LEAD CENTER
LEARNING THROUGH EVALUATION, ADAPTATION AND DISSEMINATION
UNIVERSITY OF WISCONSIN - MADISON

Department of Botany
Assessment of Undergraduate Program
May 1997

Findings and Recommendations of the Assessment Committee

By
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I. Introduction

Purpose

The Department of Botany has initiated an ongoing process of evaluation of its undergraduate program that will include student interviews and alumni surveys. This report is an initial summary of a two-part process that involves interviews with undergraduate students in botany in Spring 1997 to be followed by a mail survey of botany alumni which will take place in Spring 1998. The purpose of this year's assessment was to gather the perspectives and suggestions of undergraduate students about their experiences as Botany majors. The evaluation process has focused on gathering information about the quality of the undergraduate program as a whole. We have not attempted to evaluate individual courses or individual faculty within the department.

Summary of assessment process

In January of 1997, the Botany Department created an assessment committee of five members (two faculty, one academic staff, and two graduate students). It is anticipated that several members on this committee will be involved in future department assessment activities, thereby providing continuity. An evaluator from the LEAD (Learning through Evaluation, Adaptation, and Dissemination) Center participated with and provided guidance to the committee throughout the process. A short summary of the process is described below, whereas a detailed summary and critique of the process is available in a report entitled "*Summary of Assessment Process, May 1997.*"

In January the committee agreed on a plan to conduct approximately 24 individual student interviews, followed by two or three follow-up focus group interviews. As of February 1997, there were 40 current juniors and seniors who had declared Botany as a major. The committee developed a set of interview questions (Appendix A) and a very short written survey (Appendix B) to be completed by the student prior to the interview. These drafts were reviewed, modified and approved by faculty in the department. The committee also developed a short "consent form" to be signed by the student prior to the interview. This form notifies interviewees that the process is voluntary, that the substance of the interview and the identity of the botany student would remain confidential, and that only members of the assessment committee would review the transcript.[1] In preparation for the interviews, committee members discussed interviewing techniques and purposes, and practiced and critiqued an interview.

In early March the department office staff contacted students by e-mail and telephone to ask them to participate in individual interviews. Twenty-four interviews of approximately 45 minutes each were scheduled. Over a two-week period in March the interviews were conducted by three committee members and the LEAD evaluator. Interviews were tape-recorded and then transcribed by staff from the LEAD Center. These transcripts were distributed for review among the five committee members and the LEAD evaluator in such a way to assure that each transcript was read by two committee members who had not conducted that interview. After studying the transcripts, the assessment committee conducted a long working session and used an inductive

[1]The committee voluntarily chose to use a consent form. We were informed by the Human Subjects Committee that approval was not necessary because the purpose of these efforts was clearly program evaluation, not research.

brainstorm method to summarize the issues identified by each student. An interim summary of the findings was generated.

Based on the findings from the individual interviews, the committee identified additional questions that could be asked of students through follow-up focus group interviews (Appendix C). Using e-mail and telephone invitations, all forty juniors and seniors were invited to participate in one of two follow-up focus group discussions. Ten students agreed to participate in the sessions, although a combined total of four students actually showed up (due mainly to a lack of adequate confirmation by the department). Focus groups, which took place in mid-April, lasted one and one-quarter hour, with pizza and soft drinks provided.

After the focus groups were completed, the committee integrated the information gained through the focus groups with the findings from the individual interviews. The committee then drafted and agreed upon this document of findings which will be presented to the faculty of the department.

Background information provided by students interviewed

The following information was gained through the short written survey completed by students immediately prior to the interview. Please note that although 24 interviews were conducted, only 22 surveys were received from students.[2] Some students did not complete every survey question, thus totals noted below do not consistently add up to twenty-two.

Of the 22 students who completed the survey, twenty reported working toward BS degrees and one was working toward a BA. Fourteen students noted they have done or plan to do all of their coursework at UW-Madison, while eight had transferred into UW-Madison from another institution. Most of those interviewed had declared botany as their major in 1996 (See Table 1). Some students who were interviewed had declared botany as their major only recently and had therefore completed very few courses in the Botany program. Nine of the twenty-two students plan to graduate in 1997, nine in 1998, and three plan to graduate in the year 1999.

