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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Report of Botany curriculum committee

From: DJ Rogers Feb. 10, 1977

Attached are two items: (1) from Mike Grant (already circulated to faculty) and (2) from Bob Bye. The former is a definite must, according to all the botanists on the faculty (and some zoologists as well), but who is to do that teaching must be left up to the chairman. and this is a problem of some seriousness because of previous committements to it from Pat Webber (and from me), so don't figure this is a piece of cake to solve. The second paper, prepared by Bob Bye (and he has done a good job on it), is a recommendation for a curriculum in botany. It is not perfect, but represents the best we can put to it now, and we believe that some such recommendation sheet be available to all advisors, and it might even be put into the catalog next time.

I think it is fairly well agreed by all faculty now that I teach a course at the 300 level, 2 credits, on the Principles of Taxonomy, and that while the course is not to be listed as prerequisite or corequisite to any other course, it is strongly recommended for anyone who wishes to take other classification oriented course (the so-called "special taxa" courses).

We (or at least some of us) believe that it was a very difficult, if not impossible, task, to set up a "botany" curriculum in biology discipline-oriented department, where all other such curricula are for "animal physiology" or ~~"plant"~~ ecology" etc. By setting all botanists apart from the others, requiring that we come up with "a curriculum" or even several curricula is to cause more confusion than already exists in great quantity in this department. Such a requirement certainly causes antagonisms that are detrimental to good working relations.

A suggestion from one of the senior members (who has been through so many of these curriculum changes that he's really not willing to even have me mention his name) ~~makes a suggestion to the department. That is~~ is as follows: that we have a series of programs in this or that for the department, which might be in plant this or animal that, and from these derive sequences that might be recommended to students. Such programs would clearly eliminate any "core" program; they would clearly need close supervision from the chairman to be certain that adequate education be given in each.

But whatever else happens, this individual feels that his duties are discharged with the submission of this report, and that if more deliberations along these lines are required, they must be under the chairmanship of someone else.

tentative
recommendations for a
Botany curriculum

General Biology	101-102	6
Genetics	303	4
Principles of Ecology	341	3
(General Botany)	210	3
Ess. Plant Physiol.	321	4
Plant Morph.	311 or 312	4
Principles of Taxon.		2
Plant Ecology (course from Fl. Tax.-Diversity list)	441	4
		4
Zoology-Microbiology course 1-2		3 (8)
Geology (101-102 OR 207-208)		8 (10)
Area of interest in Botany ____ course(s)		
Area of interest in Biology ____ course(s)		
Electives (non-Biology EPOB) #		82
Dept. req. Physics Chemistry Mathematics		25 (30)
Arts & Sciences Humanities	12	
Natural Sci**	12	
Social Sci.	12	
** in Dept. req. (Chem, Phys, Math)		36 = 24

13

8

11 (18)

total in EPOB 31 (42)

3 (3)*

53 total (min.)/ total in EPOB 45

22

124

* for perspective graduate student recommend: Biometry 438 3
Ind. St.-Res 446-492-499 1-3
\# Foreign Language 3-12

TO: DR. WILSON CRUMPACKER

FROM: BOTANISTS WITHIN THE DEPARTMENT OF EPO BIOLOGY; DAVE ROGERS, CHAIRMAN, BOB BYE, SECRETARY

RE: REPORT ON DIRECTIVE TO EXAMINE THE NEEDS OF UNDERGRADUATE CURRICULUM IN BOTANY WITHIN THE DEPARTMENT.

DATE: 5 October 1976

This preliminary statement is drafted to answer your request for a suggested curriculum track for undergraduates interested in botany. Some of the courses listed are names only. The contents of the numbered and named courses need to be defined so that there is a uniform progression of presentation and little duplication of material. We also note that some courses listed in the catalog (i.e., Aquatic Botany) have no instructors.

The core of the science courses for a botany major should be as listed in table 1.

