



ANNUAL REPORT: June 1, 2014 – May 31, 2015
(i.e., Summer 2013, AY 2014-2015)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: William A. Powell

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

Course No.	Title	Credit Hrs.	No. Students	No. of Lab. Sections
------------	-------	----------------	-----------------	-------------------------

SUMMER:

FALL:

Time off from teaching duties to work on American chestnut project.

SPRING:

BTC425	Plant Biotechnology	3	12	1
--------	---------------------	---	----	---

NOTE: PLEASE INDICATE WHICH COURSE(S) HAD A SERVICE-LEARNING COMPONENT AND BRIEFLY EXPLAIN THE NATURE OF THIS COMPONENT. For examples of service-learning in courses, see: <http://www.esf.edu/students/service/courses.htm>. Service-learning is a form of structured experiential education in which students engage with the community to be active learners, to enrich their sense of civic responsibility, and to explore practical application for course content. Faculty oversight, reflective thinking, and reciprocity are key components of service-learning.

2. Non-Scheduled Course Offerings (e.g., 496, 899, 999)

Course No.	Title	Credit Hrs.	No. Students
EFB420	Internships in EFB	3	1
BTC420	Internships in Biotechnology	9	3
EFB495	Undergrad Exp/Coll Teach	3	1
BTC498	Research Problems/ Biotech	12	4
EFB798	Research Prob/Env & For Bio	1	1
EFB899	Masters Thesis Research	10	1
EFB999	Dissertation Research	2	1

3. Continuing Education and Extension (short courses, workshops, etc.)

Hosted 5 High School interns over the 2014 summer: Jennifer DeRosa, Meg Lovier, Elyse DuBois, Kaitlyn Nea, (Skaneateles High School students), and Alex Fontana (Manlius High School)

4. Guest Lecture Activities

Course No.	Title	No. of Lectures
EFB307	Principles of Genetics	1
EFB132	Freshman Orientation Seminar	1

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor __17__ and unofficial advisor __53__ (as coordinator of Biotechnology major)___

B. Graduate Students: (Name, degree sought, starting date, month & year; if a degree was completed, please give date and full citation for the thesis or dissertation).

MAJOR PROFESSOR

1. Tyler Desmarais, MS, started August 2014

CO-MAJOR PROFESSOR

1. Allison Oakes, PhD, (with Dr. Maynard), started May 2009

MEMBER, STEERING COMMITTEE (other than those listed above)

1. Oluwafunmilayo (Funmi) Adego Afelumo, MS, started Jan 2013

2. Amanda G. Gray, MS, started Aug. 2013

3. Rie Iriyama, MS, started Aug. 2011

4. Justin C. McMullen, MS, started Jan. 2013

5. Wenjun Cai, PhD, started May 2011

6. Andrew Tomes, MS, started Aug. 2013

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

1. Adam Hoffman (PhD defense, Examiner)
2. Mingyu Li (PhD defense, Chair)

III. RESEARCH COMPLETED OR UNDERWAY

A. Departmental Research (unsupported, boot-legged; title - % time spent)

Continuing research to develop DED and Elm Yellows resistant American elm. Currently unfunded. Approximately 1% of time.

Research using *Bacillus amyloliquefaciens* isolated as a lab contaminate but proved to inhibit fungal growth. This preliminary research lead to a seed grant mentioned in next section. Approximately 1% of time.

B. 1. Grant-supported Research (source, subject, amount - total award and current year, award period starting and ending dates; list graduate research assistants supported by each grant)

1. SUNY-RF Seed grant program, Protecting Trees from Diseases with *Bacillus amyloliquefaciens*. \$8,000 (5/13/13-12/31/14). PI with Dr. Maynard and Andy Newhouse Co-PIs.
2. The New York Chapter of The American Chestnut Foundation. Getting Events in the Ground and Tested. \$210,000 (8/1/12-7/31/15). Co-PI with Dr. Maynard as PI. One graduate assistant.
3. USDA-Biotechnology Risk Assessment Grant program (BRAG), Evaluating Environmental Impacts Of Maturing Transgenic American Chestnut Trees Relative To Chestnut Trees Produced By Conventional Breeding. \$500,000 (9/1/12-8/31/14 – no cost extension to 8/31/15). PI with co-PIs, Dr. Maynard, Dr. Parry, Dr. Briggs, Dr. Nowak, and Dr Tschaplinski (ORNL). Two graduate assistants.
4. **New:** Forest Health Initiative. Phase II: Supplemental - Transgenic American Chestnut leaf assays. \$30,000 (1/1/15 – 12/31/15) PI with Dr. Maynard Co-PI
5. **New:** USDA IR-4 project. Regulatory studies for the transgenic American chestnut. \$29,000 (5/1/15-4/30/16). PI.
6. **New:** Crowd Funding, 10,000 Chestnut Challenge. \$113,000 to date with more donations possible. PI with Dr. Maynard as co-PI.
7. **New:** The American Chestnut Foundation, Stanback Grant The American chestnut research. \$50,000 (7/1/14-6/31/15). PI with Dr. Maynard as co-PI. (possible renewals for 5 years, total \$250,000). One graduate assistant.
8. **New:** New York State legislation line item. American chestnut research and restoration project. \$100,000 (7/1/15 – 6/30/16, possibly refunded each year). PI with Dr. Maynard as co-PI.

2. Research Proposals pending (include information as in B.1., above).

Forest Health Initiative. Phase II: Year 3, Transgenic American Chestnut. \$88,333. One year. PI with Dr. Maynard Co-PI

Mississippi State University collaboration, Testing for deregulation of blight resistant American chestnut. \$240,000 for 4 years. PI.