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[2] **Use of Verbal Quantifiers**

When appropriate, we indicate the number of students who discussed a particular topic to help convey the weight that might be assigned to the topic. At other times, verbal quantifiers are used to denote the relative number of students who made a particular point. The verbal quantifiers used in this report are:

"a few":	used when up to 10% of the respondents presented the point
"some":	used when 10 to 19% of the respondents presented the point
"many":	used when 20 to 49% of the respondents presented the point
"a majority"	used when 50 to 69% of the respondents presented the point
"most":	used when 70 to 89% of the respondents presented the point
"virtually all":	used when 90 to 100% of the respondents presented the point

TABLE 1
Year in which interviewees declared Botany as a major
Total number interviewed = 22

Year declared	Interviewees who declared in that year
1993	1
1994	3
1995	4
1996	13
1997	1

Botany 130 was by far the most common introductory course taken by students who went on to major in botany, with fifteen of the twenty-two students indicating that they had taken this route. Four students took Botany/Zoology 151-152, and three had gone through the Biocore sequence.

When asked about plans after graduation, nine students reported that they intended to go to graduate school, six planned on employment, and six had not yet decided. Of those who planned to attend graduate school, none had made a decision about which graduate school he/she would attend. Of those planning on employment after graduation, one out of 12 who answered this question had a job lined up. We note, however, that some of the students we interviewed had not yet come to the stage of conducting a serious job search.

II. General Findings

Students expressed considerable enthusiasm for the department as a whole, for the undergraduate curriculum in general, and for most of the courses they had taken. When students were asked to name the most valuable course they have taken, every undergraduate course that the department offers was mentioned by at least one student. Students were very satisfied and stated that some of the strengths of the department are that the program provides a good foundation for further work, that the UW-Madison has a good reputation, and that the department has exceptional professors. Others noted that TA's are excellent, and that labs are small and good. Without hesitation, most students would recommend the department to a friend with an interest in botany. In general the format of the curriculum is well received, and students commented that it provides important breadth and structure but also allows enough flexibility.

Although students held overall positive views about the program, they also identified several issues which they felt could be strengthened or improved. These issues are addressed in the following section.

III. Specific Findings

For purposes of this report, the assessment committee has grouped the findings into headings that identify the most pertinent areas of concern presented by students. These are: departmental goals, curriculum, senior thesis, department/student relations, and two aspects of advising.

1. Departmental Goals

In the fall of 1996, the Department of Botany established seven goals for the students in the department (see Appendix D). While we did not expect students to be aware of the newly created departmental goals per se, we queried students about their reactions to the goals and asked them to rate their competency in each of the seven areas.

Although students were unaware of the existence of formal goals, virtually all thought it was important to have goals, and several noted that the goals as formulated seem to be appropriate and meaningful for a botany major. A summary including all student comments from the written survey is presented at the end of this report (Table 2). Among the seven goals, several students indicated on the written survey or commented during the interview that the program needs to provide better opportunities for the development of competence in three goal areas in particular. These are:

- Goal 3: Research opportunities
  Students tended to interpret this goal in terms of the senior thesis/composition requirement. Several students noted that opportunities for research could be enhanced. However, most of the students had not done their senior thesis yet, and therefore could not yet comment knowledgeably on the department's success in developing these skills.
- Goal 5: Numeracy
  In the view of several students, numeracy is not adequately emphasized in botany courses. See Table 2 for comments written by students.
- Goal 6: Computer literacy (database usage)
  Most felt that their own word processing and other computer skills were adequate, but that courses need to include more database usage. Computer Science 132 was viewed as too basic for this purpose. In general students felt that the department should not offer a separate course, but should build computer usage into labs (such as those in Botany130) and into the senior thesis/composition and other courses at regular points. Examples offered by students included the addition of data analysis graphing to the plant physiology lab (Botany 501), and addition of information about access to resources (e.g. Cricket Graph) to the Botany home page. A few students suggested the Chemistry home page as a good example of how such information might be provided.

