

BOTANY DEPARTMENT ASSESSMENT COMMITTEE

Summary of Graduate Assessment


2000-2001

Interim Report

The main exercise of the Assessment Committee this year has been an evaluation of our graduate training program, based on a four-page questionnaire that we asked all of our graduate students to complete. Questionnaires were distributed in November of 2000 to all graduate students who are working under the direction of a Botany faculty member, regardless of the students' majors. Of the 60 questionnaires that we distributed, 25 were completed and returned—a return rate of about 43%. The information derived from these 25 questionnaires is summarized here in the form of an interim report. (The full report also includes a 20-page appendix that includes most of the students' responses quoted verbatim with minimal editing. Please let me know if you would like a copy of the appendix—or, for that matter, if you would like to look at the original questionnaires.)

This compilation is intended as an interim report because the Assessment Committee has yet to evaluate the data—especially the student suggestions IV-5 of the report (on pages 5-7)—and formulate recommendations that will then be brought to the department for discussion and possible action. We anticipate doing so early in the fall semester.

Sincerely,



Wayne M. Becker, Chair
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Introduction. The main exercise of the Assessment Committee this year has been an evaluation of our graduate training program. For this purpose, we asked all of our graduate students to complete a four-page questionnaire, a copy of which is included here as Appendix I. Of the 60 questionnaires that were distributed¹, 25 (~42%) were completed and returned. The information derived from these 25 questionnaires is summarized here,² in what is intended as an interim report, with a final report and committee recommendations yet to come.

I. Academic Background of Respondents

Of the 23 students who responded to the first section of the questionnaire, most (13) are in their first or second year of grad school, while another group (7) are in their third or fourth year, and a few (3) have been here for four or more years. The respondents included 19 PhD candidates and four who are working toward a MS degree. Of the 19 PhD candidates, 8 have passed their prelims and 11 have not. The students anticipate that they will graduate in the years 2001 (4), 2002 (6), 2003 (2), 2004 (3), or 2005 (4).

Asked about their undergraduate institution, five respondents are from colleges (Calvin, Dartmouth, Davidson, Dordt, and Westminster), 14 are from universities here in the US (including 4 from the Madison campus and 2 from Stevens Point) and four from foreign universities (2 in China, 1 each in Canada and Venezuela). Of the respondents, 15 had no prior graduate training while 8 came with Master's degrees, including 2 from UW-Madison and 2 from foreign universities (1 each from China and Canada). Most (19) reported job experience prior to enrolling in graduate school here, ranging from 1 year to 4 or more years. The nature of the jobs varied greatly, but most were employed as teachers (4), lab technicians (4), environmental workers (5), or technical writers (2).

Many of the respondents (22) had prior research experience, most commonly as an undergrad but also as a Master's degree candidate, a lab technician, or in environmental fieldwork. A surprisingly high number of students (13) also came with prior teaching experience, most commonly as a teaching assistant (8) or a faculty assistant (2). When asked about their professional goals, the most common responses were to become a professor (11), a teacher (8), a researcher (4), or a writer (3). (*Note: It was not clear from the questionnaires whether all of those who specified "teacher" or "researcher" were thinking of a career goal distinct from "professor" or whether these several categories perhaps overlap.*)

II. Assessment of Previous Background and Training

In Section II of the questionnaire, respondents were asked to assess the helpfulness of their background by rating their training in each of the seven areas that we have identified as the specific goals of undergraduate training here in our own department. Rating was on a scale of 1 (poor) to 5 (excellent). Table 1 is a summary of the ratings provided by all 25 respondents. In general, respondents seemed the most confident of their research capabilities and their training in literacy (defined as reading, writing, and critiquing skills), and the least confident in the computer literacy and training in numeracy (analysis and modeling). However, the means did not vary greatly and the differences are not statistically significant.

¹ Questionnaires were distributed to all graduate students working under the direction of a Botany faculty member, whether or not the student is majoring in Botany. Common alternative majors include Genetics, Cell and Molecular Biology, and the Institute for Environmental Studies (IES).

² The number of responses to various questions in the questionnaires does not always add up to 25, in part because respondents sometimes included multiple responses and in part because some respondents left some items blank.