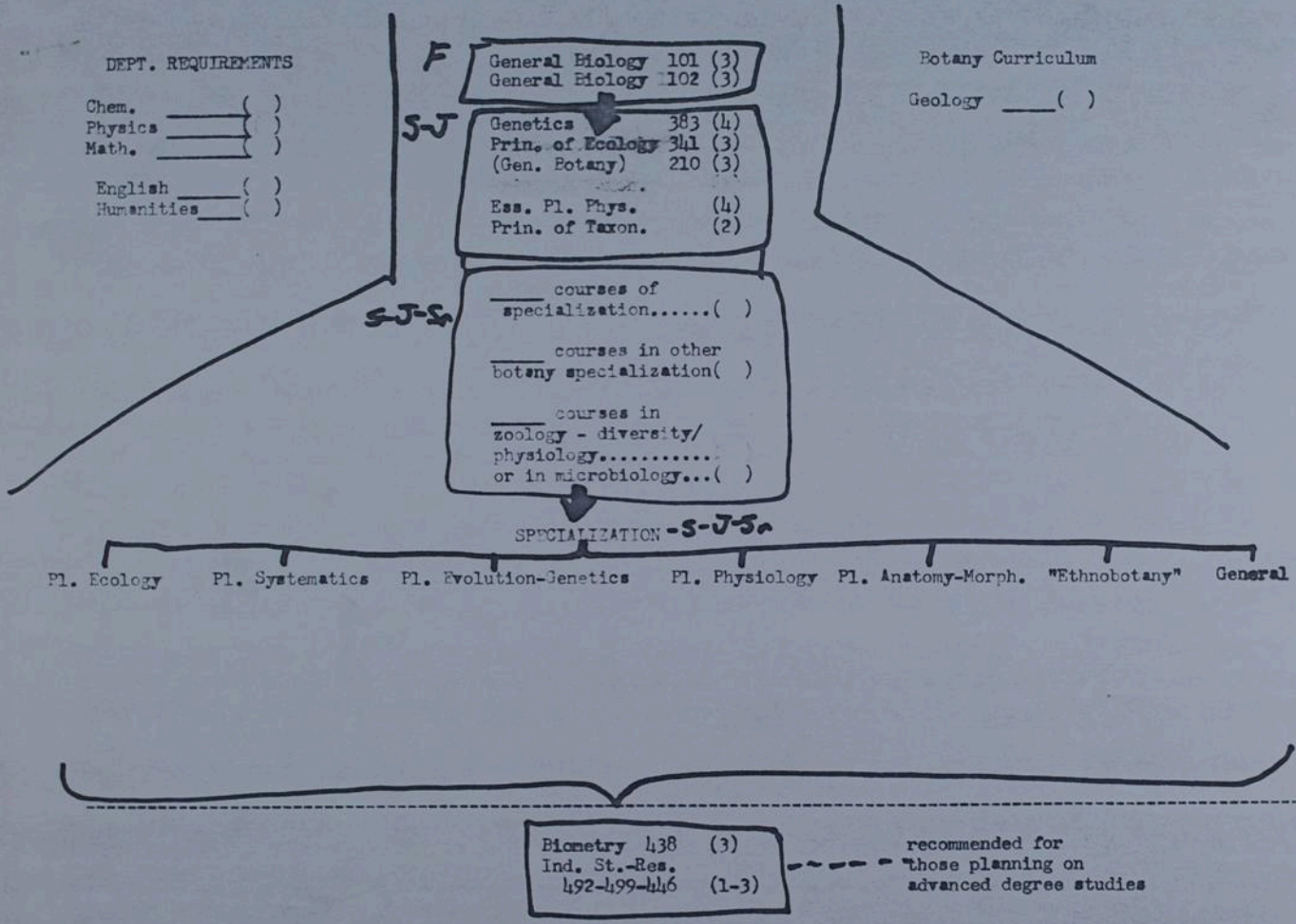
There is a need to define more precisely the courses and goals for concentrations within the botany curriculum such as Plant Ecology. An introductory plant ecology course (e.g., Marr's EPOB 441) should be required for all botany and ecology majors. Follow up courses in applied, quantative, and experimental plant ecology should be available.

There are opportunities for concentraiton in specialty areas but so far no requirements for specific tracks of courses have been outlined. It is also possible tnat the specialty courses could be improved by: 1- coordinating contents and different approaches to the concentrations (e.g., plant taxonomy, plant ecology) and 2- adding a few technique courses (e.g., cytology, cytogenetics). Before such tracks and specialty courses can be considered, we need an updated statement of the overall goals and requirements of the Department.

It is our general opinion that there is a need to look at the content of the courses offered in order to present an orderly progression of courses within the curriculum. The courses should be designed for maximum coverage of the field with as little overlap as possible. The method to achieve this goal we hesitate to recommend.

TABLE 1

Core ology requirement	Botany Major* requirement	Concentration tracks (requirements & recommendations) (only 2 examples*)	
eneral Biology 101,110 eneral Botany 202 enetics 383 Chemistry) Physics) Mathematics)	Plant Physiology 321 Principles of Plant Taxonomy 430 Principles of Plant Ecology 441 Plant Morphology[1] OR Plant Anatomy[2] --- 1- recommend for taxonomy & ecology concentrations 2- recommend for physiology concentration *ASSUME other majors Zoology Evolution & Pop. Biol. Ecology (Environmental Biology)? Genetics Microbiology Limnology	*others could include Physiology Morphology-Anatomy	
		ECOLOGY	TAXONOMY
		Physical Geography Classification of Flowering Plants Animal Ecology	Classification of Flowerin Plants Population Biology
		Plant Ecology	
		and at least two other botany courses: Morphology of Vascular Plants Morphology of Non-vascular Plants Palynology, History of Biological Communities Biometry Dynamics of Mountain Ecosystems Biological Data Management (Taximetrics) Ecological Genetics Aquatic Botany Ethnoecology Phytogeography	and at least three other botany courses: (see Ecology list) plus Plant Ecology Advance Classification of Flowering Plants Economic Botany Biochemistry Microbiology Lichenology Etc.