2. Curriculum

- In general, students think the requirements of the curriculum offer important breadth in addition to valuable direction for the major. Virtually all students felt that the "five out of six areas" requirement was a notable strength of the program. A few students even felt that courses in all six areas should be required.
- A few students stated that physics should be required because it is needed for graduate school. The committee notes that this requirement has recently been added within L&S.
- Several students suggested that the department should integrate into its program more applied plant science courses such as those offered by the horticulture and agronomy departments.

- Several students who are double majors in Botany and CALS pointed out that departmental advisors need to be more informed of the complications that double majors face.
- Several students pointed out problems with Bacteriology 303 and suggested that the department might re-examine its recommendation of this course.
- Several students felt it would be desirable if the department offered courses in tropical botany and mycology. The committee hopes that future hiring in these areas will address this issue.
- Several students suggested that more field courses are needed.
- Several students were concerned that the capstone course is not offered regularly and that they currently have no way of knowing when and if it will next be offered.

3. Senior Thesis/Composition

- Students unanimously felt that the thesis was an important requirement. In fact, several said that the Botany Department stands out in their view because of this thesis requirement. Most of those who had completed the thesis noted that it was a valuable experience.
- They also noted, however, that getting started on the senior thesis was the most difficult and unnecessarily frustrating aspect of the requirement. In general, students commented they were unclear about expectations and not adequately informed about steps and procedures to follow. In addition, several were uncertain about how to locate an advisor and/or were dissatisfied with accessibility to faculty during the process. Students want opportunities to interact with faculty and find out about faculty research interests. Of the topics that surfaced during the student interviews, the problem of understanding the thesis process and getting started on it were the issues that came up most frequently.

4. Department/ Student Relations

- Some students are not adequately aware of departmental activities, but most would like to know about these and be encouraged to attend.
- Some students expressed an interest in a Botany Club, but the interest was generally in participating in it, not in organizing such a club.
- Students would appreciate opportunities to interact with faculty and find out about faculty research interests.
- Some students reported that office staff were not well informed about the program and therefore they were not very helpful in responding to inquiries.

5. Advising

Students noted two types of advising that they need and expressed concerns about both: A) advising about the program and department, and B) advising about careers in botany.

A. Program Advising

- Many students noted that after declaring their major in botany, there seemed to be no consistent way to find an advisor. Most felt that the description in the catalogue was clear, but that the current approach allows students to proceed in the major with little or no communication with their advisor. This lack of communication with a departmental advisor contributed to uncertainties about the senior thesis and lack of knowledge about specific courses that are infrequently offered, such as algae, fungi, and the capstone course.

- A few students reported they had difficulty connecting with an advisor, or that faculty seemed inaccessible. To facilitate connecting with an advisor, students would like more information about faculty interests and expertise.
- Some students suggested that each student should see his/her advisor every semester, although others noted that it would be inappropriate to have the advisor do the work for the students, and they did not want the advising session to be just "signing a paper." Students want closer relationships with advisors who will take an interest in them and ask about their career directions.

B. Career Advising

- Many students noted that they have little knowledge about possible careers and training opportunities relating to Botany. Students suggested that, in addition to more information about career options, they also need more information about internships, work and volunteer opportunities in greenhouses, etc. The assessment committee thinks these needs are particularly important because at least half of undergraduate botany majors plan to work after completing their bachelor's degree. Students suggested that faculty could discuss careers in classes, talk about their own work experiences in classes, and make available more information about career options.

IV. Committee recommendations

1. Recommendations related to Department Goals

1.1 Computer literacy and numeracy: The committee recommends that each course should include at least one assignment or homework that builds in computer literacy and numeracy. Some of these skills are being addressed in the plant physiology course, which might be useful as model for integrating these skills into other courses.