Table 1. Summary of self-assessment of previous background and training

Goals of undergraduate training (of the UW Botany Department)	Helpfulness of previous training *					Mean +/- SD
	1	2	3	4	5	
Broad education in plant science	2	4	2	6	11	3.72
Rigorous training as a scientist	3	0	5	12	5	3.64
Research capability	1	0	2	16	6	4.04
Literacy (reading/writing/critiquing)	0	0	2	8	15	4.52
Numeracy (analysis, modeling)	1	3	9	10	2	3.36
Computer literacy	0	5	5	12	3	3.52
Documentation (keeping a notebook)	0	2	9	9	5	3.68

* Scale: 1=poor, 2=fair, 3=average, 4=good, and 5=excellent

Respondents were also asked to identify the greatest strengths and the most serious weaknesses of their previous education. Their responses are tabulated in Appendix II, including both strengths (II-1) and weaknesses (II-2). The strengths referenced most frequently included the breadth and depth of their education (11), acquisition of research skills (6), emphasis on writing skills (3), high academic standards (3), and rigorous training (2). The specific weaknesses cited most often were inadequate research opportunities or experience (7), lack of coursework in specific areas (4), and lack of computer experience (2). When asked whether there were specific courses they wished they had taken prior to enrolling here, respondents cited the courses listed in Appendix II-3. These included basic courses in physics (6), chemistry (4), and botany (4) as well as more specialized courses such as statistics (4), computer science (2), molecular techniques, and experimental design.

III. Reasons for Choosing UW-Madison for Graduate Education

In Section III of the questionnaire, respondents were asked to specify their reasons for choosing the University of Wisconsin-Madison for their graduate work. As Appendix III-1 indicates, their reasons included the quality of the Botany Department in specific (12), of the university in general (5), and of the faculty (11). Various personal reasons were also cited (10), including financial support (2), familiarity with the setting (3), a fondness for Madison (2), and specific family reasons (3).

The questionnaire went on to ask whether the respondents had given serious consideration to other institutions and, if so, which ones and why they decided in favor of the UW-Madison instead. The responses are summarized in Appendix III-2. Ten respondents answered "no" and 15 answered "yes." Of these 15, two responded very generally while the other 13 named one or more institutions, along with their reasons for deciding against those institutions. Numerous universities were cited; notable among them are Duke, Indiana, Ohio State, UC Berkeley, UC Davis, the University of Michigan and the University of Minnesota. In essence, most of the specific reasons given by the 13 students who named particular schools were covered by the two general reasons cited by the other two students: The other institutions were regarded as either not as good academically as UW-Madison or as lacking in some of the key assets found here, including specific facilities, specific degrees offered, specific profs to work under, and/or the range of interesting research possibilities. In several cases, the other institutions were identified frankly as "back-up school," of interest only in the event that the student was not admitted here. In one instance, financial support was cited as an important factor in the decision.

The final question in Section III of the questionnaire asked whether the respondent is happy with his/her decision to come to the UW-Madison for graduate work and to specify why or why not. The responses are summarized in Appendix III-3. Of the 25 respondents, 23 answered with an unequivocal "yes," while the other two were generally positive but more equivocal in their responses, including the observation that "I don't know how much better (or worse) I would have been elsewhere." The most common responses were happy (4), very happy (3), very much (2), and "learning a lot" (3), while others characterized their feelings as "almost wholeheartedly," "thrilled to be here," and "so-so." The most frequently cited reasons for being satisfied with UW-Madison as their choice included the faculty (5), fellow students (4), the campus (3), available resources (3), the student's specific lab (3), the city (3), the department (2), specific courses (2), and the learning environment (2). Other reasons included the diversity of opportunities, the academic challenge, the opportunity to explore broad botanical questions, "exposure to many new ideas which have broadened my intellectual horizons," and "the feeling that we're all working on the same team." The only negative features mentioned were a dislike of the weather, a "tremendous sense of inadequacy not having the fundamental courses," and "a lack of good facilities, particularly reliable access to modern computers, quiet workspace and ergonomically-friendly computer desks."