Plant Ecology

Plant Ecology	441	(4)
Class. Fl. Pl.	430	(4)
Geomorph. Geol.	463	(4)

Dyn. Mt. Ecos.	421	(3)
Hist. Biol. Comm.	376	(3)

(see Ecol. list)

Plant Systematics (taxonomy)

Class. Fl. Pl.	430	(4)
Evol.-Pop. Biol.		( )
Pl. Anat.-Morph.		( )

Pl. Ecology	441	(4)
Adv. Class. Fl. P.	460	(2)
Taximetrics	573	(3)
Biochemistry		
Phytogeography (Biogeography)	Gg435	(3)

(see Botanical Diversity)

Plant Evolution, Population Biology, Genetics

Lab. Genetics	451	(4)
Evo.-Pop. Biol.		( )

(see Botanical Diversity)

Plant Physiology			Plant Anatomy-Morphology			"Ethnobotany"			General
Pl. Growth-Dev.	480	(3)	Morph Nvas Pl. 311		(4)	Pl. & Man	315	(3)	1 - Diversity
			Morph. Vas Pl. 312		(4)	Ethnoecol.	402	(3)	1- Anat.-Morph
						or			1- Ecology
						Ev.Dom.Pl.		(3)	
---			---			---			---
Adv. Pl. Phys	551	(3)	Pl. Anat.	553	(3)	Class. Fl. Pl.	430	(4)	choice
Ecophys. Pl.	558	(2)	(see Botanical Diversity)			Morph. VasPl	312	(4)	
						Biochem		( )	
						Pl. Ecol.	441	(4)	
						Microbiol.	301	(4)	

EPOB 210. (general botany) - Biology and diversity of plants.
M. Grant, R. Eye, P. Webber.

EPOB 383-4. Genetics. Lect., rec. Mendel's Laws, gene action, linkage, chromosomal aberrations, mutation, genetic fine structure, chemical basis of heredity, quantitative and population genetics. For emphasis on molecular, biochemical, and developmental genetics, MCDB 384 recommended. Prer., EPOB 101 and 110-202, or equivalent.

EPOB 341-3. Principles of Ecology. Principles relating to ecosystem structure and function; properties and interactions of populations; adaptations and environmental influences; organization and development of terrestrial and aquatic ecosystems. Prer., EPOB 101 or 202.

EPOB (2) Principles of Taxonomy.
D. Rogers

EPOB 321-4. Essentials of Plant Physiology. Lect., lab. Water relations, photosynthesis, respiration, germination, growth, and movements of plants. Prer., EPOB 101 and 110-202 or college botany and college chemistry. Bonde.

EPOB 438/538-3. Biometry. A demanding, problems-oriented methods course in statistical inference procedures, assumptions, limitations, and applications with emphasis on techniques appropriate to realistic biological problems. Grant.

} esp. recommended for those wishing advanced degrees

EPOB 492 or 499 or 446 Independent Study - Research.

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within Botany

1- two courses in specialization

2- at least one in Evolution-Genetics / Diversity or Systematics / Anatomy-Morphology

---

in Biology

1- at least one course in zoological diversity/zoological physiology or microbiology

---

Departmental requirements outside Dept.

1- Chem.
2- Physics
3- Math.

---

outside Biology(one course in each field)

1- Geology/Geography
2- English
3- Humanities

UNIVERSITY OF COLORADO
Interdepartmental Memorandum

TO EPO BOTANISTS

FROM DAVE ROGERS

SUBJECT MEETING WED., FEB. 9 AT 4 P.M. HALE 109

DATE FEBRUARY 8, 1977

So few met on Monday we couldn't get a decision on a botany program. Time is running short, so be sure to attend this one. We have a good suggestion on the curriculum ready to be examined.

proposed course

EPOB 4__/5__

Evolution and Ecology of Domesticated Plants.

Study of the evolution of plants that are important to man's biological existence with reference to domestication and alteration of the ecological tolerances of these plants. Emphasis on the comparative morphological, reproductive and ecological diversity of progenitor and advanced species based on data from archaeological, field and experimental studies. Term paper and/or project required. Prerequisites: EPOB 210, 315, or equivalent. Bye.

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textbook: N. W. Simmonds (ed.) 1976

<u>Evolution of Crop Plants.</u>
Longman, Inc. New York

recommended:

J. B. Hutchinson (ed.) 1965 **

<u>Essays on Crop Plant Evolution.</u>
Cambridge Univ. Press

Milthorpe, F. L., and J. Moorby. 1974

<u>An Introduction to Crop Physiology.</u>
Cambridge Univ. Press.

Schwanitz, F. 1967

<u>The Origin of Cultivated Plants.</u>
Harvard University Press.

Ucko, P. J., and G. W. Dimbleby (eds.) 1969.

<u>The Domestication and Exploitation of Plants and Animals.</u>
Aldine Publ. Co., Chicago.

** a recent (updated) edition has come out; do not have the exact reference

TO Dave Norris

FROM Bob Bye

SUBJECT proposed course

DATE 4 Feb. 1977

UNIVERSITY OF COLORADO
Interdepartmental Memorandum

Dave,

Attached is a draft of a proposed course that I would like to develop/ This would be offered as a course that would alternate yearly with my present course (EPOB 402/502, Ethnoecology -- biological and ecological ~~alteration~~ basis of human alteration of the ambient environment). The proposed course would deal with the biological aspects of man as an evolutionary force and would complement the "Ethnoecology" where I consider man as an ecological force. I have been approached by students in this department and other departments who would ~~lki~~ like a course offered such as the proposed one.

Because my heavy teaching load (general or introductory biology -- section 6 group) will occur in the Spring semester of 1978, I would like to offer and develop this course during the fall (1977) semester. I envision the course set up as follows:

2 lectures per week
1, 3 hour laboratory-discussion period per week

facilities needed: room with dissecting scopes
limited greenhouse space (bench for growth and competition experiments)

What are the procedures I should follow (i.e., course outline, submission to dept, etc.)?

Memo:

Feb. 1 1977

To: Dave Royer
From: Pat Webber.
Re: Botany Curriculum.