1.2 Research capabilities: Courses that have lab components should build in ways to enhance student experiences in the process of science. That is, courses need to provide opportunities for students to formulate relevant biological questions, generate hypothesis, devise experiments, and interpret results. Also see recommendations for the senior thesis below.

2. Curriculum Recommendations

2.1 Identify plant-related courses that exist across the campus in order to better integrate possibilities for botany students. The department should prepare a list or cross-referenced guide of such courses, update the list yearly, and make it available to advisors, students, and on the Botany home page.

2.2 The curriculum committee should review the capstone system and recommend ways to meet these needs. The department needs to decide whether to expand and create new capstone courses or make clear to students when these courses will be offered. The department should offer other field courses if the capstone course is not offered.

2.3 The department should re-evaluate Bacteriology 303 as an acceptable course to count toward departmental requirements.

3. Senior Thesis/Composition Recommendations

3.1 The lack of student understanding about getting started on the senior thesis/composition is serious enough that we suggest the department identify a committee to clarify the process of initiating a senior thesis and to develop a "senior thesis guidebook." This guidebook should provide an introduction to the thesis requirements, clarify the philosophy of the senior thesis (creative research), and describe the mechanisms whereby students can connect with and select an advisor. Some specific suggestions that the subcommittee should consider are:

- Make the guidebook available both in printed form and on the Botany home page.
- Facilitate matching of student and professor interests. We suggest that the department use a point person to help students match up with faculty interests. The department could create a list of faculty interests and/or a videotape of faculty presentations that would summarize individual faculty research interests and expertise. Consider offering an afternoon session once a year to introduce students to faculty and their areas of research and interest.
- Require students to create a thesis proposal similar to the molecular biology model.
- Develop a list of potential thesis projects that students can do. Update this list each year and make it available to faculty and students.
- Clarify mechanisms whereby thesis students could work in labs of colleagues in other departments.

4. Department/ Student Relations Recommendations

4.1 The department should consider all of the following as methods to communicate and integrate more effectively with students:

- Create a mailbox for undergraduates.
- Encourage undergraduate access to and involvement in the *Plant Press.*
- Centralize information and resources.
- Use e-mail notices, bulletin boards, and the Botany home page to post information about advising, special events, resources, courses, jobs, career information, etc.
- Provide a room, a space, or a bulletin board for majors. (The Soils Department was suggested as a model of an especially good student bulletin board.) The Birge Hall lobby mezzanine is a possible space for such a bulletin board
- Invite undergraduate students to departmental functions (students suggested using nametags at functions)

4.2 Facilitate opportunities for students to volunteer or do independent projects for credit in greenhouses, gardens, and other department facilities. (As noted above, a frequently updated list of these should be created to keep faculty and students abreast of these.)

4.3 Perhaps a faculty member or a member of the academic staff could act as an advisor to the Botany Club, making students aware of financial resources available for a club, and providing a structure for continuity. If a bulletin board for majors is created as suggested above, information about the Botany Club should be posted on this board.

5A.Program Advising Recommendations

5A.1 The department should consider requiring students to meet with an advisor at least once a semester. This interaction could be fostered by notifying faculty of the names of their

advisees so that the faculty member may initiate contact. Advisors should know L&S requirements, and make students aware of senior thesis requirements and the status of infrequent courses. (As noted above, relevant advising information should be posted on the Botany home page and/or on an undergraduate bulletin board.)

5B. Career Advising Recommendations

5B.1 Investigate the variety of career information sources that are relevant to students in this department. Provide information about campus career-advising sites. This information should be centralized (such as in a career center/corner) and might include written resources. Perhaps use internet connections. (Information could be made available through the Botany majors bulletin board, the Botany home page, and e-mail).

5B.2 Contact employers for information on internships/jobs (both local and otherwise). Consider Jane Cramer from the Center for Biology Education as a contact.

5B.3 Students note it is good to hear about faculty career experiences. As much as possible, faculty should integrate their experience and perspective into courses and advising.