IV. Assessment of Graduate Training to Date

We regard Section IV as the most important part of the assessment questionnaire because it asked the students to evaluate their training to date and to offer specific suggestions whereby our graduate program might be improved. In keeping with the formal goals we have set for our graduate program, the first questions in this section asked the student to assess his or her training to date as a researcher and as a teacher (questions 1 and 2, respectively). Students were also asked to identify the greatest strengths and most serious weaknesses of their graduate training thus far (questions 3 and 4). Specific suggestions were then elicited (question 5), as well as remarks on the student's "sense of belonging." (question 6) and any further comments they chose to make (question 7). Responses to each of these questions are summarized in Appendix IV and are discussed here.

Training as a researcher (Appendix IV-1). When asked about their training in research, two students answered that they have not been here long enough to comment, while the others offered a wide variety of responses, ranging from an unequivocal "yes" (9) to a qualified "yes, but" (11) to an outright "no" (3). Those who responded with an unequivocal "yes" cited a variety of reasons, including these: in the lab learning every day; getting a lot of exposure to conducting, critiquing and discussing research; learning cutting-edge molecular techniques; don't know anyone else who teaches me to think critically as well as those in my lab; being exposed to many aspects of research; advisor sets aside an hour or more per week when we can get together to discuss research; and courses I'm taking help because they require research projects. Judy Croxdale's microtechniques course was cited specifically as "helping me the most."

Respondents who qualified their "yes" with a "but" went on to mention various concerns, including the observation that "I do not feel the program has 'trained' me in any way" and the caveat that the training hasn't necessarily been "rigorous." Several students noted the extent to which the answer is contingent upon the student's advisor, with comments ranging from "I could use a little more guidance" to "this is wholly dependent on having a good advisor." Several lamented the absence of specific courses, citing variously a course in molecular systematics, "a class for undergrads and deficient grads like me on how to function as a grad student," and "a rigorous historical and conceptual background for the work we're doing." Two respondents cited both strengths of their training (independent study and presentation; decision making skills, scientific method, perseverance when projects go wrong, data analysis, and critical thinking) and weaknesses (inadequate training independent thinking and the ability to critique; not enough emphasis on data analysis or modeling; and not enough communication activities to convey results to non-scientists and other scientists).

Of the three who answered “no,” one observed that “my training has not been directed—strictly a ‘sink-or-swim’ approach,” while another said that “the only research-type thing I have done is trying to choose a thesis topic, [which] has taken much too long, largely due to my own lack of discipline and commitment.” The third replied that “I am not yet engaged in research; instead I am immersed in gaining appropriate background knowledge and theory. A weakness of this program is the focus on long-term (i.e., Ph.D) research at the expense of gaining practical experience doing more modest yet relevant studies.”

Training as a teacher (Appendix IV-2). Categories of response to this question were similar to the above: Some students had no experience on which to base comments (5), some answered with an unequivocal “yes” (5), more responded with a qualified “yes, but” (9) and a few replied with a “no.” Those in the no-experience category added uniformly that they have not yet had any teaching experience in the Botany department. Respondents who answered “yes” have all served as teaching assistants within the department and cited one or more of the following as reasons for their positive response: the departmental TA training program, the peer TA training conducted by experienced TAs, the hands-on experience of being a TA, and input from professors.

In the “yes, but” category, respondents added a variety of qualifying comments, including the following: Training has come mainly from many semesters of experience, not from departmental programs; it depends very much on the course; no training is offered in quiz development or grading; I have no support structure for becoming a better TA [and] have gotten little feedback; and we only receive on-the-job training [but] so much more could be done. One student observed that “most of this [training] is done by senior grad students rather than by faculty members” and asked “Is this wise?” Several acknowledged the existence of helpful seminars and classes, “including Judy Croxdale’s course on teaching.”

One of the three students who responded to this question with a “no” observed that “I was just thrown into the classroom [with] little teacher-to-teacher mentoring/sharing of teaching experience—each set of new TAs has to re-invent the wheel,” while another commented that “the extent of my training has been general, brief, and not given by people with any special training.” The third respondent lamented that “I feel completely inadequate about teaching...I’m not teaching yet but I hope to gain a fuller and broader understanding of Botany before my time to teach presents itself.”