Sorry I can't attend the Feb. 7 meeting.
The Botany Curriculum Committee must address itself to the teaching of Advanced ecology courses. That is, ~~[redacted]~~ courses following EPOB 341 (Principles of Ecol.). Will 441 (Plant Ecol.) remain intact? I think it should for at least a year or so although with lower enrollments and teaching assistance.

I would be prepared to develop 2 advanced plant ecol. courses. ($2\frac{1}{2}$-3 credits each)

a). Field techniques in Plant Ecology (This would be an improved version of Field Botany.) 4-500 level

b). Quantitative Plant Ecology (This would be a version of my current 624 course at the 4-500 level).

Feb. 1. 1978

Harvey:

There will be a Botany Curriculum Meeting in Hall 109 at 4:00 pm on Monday Feb 7.

Dave Rogers is presiding.

Pat.

2 February 1977

M E M O R A N D U M

To: EPO Faculty & Ron Duke

Fm: Botany Contingent

Re: Undergraduate course in General Botany

In a recent meeting of most departmental Botany types, we have decided to strongly recommend that the department offer a course in general botany at the early undergraduate level. This recommendation derives largely from the recognition that the current 202 course which has ½ of a semester devoted to a survey of the plant kingdom will cease to exist after being offered only once. We recognize that there will be roughly ¼ of a semester of plant kingdom survey in the general biology course and feel that our general botany type offerings at the early undergraduate level need to be strengthened. Perhaps the most straightforward way of accomplishing this objective is to reinstate the Plant Kingdom course taught previously by Pat Webber and, for half a semester, by Dave Rodgers.

The content of this course would roughly consist of a broad survey of the plant kingdom with varying amounts of depth in such things as physiology, genetics, ecology, biogeography, taxonomy, anatomy, morphology. The details of course content and emphasis are yet to be worked out. It would be 3 hours credit; 3 lab and 2 lecture hours.

We do not know how to estimate the student demand but it may go as high as 1-200 students per year. We do not have the resources to handle that many students in a laboratory type course nor can we offer this course more than once per year at present. Our initial recommendation is to limit the enrollment to what can be handled by the instructor plus one teaching assistant once per year, i.e. approximately 30 students. If the demand substantially exceeds this number a reassessment of resource allocation to the course would be appropriate then. This course is envisioned as an appropriate one to be designated as prerequisite by instructors for several advanced Botany courses, e.g. Lichenology, Morphology (2), Physiology, Ethnobotany etc. etc. It would also be quite appropriate for Zoology majors to take for general Botany experience (keep in mind enrollment limits!).

Three persons within the department are currently interested in taking part in the responsibilities of the course; Pat Webber, Bob Rye, and Mike Grant. The details of how this responsibility will be allocated must wait until the department as a whole makes a decision regarding its desireability and feasability.

Member of Botany committee –

Margaret Lindeberg
Hale * 14
x 6547

TO All botanists - EPOB
FROM Dave Rogers
SUBJECT Curriculum Revisions -
DATE 1/27

UNIVERSITY OF COLORADO
Interdepartmental Memorandum -

Can we meet Mon. January 31, at 4 P.M., Hall 109?
Please call Janice (ext. 6547) if you cannot meet then -

Subjects: - Reinstatement of E.P.O.B. 210 -
- Pre- or Co-requisite status of Principles of Taxonomy
- New course offerings, if any -

Date

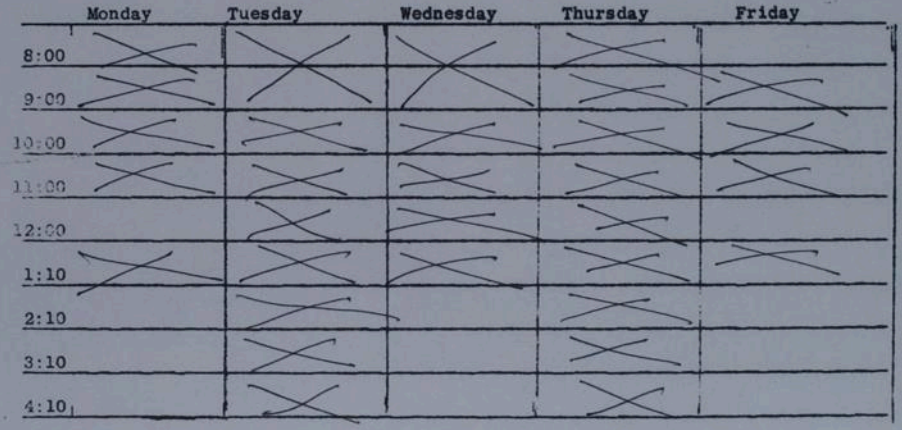
_____ is trying to arrange a meeting for

Botanists

Name of Committee

involving the following persons:

Please cross out the times and days of the week when you could not attend (this) (these) meeting(s), and return to the person named above.