TABLE 2

Students were asked to respond to the following question: As a result of your major in Botany at UW-Madison, how competent do you feel you are relative to the seven departmental goals?

Botany Major Goals	**Student rating, number of students, and student comment (with asterisk)** [All student comments from the surveys are included here.]
1. Broad education in plant biology Graduates should be proficient within the knowledge covered by courses at all levels of organization including molecular, cellular, organismal, and ecological.	**Superior/Very competent** -- 4 *Botany 151-152 are both excellent courses that cover all these well with enough depth without getting into detailed specifics. **Good/Adequately competent** -- 15 *It is true I have learned information in each of these areas **Fair/Somewhat Weak** -- 1 *Biocore doesn't cover plants well; suggest changing the number of credits of Biocore that can be used towards Botany **Poor/Not competent** -- 0
2. Rigorous training Graduates should be adequately and rigorously trained as plant scientists, including several science related courses outside the Botany Major.	**Superior/Very competent** -- 4 **Good/Adequately competent** -- 12 *Would suggest requiring more chemistry **Fair/Somewhat Weak** -- 3 **Poor/Not competent** -- 0
Goal 3: Research capability Graduates should have the ability to formulate relevant biological questions, generate hypothesis, devise experiments and interpret results.	**Superior/Very competent** -- 6 *Gained on the job, not at UW. **Good/Adequately competent** -- 5 *Achieved in Botany 501 lab. **Fair/Somewhat Weak** -- 9 *Botany courses lacking in this area. *Just now learning in Botany 501 **Poor/Not competent** -- 0

TABLE 2 (cont'.)

Goal 4: Literacy Graduates should be capable of communicating in clear scientific prose and of reading and critically evaluating scientific literature.	**Superior/Very competent** -- 6 **Good/Adequately competent** -- 9 **Fair/Somewhat Weak** -- 4 *Reading/critically evaluating scientific literature is good (especially Botany 400), but writing scientifically not emphasized except in 151 individual project. *There should be classes on scientific prose. **Poor/Not competent** -- 0
Goal 5: Numeracy Graduates should be capable of using quantitative methods of analysis and modeling.	**Superior/Very competent** -- 4 **Good/Adequately competent** -- 10 * Not covered in many of my botany classes. * Labs are good (except 151-152); maybe need more emphasis on statistics. **Fair/Somewhat Weak** -- 5 *Needs more emphasis. **Poor/Not competent** -- 2
Goal 6: Computer Literacy Graduates should be capable of using computers in such areas as data processing, database searches, and word processing.	**Superior/Very competent** -- 7 *I think that a holistic type of analysis need to be stressed more. **Good/Adequately competent** -- 4 *Could be emphasized more. **Fair/Somewhat Weak** -- 8 * Database- because of 151-152; Word Processing- because of Computer Science 132. Uncertain where to get data processing. * Most classes do not emphasize work on computers. * I did searches & word processing, but no data processing on computers **Poor/Not competent** -- 1 * No training in data processing.
Goal 7: Documentation Graduates should be capable of establishing and maintaining a laboratory and/or field notebook.	**Superior/Very competent** -- 8 **Good/Adequately competent** -- 10 * Achieved in Botany 400 and 501. **Fair/Somewhat Weak** -- 2 **Poor/Not competent** -- 0

DEPARTMENT OF BOTANY
PROGRAM ASSESSMENT
Spring, 1997

Interviews with Juniors and Seniors

All juniors and seniors majoring in Botany as of Semester II of the 1996-97 academic year will be asked to participate in a one-hour individual interview. Participation is voluntary. Students will be mailed the interview questions and the attached short written survey (yellow sheets). Students will be asked to bring the completed survey to the interview. It will be used as a take-off point for discussion. All students who complete the interview will be invited to participate in a follow-up "focus group" (group discussion; about one hour) about the issues which were raised by students in the individual interviews.

INTRODUCTION

1. How long have you been a Botany major?

2. Did you come to the UW knowing that you wanted to major in botany, or is that something you decided once you were here on campus?