Strengths of graduate education to date (Appendix IV-3). Almost all respondents identified particular strengths of their graduate education to date. Most of their comments fell into five main categories: research opportunities and training, coursework, resources, interaction with others, and development of thinking skills. Under research, students commented favorably on their exposure to world-class research, the high level of technical training, and the focus on collaboration—being part of a research community in which “everybody helps everybody else.” As one student put it, “I am amazed by how helpful and interested other faculty and grad students are in each other’s work, which promotes a positive atmosphere for learning.” Coursework was praised variously as “excellent,” “rigorous and informative” and “of high quality.”

The quality of resources was cited by several respondents, with the libraries referenced specifically by three students. Interactions with other students, professors, and visiting lecturers are also appreciated. One respondent cited “the excellent rapport betwixt grad students as well as betwixt students and faculty” while another stated that the department’s greatest strength is “the intellectual and personal support I’ve received from my fellow grad students.” The development of thinking skills was identified as another strength of the department. Included in this category are exposure to new ideas and ways of thinking, critical thinking, learning the language of science, the ability to find and focus on the appropriate questions, problem-solving skills, independence and creativity in studies, and “learning how to teach myself what I don’t know.”

Based on suggestions from our graduate students, what this department needs is:

1. An informational session to explain the mechanics of grad school (set up by the Grad School, perhaps?)
2. A program whereby the two-day orientation in August during which we meet every person in Birge is replaced by a weekly seminar at which each professor would have an opportunity, in turn, to introduce his/herself, research interests, lab focus, etc. for half an hour once, but spread across the semester as a one-hour seminar class. This could involve two half-hour sessions a week that new grad students would be required to attend; the two-day thing was too brief, too new, and too hurried to be of significant value.
3. A rotation system for new grad students so that they can get to know many of the faculty and feel comfortable talking to them; this would also enable students to know where to go for certain expertise.
4. A graduate student support group to help motivate and diffuse stress and to facilitate communication between labs.
5. An atmosphere in which graduate students are treated like professionals, not lowly students: I see a big difference [when comparing Botany with other departments]: In other departments, Ph.D. students are considered collaborators who are actively engaged in their field; in Botany, by contrast, a lot of professors make the path to a Ph.D. unnecessarily hard and demeaning, whereas it should be a supportive, collaborative, creative, and exciting process.
6. More guidance in designing a Ph.D. project
7. A weekly or biweekly seminar to present research, even in very early stages, to keep people informed of what is going on in the department.
8. Some sort of integration, collaboration, meetings, etc. with all of the graduate students, maybe every other week with a different student speaking about his/her research.
9. A seminar for each graduate student each year to present his/her research work and progress at the end of that school year.
10. More time together with the other plant ecology labs; e.g., monthly plant ecology journal club meeting.
11. An informal grad group in which people can get feedback and bounce ideas off one another like the Madison Ecology Group.
12. More practical research experience, with more emphasis on local ecosystems, local flora. (How many people here in the department could identify 10 species of *Panicum*, or even tell you where to find 1?)
13. Feedback among graduate students and faculty on what courses/seminars graduate students would like to see offered or “need”; e.g., seminar on ecological methods, writing and publishing a research paper, etc.
14. More seminar classes: I think they are valuable in introducing students to new areas of research and in giving practice in presenting. It seems like it would be easy to have more, since they shouldn't require a big investment of teacher time
15. More applied statistics—like learning the syntax of SAS, for example.
16. Fewer required courses; to compensate, re-instate a general knowledge exam during doctoral prelim exam.
17. More rigorous prelims: The prelims we have are embarrassing to discuss with people from other departments. In geography, for example, a grad student reads about 50 books and gets examined on those. In philosophy, a student needs to write 3 publishable manuscripts. All we have is a research proposal defense as a preliminary exam, and it does not ensure a broad background to the Ph.D. work.

Weaknesses of graduate education to date (Appendix IV-4). Apart from four students who felt they had not been here long enough to identify weaknesses, respondents were not at all hesitant to do so. Here, the comments fell into five main categories: lack of communication within the department, coursework, research opportunities and training, concern about advisors and other, more general comments. Inadequacy of communication was cited with concern by several students, though each with a different emphasis. One mentioned the spatial segregation between different sections of the department and another observed that the research programs of graduate students are so specialized that students can't always understand each other's work, sometimes even in the same lab. Two others were quite blunt. One observed that "our department is very insular and becoming more so all the time," while another expressed concern that the department is not cohesive, adding pointedly that "one thing that really makes me angry is the extreme politicking that occurs among certain faculty members and the lack of inter-lab interaction even among those with the same focus area."