Thank you,

_____

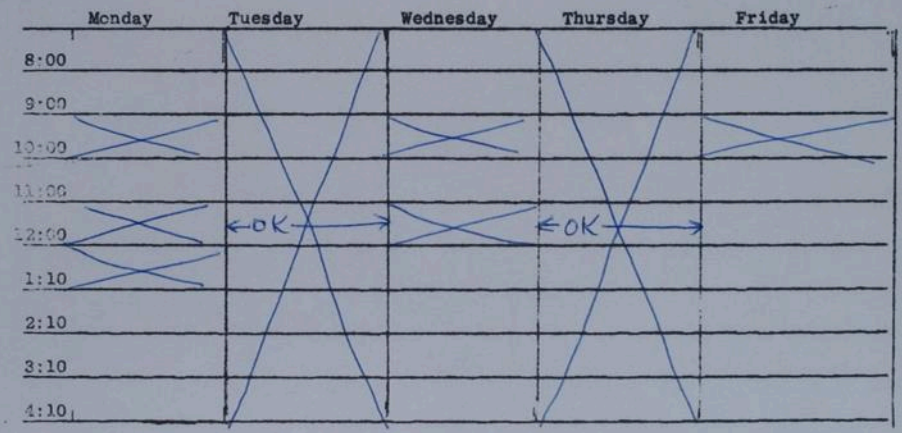
Date

_____ is trying to arrange a meeting for

Botanists
Name of Committee

involving the following persons: E. Bonde

Please cross out the times and days of the week when you could not attend (this) (these) meeting(s), and return to the person named above.



Thank you,

_____

25 JAN. 1977

Date

_____ is trying to a-range a meeting for

BOTAN(Y)ISTS

Name of Committee

Involving the following persons:

Please cross out the times and days of the week when you could not attend (This) (These) meeting(s), and return to the persons named above.

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00	X	X	X	X	X
9:00	X	X	X	X	X
10:00		X		X	
11:00		X		X	
12:00		X		X	
1:10	X		X	X	X
2:10					
3:10					
4:10					

Thank you,

SAM SHUSHAN

B4E

_____
Date

_____ is trying to a-range a meeting for

_____
Name of Committee

Involving the following persons:

Please cross out the times and days of the week when you could not attend (This) (These) meeting(s), and return to the persons named above.

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00					
9:00					
10:00					
11:00					
12:00					
1:10					
2:10					
3:10					
4:10					

Thank you,

_____

_____
Date

_____ is trying to a-range a meeting for

_____
Name of Committee

involving the following persons:

Bruce Pollock

Please cross out the times and days of the week when you could not attend (This) (These) meeting(s), and return to the persons named above.

Monday	Tuesday	Wednesday	Thursday	Friday
8:00	X	X		
9:00				
10:00				
11:00				
12:00				
1:10				
2:10				
3:10				
4:10				

Thank you,

_____

TO: Bonde
Bye
Grant
Linhart
Marr
Nichols
Pollock
Rogers
Shushan
Webber

5 Oct. 1976

RE: draft of botany curriculum report to Crumpacker

Please read this general statement which will be sent to Wilson Friday afternoon (8 Oct. 1976). If you have any suggestions or points you feel should be emphasized, send a note to or contact Bob Bye (Hale 1, x 6319) by Friday morning.

TO: DR. WILSON CRUMPACKER

FROM: BOTANISTS WITHIN THE DEPARTMENT OF EPO BIOLOGY, DAVE ROGERS, CHAIRMAN, BOB BYE, SECRETARY

RE: REPORT ON DIRECTIVE TO EXAMINE THE NEEDS OF UNDERGRADUATE CURRICULUM IN BOTANY WITHIN THE DEPARTMENT.

DATE: 5 October 1976

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There are opportunities for concentraiton in specialty areas but so far no requirements for specific tracks of courses have been outlined. It is also possible that the specialty courses could be improved by: 1- coordinating contents and different approaches to the concentrations (e.g., plant taxonomy, plant ecology) and 2- adding a few technique courses (e.g., cytology, cytogenetics). Before such tracks and spedialty courses can be considered, we need an updated statement of the overall goals and requirements of the Department.

It is our general opinion that there is a need to look at the content of the courses offered in order to present an orderly progression of courses within the curriculum. The courses should be designed for maximum coverage of the field with as little overlap as possible. The method to achieve this goal we hesitate to recommend.

TABLE 1

Step	Core Biology requirement	Botany Major* requirement	Concentration tracks (requirements & recommendations) (only 2 examples*)
1	General Biology 101,110 General Botany 202 Genetics 303 (Chemistry) (Physics) (Mathematics)		*others could include Physiology Morphology-Anatomy
2		Plant Physiology 321 Principles of Plant Taxonomy 430 Principles of Plant Ecology 441 Plant Morphology[1] OR Plant Anatomy[2] --- 1- recommend for taxonomy & ecology concentration 2- recommend for physiology concentration	
3		*ASSUME other majors Zoology Evolution & Pop. Biol. Ecology (Environmental Biology)? Genetics Microbiology Limnology	ECOLOGY Physical Geography Classification of Flowering Plants Plant Ecology and at least two other botany courses: Morphology of Vascular Plants Morphology of Non-vascular Plants Palynology, History of Biological Communities Biometry Dynamics of Mountain Ecosystems Biological Data Management (Taxmetrics) Ecological Genetics Aquatic Botany Ethnoecology Phytogeography	TAXONOMY Classification of Flowering Plants and at least three other botany courses: (see Ecology list) plus Plant Ecology Population Biology Advance Classification of Flowering Plants Economic Botany Biochemistry Microbiology Lichenology Etc.

Curriculum Pathway for Botany (Plant Ecology) Majors

I have misgivings about this exercise because we have no current master plan for the department since the dissolution of the Divisions and the latest (September 1976) memorandum from Dave Norris concerning EPO Majors is only proposed. So here (cynically) is another untenable scheme. It would require 40-44 credits in the major.

