funds so that peer advisors can be paid for their efforts, ensuring that this is taken as a serious activity; 4. Monitor the program to determine if it is helpful and what improvements can be made. We will carefully assess the peer mentor program to assure that it is meeting our advising goals.

Our second approach, to hire a full-time staff member who is trained in advising, will open the door to a multitude of possibilities for addressing our advising challenges. First and foremost, a new staff member will enable more students to see an advisor. The new staff member can also use the EAB SSC advising tool to identify students who are struggling in our first year course, Bio 151,152 and 153. We believe that reaching out to these students will help address problems in a timely manner and increase the satisfaction of these students with the major. Currently, we make only minimal use of this tool and our goal is to use this tool to identify students struggling in the Introductory Biology sequence. As we become more familiar with the system we can use it to identify struggling students in other courses as well.

Over the years we have explored the possibility of mandating greater faculty participation in advising, an option that might obviate the need to hire additional staff. This has not proven an effective solution in large part due to necessity of training faculty so that they impart high quality academic advice to students, who range from Freshman to Seniors and have a wide range of interests and challenges. Additionally, given the large number of students, and limited times that students and faculty can meet, we cannot arrange for students to meet with the same advisor, and develop a relationship. Biology faculty do meet with students informally after class, during office hours and in their research programs all of which are important interactions. However, given competing demands on their time, our experience to date suggests that mandating greater participation in more formal advising is not a viable action.

Yet another option is to develop and offer a mandatory one-semester seminar for Biology majors that focuses on topics typically addressed in an advising context. Such a seminar would ensure that every Biology major is exposed to the information and resources needed for academic success. The target audience would be freshmen (or perhaps sophomores, so that the seminar would occur after the typical first-year shuffling of majors has already occurred). The seminar would probably have to be offered frequently enough to ensure that every Biology major completes it. This sophomore class would need to reach ~400 students, so new or reallocated personnel would be required.

We agree that all first year students should "know where to go" to get advising. However, we propose to devote our limited resources to students who have completed at least one semester as a Biology major. Since we typically have a sizable attrition (~30%) in our major as students shift from Biology to other majors, our effort will be better spent after this shake-out has occurred. Additionally all entering students receive mandatory advising sessions at the college level, summer advising and a NSO manual, which we believe are significant resources that should provide the resources to "know where to go".

Career Advising:

We believe that the College of Natural Sciences needs a comprehensive plan for career preparation for life science majors. Biology is a diverse discipline and graduates enter a wide range of careers including health professions, education, biotechnology, environmental careers etc. There is considerable overlap among majors in CNS as to the types of careers that students

enter, suggesting that a central CNS Career Office would be an efficient solution for this type of advising. Biology faculty can be extremely helpful for students seeking academic careers, but for the most part Biology faculty lack the training and experience in career counseling to perform this job. During the process of academic advising, we do inform students about career advising opportunities on campus. For example, pre-Health students are directed to seek career advice from the Pre-Med and Pre-Heath Advising office, and students interested in research, biotechnology and internships are directed to our BURA program or the Office of Undergraduate Learning and Scholarship (OURS), and all students can seek advice from the existing UMass Career Services office.

While it is difficult to accurately determine the number of our students that participate in an internship or other career preparation, 52% of Biology majors report that they were involved in practica or internships. Many students seek out such experiences independently, for example pre-health students find opportunities to volunteer at local hospitals and clinics and other students perform internships over the summer months. These latter positions are not typically credit-based, so we do not have detailed data. However, a high % of our students report that they worked on a research project with a faculty member.

To make sure all of our students are aware of the opportunities for academic and career advising, we propose to redesign our web site. We believe that this action will be helpful in increasing the chances that students will encounter information important to academic success and career preparation. Funds would be required to implement a professional web redesign, and ongoing staffing would be required to maintain and update the web and implement a social media presence. Without continual monitoring and updating, web and social media content quickly becomes stale and ineffective.

We also aim to implement a web-based interface for making advising appointments online. This action would result in a small but possibly helpful change. Students who for whatever reason don't wish to call or stop by the advising office to make an appointment might make an appointment online. One drawback: our current method of making appointments allows for effective triage at the point of contact (e.g., students can be referred to the most appropriate advisor, or desired information can be provided at the point of contact) and students making online appointments would lose this benefit. Also, it is not clear that currently available scheduling software can address all of our logistical needs (e.g. accommodate continually changing advisor availability). Implementing online appointments would require a relatively modest but ongoing commitment of funds.

As already mentioned, students satisfaction with Biology is not as high as we would like. Our goal is to move students from the category of "unsatisfied" to the "satisfied" category. To address this we first need to understand the nature of the dissatisfaction. In consultation with the Office of Academic Planning and Assessment (OAPA) on campus, we propose to develop a survey to identify the factors that lead to dissatisfaction. Once we have these data, we can identify problem areas and initiate solutions to remedy them. This tool will also allow us to monitor our progress as we move forward.

Part Three: Academic and Career Advising Action Plan

Based on our analysis of the issues related to Advising in Biology we propose the following actions:

1. Using existing, or reallocated, resources we can:

a. Revise the Biology web site. There has been much prior discussion of the need to revise our website, which is incompatible with mobile devices and lacks some features that students expect in a modern, easy to navigate site. Addressing this issue will allow us an additional means to provide information to students that we believe will assist them in navigating the major. Although this will require funds, revising the website will impact many areas of our Department, and it is likely that reallocated funds can be used for this purpose.

b. Create a survey to identify underlying issues that impact student satisfaction. In collaboration with the Office of Academic Planning and Assessment we will generate a tool for assessing and monitoring student satisfaction with Advising. The key here is to understanding the underlying issues that impact student satisfaction and, once identified, devising mechanisms to correct them. This tool is important because it will be a mechanism to monitor the results of our actions, including peer advising.

2. Actions that require additional resources:

a. Hire a professional academic advisor. This action would increase advising capacity and create new options for addressing the issue of Biology majors who do not receive advising. Additional staff dedicated to advising would open many new possibilities. For example with a dedicated professional advisor we can learn the causes (see below) of student dissatisfaction and begin to remedy the situation. The advisor can make greater use of the EAB SSC resource to monitor student progress and intervene when needed. More students can meet with an advisor. We believe that this option is most likely to increase satisfaction in the major. Although a professional career advisor, who could provide career counseling, internship development and job placement, would greatly benefit our students, at the present time we will continue to make use of other resources on campus that provide these services.

b. Explore a peer advising system. We propose that a faculty committee be charged with generating a plan for implementation of a peer-advising program for Biology. During Fall 2016, this committee can work with the entire faculty to identify student mentors, design a training program and propose a peer-advising program. Funding for paying peer advisors, and for follow-up on the effectiveness of the program will need to be identified. We will advertise the program to students via our web site, and monitor the results with our survey (see below). If a professional advisor is hired, they could assist with this program.

c. Implement a web-based interface for making advising appointments online. This is a modest, but potentially helpful change that we believe will increase students seeking advice. As mentioned, implementing online appointments would require a relatively modest but ongoing commitment of funds.