Concerns about coursework focused on the unavailability of courses ("Many of the courses in the program listing have not been offered in years"), too few field courses, not enough variety in courses, lack of focus on critical thinking and assessment, and variation in level of difficulty ("Some courses are too easy, while others are too hard for their credit units.") One respondent commented at length on the lack of emphasis on writing in our graduate courses: "I've never written so little in a semester. I expected graduate school to be more writing-intensive. Unless I communicate the ideas and new vocabulary that I acquire from my classes, they fade rapidly."

In terms of research opportunities, respondents cited the lack of methodological grounding, the lack of a forum to present graduate research and give and receive feedback, and the "lack of a moderate-sized research project which would give practical training in experimental design, collection and analysis of data and preparation and publication of manuscripts." Advisors came in for criticism by two respondents, in one case for being "not particularly attentive in helping me design a project" and in the other for being "spread too thin—doesn't have much involvement in formulating research with students." Other weaknesses mentioned included the lack of information on the mechanics of grad school ("I still don't really understand how all that stuff works"), the lack of an ecology reading group ("due to, or so I'm told, schisms between faculty members"), colloquia that are too narrow and repetitive in theme ("Get some diversity [and] hold it in a place where students and profs can interact—B302 is a bad place for promoting interaction").

The final comment is sufficiently thoughtful to warrant inclusion in full: "I think the biggest weakness is the one shown in this form, where 'education' and 'training' are deemed synonymous. To me, training implies developing technical skills, whereas education implies learning to think for oneself (or to think 'outside the box'). This department provides technical training, but it seems to be lacking in education (or at least I've missed the educational courses). I am troubled by this. Our society is changing so fast that educating adaptable people seems at least as important as training people in today's technology."

Suggested changes in graduate training (Appendix IV-5). When asked to "suggest 2-3 specific changes in the way you and your peers are being trained as graduate student," respondents offered a remarkable variety of suggestions. Rather than attempt to summarize or categorize the suggestions—and thereby perhaps to mute their emphasis—we will simply list them here, with only modest editing to reduce length in some cases.

Please note, however, that what follows is just a compilation of student suggestions at present, grouped to some extent by content. Specific recommendations will be forthcoming from the Assessment Committee but this list of suggestions should not be construed as carrying the endorsement of the Assessment Committee at this point; it is simply a compilation of the suggestions offered by the 25 respondents to our questionnaire.

18. A format for acquiring management skills: Since most of us will be responsible for running our own careers, if not our own labs, why not steer grad students toward management-type courses that might be useful in this regard?
19. A format for teaching communication skills: I know this is “trendy,” but I strongly suggest courses to teach us how to communicate with the public and non-specialists. Since these are the people who are ultimately funding our work, learning to communicate the value of our work to them would seem to be vital.
20. A mandatory teaching course to be taken before, or concurrent with, the first semester of TAing.
21. A required seminar or course in education: Yes, it’s another requirement, but hopefully a useful one if a major goal is to make us better teachers
22. A means whereby faculty can help students balance the teaching/research life: Although teaching is a very good experience, teaching in botany department weighs too much.
23. A graduate student lounge where students can interact.
24. An adequate computer laboratory with equipment (e.g., slide printer, scanner) that we can use and printers (even if they are card-charge machines).
25. A computer lab with programs such as ArcView, Adobe Illustrator, SAS, a scanner, a laser printer (or color laser printer), and multimedia equipment.
26. Training with multimedia equipment, such as sign-up courses for slide scanner, flatbed scanner, tips on using Adobe Photoshop, etc.
27. A larger web presence with web pages for all faculty members and for current research news.
28. A machinist to help build equipment; Nelson was awesome!
29. More semesters of guaranteed TA support for students who enter with a Master’s degree: Nobody finishes a Ph.D. in 3 years, and the schedule already feels rushed as it is.
30. A yearly trip to some place that’s botanically interesting—e.g., the Ridges Sanctuary in Door County—as a group.
31. A burying of the hatchet between ecology personalities.