Pat Webber
27 September 1976

General Biology (101, 110 and 202) - 8
Genetics (383) - 4
Chemistry, Physics, Math (one year, as previous)

Education | Distributed Studies | BOTANY | Zoology | other?

Plant Physiology - 4
Principles of Ecology - 3
Principles of Taxonomy - 3
Plant Morphology and Anatomy - 3

Population | Organismic | ENVIRONMENTAL | Microbiology | other?

Physical Geography - 4
Classification of Flowering Plants - 3
Plant Ecology - 4
Plus at least two other botany courses from:
Morphology of Vascular Plants
Morphology of Non-vascular plants
Palynology
Biometry
Dynamics of Mountain Ecosystems
Taximetrics
Ecological genetics
Aquatic Botany
Lichenology
etc. etc.

General Course - 210.

Morph. - 311, 312

Econ. Bot. - 315

Physiology - 321, 480/580, 551, 558, 621

Field Bot. - 331

Taxonomy - 430, 460/660

Ecology - 441, 521, 522

Aquatic Bot. 523

Anatomy 553

Lichenology - 555

Webber - 210

Shushan - 311, 312, 553, 555

Rogers - 315

Bonde - 321, 430, 480/580, 551, 558, 621.

Marr - 441, 521, 522.

Bock - 460/560., 651

Nichols - 591, 598.

Palynology - Nichols

Comp. Paleobot. "

(3) 210 - Pl. Kingdom - Webber
(4) 311 - Morph. Non Vasc. - Shushan
(4) 312 - " Vasc "
(3) 315 - Pl + Man - Rogers
(4) 321 - Pl. Physiol. - Bonde
(3) 331 - Field Bota — X
(4) 430 — Class. Fl. Pl - Bonde
(4) 441 - Pl. Ecol. - Marr
(2) 460/560 Adv. Class. Fl Pl. - Bock
(3) 480/580 Pl Growth + Dev. in Steril Cult. - Bonde
(3) 521 - Dynamics of Mt. Ecosys. - Marr
(3) 522 - Tundra Ecol.
(2) 523 - Aquatic Bot. —
(2) 551 - Adv. Pl. Physio Bonde
(3) 553 - Developmental Pl. Anatomy - Shushan
(3) 554 - Algology —
(3) 555 - Lichenology
(2) ~~573 - Taxonomy - Rogers~~ (2) 555 - Sem. Ecophys. Alpine Arctic Pl - Bonde
(3) ~~595 - Prin. & Prac. Biol. Tax - Staff~~ (2) ~~Adv. Class. Fl. Pl. - Bock~~
(3) 591 - Adv. polynology - Nichols
(3) 598 - Cenozoic Paleobotany + Palynology - Nichols
(3) 621 - Ecological Pl. Physiol. - Bonde
(3) 651 - Reproductive Biol. Fl. Pl - Bock

Have not listed - taxonomic botany, evolution - ethnobotany

Dave - for your interest, our old major sheet

Department of Biology
University of Colorado
Major Requirements

5/62

Erik

BOTANY MAJOR

Major		First Minor	
General Biology (Biol. 101-102 or Biol. Sci. 103-104, or Advanced Placement in Biology, scores of 4 or 5)	8 cr.	Zoology (Specific courses to be decided on consultation with Departmental advisor)	6 cr.
Bacteriology (Bact. 201)	3		
Plant Ecology (Bot. 241)	4		
Morph. of Non-Vasc. Plants (Bot. 311)	4		
Plant Physiology (Bot. 421)	4	Second Minor	
Classification of Flowering Plants (Bot. 431)	4	Chemistry (Preferably Chem. 101 or 103 or 105 and 104 or 106)	8-10 cr.
Genetics (Biol. 351)	3		
Recommended but not required:			
Morph. of Vasc. Plants (Bot. 312)	3		
Ecosystems of North America (Bot. 442)	3		
Principles of Plant Taxonomy (Bot. 432)	3		

General Information:

Majors must take Mathematics (rather than Philosophy) as a graduation requirement.

Depending on the interests and plans of the individual student, the following are suggested as electives in the Department of Biology: Field Zoology, Microscopic Technique, and Animal Ecology.

The following are suggested electives outside the Department of Biology: Physics, Geology, Paleontology, Statistics, Organic Chemistry, Calculus, Climatology, Geography, Conservation, and Radiochemistry.

German, French, and Russian are especially recommended as languages which might be selected to fulfill the language requirement for the B.A. degree. These languages have especially large scientific literatures and are particularly useful for the student who expects to go into graduate work.

A student may have no more than 45 hours in his major field to count in the 124 hours required for graduation. Sixteen hours of these 45 hours must be in upper division courses in the major field. Biol. 251 (Evolution and Genetics) will not count toward graduation if a student takes Biol. 101-102, Biol. Sci. 103-104, Advanced Placement Test with scores of 4 or 5, or Biol. 351 (Genetics) at any time in his college career. Biol. 351 (Genetics) is required for all majors, regardless of whether or not the student has taken Biol. 251 (Evolution and Genetics).

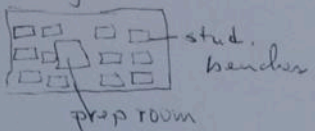
Botany for Distributed Majors:

If Botany is the field of specialization or one of the two other fields in the distributed plan, a minimum of 25 or 16 credits, respectively, is required toward the total of 67 for all three fields. A specific program should be worked out with the Botany departmental advisor.