3. Did you consider any other majors? If so, why did you decide to major in botany?
   (Prompt: advisor? Specific interest? reputation of department? scholarships?)

4. What introductory biology course or course sequence did you take? How was it that you chose that course or sequence? Did it prepare you adequately for subsequent courses in your major?
   (Prompt: The choices are Botany 130, Botany/Zoology 151-152 or the Biocore sequence)

5. Do you have a specific area of interest within botany?

CAREER PLANS

6. What do you plan to do after receiving your bachelor's degree?

7. What are your long-term career plans?
   (Prompt: grad school. education - what major, why, where)
   (Prompt: employment - what field, why, where)

8. Do you think your undergraduate experience in this department has equipped you with the skills and knowledge you need to pursue your career plans?

9. Of the courses you have taken here at the UW-Madison, are there any courses **required for the botany major** which you consider to be
   (a) especially worthwhile or valuable? Why?
   (b) not very worthwhile or relevant? Why?
   (c) especially difficult? Why?
   (d) especially interesting? Why?

10. The botany major requirements specify that students take courses in five out of six areas within the department (plant anatomy or morphology, ecology, genetics, plant physiology, cryptogamic botany and plant taxonomy). Have you found that to be an advantage or disadvantage and why? Do you feel there should be more flexibility in choices or do you agree that the present design is adequate?

11. The botany major requirements also specify completion of either a senior thesis or a senior composition. Which of these options have you chosen? Is your project already underway? How valuable did you find (or do you expect) this experience to be?

ADVISING

12. Do you feel that you received adequate advising prior to your decision to declare botany as your major? Why? Can you suggest ways to improve the advising system?

13. Do you feel that you received adequate advising after declaring botany as your major? Can you suggest ways to improve our departmental advising system?

14. Do you feel a sense of "belonging" to the botany department? Why or why not? Do you have any suggestions related to this?

GENERAL

15. Taken as a whole, how would you assess our undergraduate program?

16. What do you consider to be some of the strengths of the Botany major?

17. What do you consider to be some of the weaknesses of our program?

18. Would you recommend botany as a major to a friend who shares your general interests? Why or why not?

19. Can you suggest specific ways in which our undergraduate program might be strengthened or improved?

20. Are there any concerns, suggestions, or comments you would like to make about the program that haven't already been discussed?

DEPARTMENT OF BOTANY
PROGRAM ASSESSMENT
Spring, 1997

Student Name_____ Date:_____

1. When did you declare Botany as your major?

2. What degree as you working toward? (Circle one) BA BS

3. Check the statement below which best represents your path in college:
   ____ I have done or plan to do all of my coursework at UW-Madison.
   ____ I transferred into UW-Madison from another institution. If so, from what institution have you come and how many semesters have you been at UW-Madison
   ____ Other (Please describe: _____)

4. Students in the botany major can take any of several introductory courses or sequences in biology before they take upper level courses. What foundations sequence did you take? (Circle one below)

   Botany 130 Botany/Zoology 151-152 Biocore Sequence

5. When do you plan to graduate? (Circle semester and year)
   Spring Summer Fall 1997 1998 1999

6. What are your plans after graduation:
   ____Grad School _____Employment _____Other (Please specify: _____)

If Graduate School:

A. Do you know where you will be going for graduate school? ___Yes ___ No
   If yes, to which institution? What others did you consider?

A. How well prepared do you feel you are for graduate school?
   _____Not prepared _____Prepared _____Well prepared ____ Not sure

If Employment:

A. Do you have a job lined up after graduation? ____Yes ____No
   If yes, what type of job is it? If no, what sort of employment are you seeking?

B. How well prepared do you feel you are for employment?
   _____Not prepared _____Prepared _____Well prepared ____ Not sure

A. The department has specified the following seven goals for our undergraduate program. As a result of your training as a botany major, how competent do you consider yourself to be in each of these areas? (Please check a box and enter any comments you think might be helpful to us in our evaluation of the Botany undergraduate major.)