A sense of belonging (Appendix IV-6). The penultimate question on the assessment questionnaire asked: “Do you feel a part of the Botany Department? If so, what contributes to that? And if not, what changes would make it more likely that you would feel connected here?” Of the 24 who responded, 16 answered with an unequivocal “yes,” a further six replied with a “yes, but...” and two said “no.”

Those who answered “yes” attributed their sense of belonging variously to friendly profs, students, and office staff, FAC, colloquium, departmental picnics and parties, and the small size and centralized facilities of the department. Other factors include the closeness of lab- and office-mates, opportunities to interact with others, good communication, great support people and resources (library, herbarium, greenhouse, etc), opportunities to chat informally, inclusiveness of the department, and the close-knit nature of the department, which was expressed by one respondent in this way: “Almost everybody says hello and knows me by name. When we get together for a group event—e.g., the holiday party—it’s always an informal gather but clearly one into which everybody puts some real effort. People seem to really care about their lives and work here, and about each other.”

Respondents who answered “yes, but...” cited a variety of reasons for qualifying their response. These include the need for better communication between molecular and ecology students as well as between students and faculty, a lame colloquium series (“the same type of research is presented again and again, with poor venues for intellectual discussion, no mixing after the talk, scheduled too sporadically) and what one student described as “strong divisive elements,” as evidenced not only by the “division between basement and non-basement” but also by the divisiveness within the ecology section. The latter concern surfaced several times and was attributed variously to the disparate research interests within the section, the involvement of only some labs in the ecology field trips (“it’s too exclusive”), and what one respondent characterized as “the pathetic personal feud between two faculty members.” One student was especially pointed in his/her reply to the question of belonging: “Yes, but thanks only to the efforts of my fellow graduate students and not to the efforts of the faculty (though with some important exceptions). I realize that the feuds within the department are old and deeply-etched, but (in my opinion) the only reason this department isn’t more balkanized than it is now are the efforts of a few grad students to bridge the gaps among the different labs. The faculty should learn something from this.”

The two students who answered this question with a “no” also mentioned divisiveness within the department. One said “I feel more a part of my minor department than I do in Botany,” citing as contributing factors the large size of the Botany department and the need for a graduate student lounge for ongoing interactions (“FAC is not enough, especially if you don’t drink”). The other student suggested that we have “some sort of community service project to which it was dedicated from year to year. Something like that would have everyone functioning as a unit rather than as several divided segments.”

Other comments (Appendix IV-7). The final item on the questionnaire asked, “Are there any additional comments you care to make concerning the quality of your graduate experience?” A few of the responses were on new topics (such as the two who acknowledged gratefully Davis Fund support), but most echoed points that had already been made in response to prior questions, including the quality of resources, the productivity of the department (“positively stellar compared to other institutions”), the need to “get our acts together on our lab web pages,” and the problem of isolation and increasing cohesiveness. Regarding the latter, one student responded quite gloomily: “Collegiality within the department is on the decline. More and more, each lab is isolated in its own pursuit of research and funding from outside. The pressure to get published and funded decreases cohesiveness within the department between labs and between sections. I don’t believe this situation is likely to change, and the experiences of future grad students will be of ever- diminishing quality as a result.” Other suggestions included getting the lichen herbarium in better order (“many taxonomic changes have been made, resulting in an out-of-date herbarium”) and providing better graduate student work spaces, the latter as an especially impassioned plea: “This may be less relevant to students with lab-oriented work, but everyone has to do some writing, reading, modeling, statistics, preparing presentations, etc. To do these things, you need a quiet place and reliable access to a computer – and in a place that doesn’t give me tendonitis just to look at it.”

V. CONCLUSION

This is intended as an interim report only, summarizing the responses received to the graduate questionnaire. A final report will be forthcoming, which will include specific committee recommendations to the department, based at least in part on the information summarized here.

Respectfully submitted for the Assessment Committee
to the faculty of the Department of Botany
by Wayne Becker, Committee Chair
on May 11, 2001

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