Distributive majors should choose their courses from the list for the major field; that is, a student with a distributive major in Botany should choose his courses from the list required for Botany majors, not just any Botany course listed in the Bulletin. The same applies for distributive students with a Zoology or Botany minor. There is no Biology minor.

~~Grant, Boyce, Linhart~~ -

Ekeley East - main + 2nd Fl. - $98K remodelling -



1st Fl - Anatomy
2nd Fl - Pl. + Animal Ecology
- Pl. Taxonomy

Office space available?
Pl. Taxonomy can't be moved.
Occupy Jan. 1, 77
Equipment - wilber - maybe $ from admin. by Fall 77.
Supplies - of plants.

Alternative - Bunwell a room in Hale
- TA for making collections?

Greenhouse -
Survey by Yan and Eric.
Two things - future needs
- present uses.
How accomodate g'house needs and Ramaley plants -
Bob + Mike -

Expt. gardens -

Rogers

TO THE BOTANISTS:

The attached report from the botanists of 1965 of course precedes the move to Ramaley and the hiring of various faculty members.

Erik Bonde

PRELIMINARY PROPOSAL FOR THE IMPROVEMENT OF RESEARCH AND TEACHING IN BOTANY AT THE UNIVERSITY OF COLORADO

INTRODUCTION

We, the undersigned staff members of the Department of Biology, are painfully aware that space, facilities, and staff are totally inadequate for conducting a balanced and modern research and teaching program in the field of botany. The same holds true for the entire field of biology, as has been repeatedly pointed out, but we as botanists have a particular community of interests and especially great needs and have therefore decided to make a joint effort to improve matters in the area of botany.

I. THE PRESENT SITUATION

The University of Colorado is situated in an area of unrivalled opportunity for biological research. The situation of the University where the prairies meet the mountains is more suitable for many kinds of botanical studies than that of any other University on the American continent. Nowhere else are there more variable environments within easy reach, with all kinds of natural conditions known to affect developmental and evolutionary processes at all levels. Four of the ten floristic provinces of America are represented within the State, with a fifth only a day's drive away. In this region one-fourth of all the species of higher plants of North America occur. The establishment of scientific facilities in related areas, such as the Institute of Arctic and Alpine Research, the Environmental Science Service Administration, the University Museum, and the Computing Center, greatly augments the potential for botanical research.

Despite such potential, the botanical sciences at the University of Colorado have been rapidly outdistanced at other institutions in less fortunate geographical locations. The botanists at the University of

Colorado are extremely concerned about the present level of botanical endeavor; we submit this review and prospectus with the hopes that the quality of research and teaching can be greatly improved.

We believe that botanical investigation and teaching suffers from the following defects in the botanical portion of the Biology Department:

1. Lack of research and teaching space and facilities. Each botanist has inadequate laboratory, office, and teaching facilities. There is no space for the up-to-date equipment needed for modern botanical research. Greenhouses, gardens, and laboratory space and equipment are virtually non-existent or inadequate. Quarters are cramped and crowded; storage and teaching space is hopelessly inadequate; rooms must be shared with many of the biological pursuits to the detriment of each. Scientific instruments which are vital in every field of modern science are largely unavailable to the botanists here.

2. Insufficient staff. The total scope of botany is only partially represented by the members of the present staff. This situation creates additional handicaps for both student and researchers since the gaps must be filled as well as possible by the existing staff to the detriment of their own research and teaching.

3. Inadequate financial support. The biological sciences have been conspicuously overlooked, while many of the other sciences have been vigorously encouraged at the University of Colorado. In particular, Physics, Chemistry, and Engineering have received strong support. Their space, staff, and research and teaching opportunities are conspicuously greater than those of Biology.

II. CONSEQUENCES OF THE PRESENT SITUATION

1. Research and teaching. Botanists here are aware of the advances made in their own fields of specialization at other universities, but their own ideas have limited possibility of being tested and developed without space and equipment. Thus a relatively small contribution to the mainstream of modern botany can come from the present staff. The future of botanical research under the existing situation is dim. Training and teaching that require modern instruments and techniques cannot be carried out here under the existing conditions.

2. Intellectual atmosphere. Insufficient staff, sparsity of students, and limitation of research opportunities do not provide the stimulating atmosphere essential to creative activities. Exciting new ideas come from exciting avenues of inquiry where up-to-date opportunities exist.

3. Student number. The number of students in botany will remain at a low level unless adequate staff and facilities are first provided.

4. Low morale. Good students and teacher-researchers can neither be attracted nor induced to stay here under the present circumstances. The botanists here are in a position where they must watch other sciences at this University and botany at other universities develop to their full potential.

III. PROPOSALS

We realize that the present situation in botany at the University of Colorado cannot be remedied overnight. We hope that the proposals presented below will initiate a program that will eventually bring this University to excellence in research and teaching in botany. It is not to be construed that these proposals are in any way designed to minimize

research and teaching in other areas of Biology or to gain support at the expense of zoological research and teaching, but rather to expand the role of botany and at the same time to help meet the highly justified needs of all areas of Biology for space, facilities, and staff.