	RATING			
Botany Major Goals	Superior Very competent	Good Adequately competent	Fair Somewhat Weak	Poor Not competent
1. Broad education in plant biology Graduates should be proficient with the knowledge covered by courses at all levels of organization including molecular, cellular, organismal, and ecological.				
2. Rigorous training as a plant scientist including several science related courses outside the Botany Major.				
Goal 3: Research Capability Graduates should have the ability to formulate relevant biological questions, generate hypothesis, devise experiments and interpret results.				
Goal 4: Literacy Graduates should be capable of communicating in clear scientific prose and of reading and critically evaluating scientific literature.				
Goal 5: Numeracy Graduates should be capable of using quantitative methods of analysis and modeling.				
Goal 6: Computer Literacy Graduates should be capable of using computers in such areas as data processing, database searches, and word processing.				
Goal 7: Documentation Graduates should be capable of establishing and maintaining a laboratory and/or field notebook.				

B. The department regards the following content areas as important for our students. How well prepared do you consider yourself to be in each of these areas? (Please check a box and enter any comments you think might be helpful to us in our evaluation of the Botany undergraduate major.)

RATING

Content Area and/or Course Clusters	Very well Prepared	Adequately prepared	Poorly prepared	Not applicable
a. Mathematics, statistics, computer science				
b. Chemistry				
c. Physics				
d. Introductory Biology Biocore or 151-152				
e. Anatomy & Morphology (300, 305)				
f. Ecology (455, 460)				
g. Genetics (466 or Biocore 301 & 303)				
h. Plant Physiology (500 or Biocore 303, 323, lab)				
i. Cryptogamic Botany (330,332, 360 or Bact. 303)				
j. Taxonomy (400, 401)				
k. Senior thesis or independent research				

FOCUS GROUP QUESTIONS

Topic 1: Departmental Goals

1-1. The department has seven departmental goals. Would it be useful or helpful for you to know these goals? Should we be communicating these goals to students? Would you have done things differently if you had known these goals?

1-2. In your experience in the department, is there adequate provision being made in course for students to develop computer literacy and numeracy? If not, do you have any suggestions to alter the program to strengthen these?

Topic 2: Curriculum

2-1. We have changed our curriculum to require ..[Wayne please describe what you are currently doing here] five core areas out of six. These areas are: _____
What do you think about this change?

2-2 Just recently, physics became a requirement for those completing a BS. Any comments on this requirement?

2-3 Are there content areas that our program doesn't offer or courses that you wish were available, but that were missing?

Topic 3: Advising

3-1

a. What suggestions do you have for improving advising in the department?

b. What topics should advising cover more adequately?
(Examples: career opportunities; courses offered only infrequently; special concerns of double majors; senior thesis/composition requirements -- see below)

c. What mechanisms can we use to inform you of resources available? Would you find an introductory packet useful?

3-2. Would it be a good idea to require some student-advisor contact?

3-3. What suggestions do you have for improving career advising and information about careers in botany?

3-4. How might we improve general advising?

Topic 4: Senior Thesis or Senior Composition

4-1. Do you feel that you had adequate awareness and information about this requirement?

4-2. Do you have suggestions about how this requirement can be described so that students get a timely start?

4-3. Some students had the idea of offering a pre-thesis seminar (in the junior year, perhaps). Would something like a seminar have helped you? What should be included in this seminar?

Topic 5: Department/Student Relationship

5-1. In what ways might we increase a sense of belonging on the part of our students? (Suggestions: bulletin board, e-mail, newsletter, undergrad mailbox, invitations to social events, use of nametags at such events)

5-2 Is e-mail an effective way of communicating with students?

5-3 Is there interest in reactivating the undergrad Botany Club? Any ideas for how this might begin? Any ideas for how to institutionalize this so that it keeps going every year?

IF TIME PERMITS

Topic 6: Miscellaneous

6-1. Are any of you double majors who also have a relationship to CALS? Has this double major been a problem? If so, Suggestions for improvement?