A. We propose that research and teaching space for Botany be expanded in several ways:

a) Through the assignment to Botany of the space in McKenna Building which is at the present time being used by the Biological Sciences Curriculum Study.

b) Through the retention of the Hale Science Building for the Biology Department, more specifically its botanical section, when the Life Sciences Building I is completed. This is particularly important for these reasons:

(1) Approximately 80% of the space in the Life Science I Building will apparently be assigned to the Department of Psychology, with the Department of Biology space devoted primarily to General Biology, Microbiology, and Genetics, leaving little or no space for botanical teaching and research.

(2) An equally serious problem is that space for greenhouses on the ground level and for garden space for research purposes will not be available in the vicinity of the new Life Science Building. Greenhouses are already in operation adjacent to Hale Science Building, and space around this building is available for additional greenhouses and garden areas. Such greenhouses and gardens

could easily be screened from public view and would have no deleterious effect on the general campus landscaping.

c) Through the acquisition of the following new facilities:

(1) Modern (climate-controlled) greenhouses next to the Hale Science Building on a matching-fund basis by the University and the National Science Foundation.

(2) Additional growth chambers when space is made available for them in the Hale Science Building or elsewhere.

(3) Space for the cultivation of experimental plant material. Six to ten acres of suitable land are needed where plants can be cultivated in the field over a period of years. It is also recommended that a similar facility for working with alpine and arctic plants be constructed near Science Lodge, with some greenhouses and growth chambers for working on alpine and arctic floras. Transplant gardens at various altitudes are also necessary. When such facilities have been acquired, the University of Colorado will no doubt become a major center for biosystematics and biogeography.

B. We propose that research and teaching equipment for botany be expanded in the following ways:

a) By securing funds for equipment from the National Science Foundation and the National Institutes of Health. This should include a good electron microscope, several modern research microscopes with accessory equipment, apparatus for modern ecological research, and equipment for various phases of modern physiological investigation.

b) By securing graduate teaching facilities and equipment grants.

c) By securing grants for the botanical staff for encouraging individual projects.

d) By securing much-needed technical and secretarial assistance.

C. We propose that the botanical staff be increased to make botanical research and course offerings adequate for a modern department. New staff members should include:

a) a developmental anatomist-physiologist

b) an experimental mycologist

c) a numerical taxonomist-ecologist (computer botanist)

d) a chemotaxonomist

e) a phytogeographer

f) a physiologist with biochemical interests

g) a soil scientist

h) a paleobotanist

i) a geneticist

j) a field botanist for basic teaching in botany

k) a cytotaxonomist.

We would expect all of these staff members to be laboratory-oriented and to advance modern aspects of their respective fields, making use in varying degree, however, of the unrivalled opportunities presented by the environs of the Boulder area as a natural laboratory.

IV. CONCLUSION

The results of our proposals would be:

1. To strengthen the research activities of present staff members.
2. To broaden course offerings and research opportunities in the field of Botany for undergraduate and graduate students.
3. To increase the number of undergraduate and graduate students in Botany and to attract high-caliber graduate students.
4. To strengthen the morale of the botany group in particular and the Biology staff in general by attracting new staff members.

November 19, 1965

Erik K. Bonde

Askell Löve

William Moir

John Marr

Sam Shushan

James L. Smith

Curriculum-

Discipline as Subject matter (pl. vs. animals).

Specialization in botany-

1 Month - Report-

Revisions in bot. oriented - upper division 300-500 level.

Report.

Teaching Taxonomy-

Pl. Physiol - obs-

Enrollment projections - present, past, future.

No increase in teaching loads.

Cut down on labs at 300 level-

Increase labs at 400.

Credit hrs.

Courses

When to be offered-

F, S, both

Equipment needs

Gen. Biol.
Genetics (1 sem)
Pl. Ecol "
Pl. Physiol. "
Pl. Tax. "
Pl Morphol. "

32 hrs.

Shushan

classes on

M 9-12

T 9:30-12:30

W 9-12

Th 9:30-12:30

F 9-10

Bob Bye

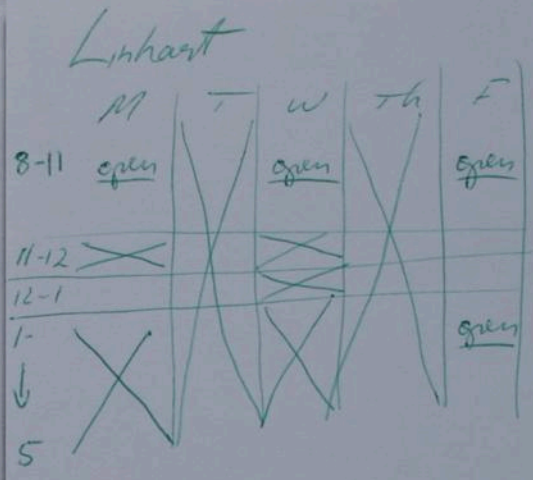
Teach MWF

3^{00} – 3^{50} PM

Mon Sched

1–5 MWF

Grant – No teaching conflicts until 20 October.



Bonde – Teaching Schedule – Fall 1976

Tues & Thurs. 1–5

Exec. Committee Monday 12–2

Fac. Meeting Wed. 12

Bruce Pollock

EPOTB 515 12 Mon, 11 Fri

Dan's Meeting 8:00 Mon

Webber

	M	T	W	Th	Fr.
8					
9					
10					
11					
12	X	X	X		
1	X				
2	X		X		X
3					
4					X
5					