Working with the ESF development office and TACF to find donors to the Chestnut Project. Goal is to raise \$3M over the next 5 years.

3. Research Proposals submitted, but rejected (include information as in B.1, above)

1. USDA AFRI NIFA. Does enhancing resistance to *Cryphonectria parasitica* in transgenic American chestnut affect its interactions with other microbes? \$500,000. 10/1/14-9/30/17. PI with Dr. Maynard and Steve Jeffers Co-PIs

IV. PUBLICATIONS (Full bibliographic citation, i.e., do not use "with Jones," or "Jones, et al."; please list only publications published, in press, or actually submitted during this reporting period --- **do not list manuscripts in preparation**).

A. Refereed Publications

Peer reviewed journals:

D'Amico, KM, TR Horton, CA Maynard, SV Stehman, AD. Oakes, and WA Powell. 2014. Assessing Ectomycorrhizal Associations on Transgenic American Chestnut Compared to the Wild-Type, a Conventionally-Bred Hybrid, and Related Fagaceae Species. *Appl Environ Microbiol* 81:100-108

Newhouse, AE, LD McGuigan, KA Baier, KE Valletta, WH Rottmann, TJ Tschaplinski, CA Maynard, WA Powell. 2014. Transgenic American chestnuts show enhanced blight resistance and transmit the trait to T1 progeny. *Plant Science* 228:88-97

B. Non-refereed Publications

Interviews leading to 31 (or possibly more) popular press articles, blogs, radio and TV shows:

The Chestnut Project in the News (6/1/14 – 5/13/15)

1. GenomeWeb: A little help from the chestnut's friends

GenomeWeb reports on ESF's American Chestnut Project. 5/12/15 [READ MORE](#)

2. SciTech Now: Discover how genetic engineering is saving the American Chestnut from blight

PBS's SciTech Now reported on the American Chestnut Project this week. 5/10/15 [READ MORE](#)

3. Smithsonian SmartNews 5/10/15:

"Turning the American Chestnut into a GMO Might be the Only Way to Save it"

<http://www.smithsonianmag.com/smart-news/wheat-genes-could-save-american-chestnut-180955216/>

4. Scientific American 60 second science 5/6/15:

"Wheat Genes Could Bring Back Chestnut"

<http://www.scientificamerican.com/podcast/episode/wheat-genes-could-bring-back-chestnut/>

5. Lake Placid News: A threat to hemlocks

The ESF Chestnut Project is mentioned in this article on the woolly adelgid threat to Adirondacks hemlocks. 4/8/15

[READ MORE](#)

6. Dr. Powell: Return of the king: The development of a blight-resistant American chestnut tree"

Dr. Powell will speak on the American Chestnut Project at SUNY New Paltz as part of the college's Earth Day celebration. 4/15

[READ MORE](#)

7. Skaneateles Journal: Skaneateles High School Environmental Club to host biotechnologist William Powell

(Bill Powell will talk on the American Chestnut Project in Skaneateles tonight. 3/25/15) [READ MORE](#)

8. NPCA Magazine: Cracking the Nut

(ESF's American Chestnut Project is discussed in this article on attempts to restore the American chestnut. 3/15)

[READ MORE](#)

9. Delaware Online: Did You Know: Delaware's lost trees

(ESF's American Chestnut Project is mentioned in this article taking a look at the trees that once dominated Delaware's lands. 3/10/15)

[READ MORE](#)

10. American Chestnut Project in Oregon State U Forestry Blog

(A recent blog article on genetic modification in forestry included a mention of the American Chestnut Project. 12/19/14)

[READ MORE](#)

11. Oak Ridge Natl Lab: blight-resistance of transgenic American chestnuts confirmed

(ORNL announced they had verified the blight-resistance of the transgenic trees, as well as near-identical chemical composition to unaltered American chestnuts. 12/14)

[READ MORE](#)

12. [Tests Show Wheat Gene Increases Blight Resistance of Chestnut Trees](#)

13. [Design & Trend: Scientists Modify Chestnut Tree's DNA To Cope With Blight](#)

(As the American Chestnut Project garners awareness, it meets resistance from anti-GMO groups. 12/28/14) [READ MORE](#)

14. Popular Science: Genetically Modified Chestnuts Roasting on an Open Fire
("A project to save the American chestnut is gaining momentum-and opponents." 12/24/14) [READ MORE](#)

15. TWC News: ESF develops a blight-resistant chestnut tree
(TWC's weekly Going Green segment reported on the development of a blight-resistant American chestnut at ESF. 12/8/14) [READ MORE](#)

16. Biology Fortified: The Return of a King
(Biology Fortified posted a video interview with Dr. Powell and Dr. Maynard on the development of a blight-resistant American chestnut and plans to return it to the wild. 12/2/14) [READ MORE](#)

17. Action Institute Blog: A GMO Thanksgiving
(The Action Institute blog featured the American Chestnut Project among other Thanksgiving-related genetic modification research projects. 11/25/14) [READ MORE](#)

18. Daily Orange: Professors use crowdfunding to help restore American chestnut trees
("After 25 years of work, two SUNY-ESF professors have developed a way to restore the American chestnut tree back to its former glory and are receiving funding from the community to help the cause." 11/17/14) [READ MORE](#)

19. Chestnut Project on CBC Quirks & Quarks
(CBC's Quirks & Quarks radio show interviewed Dr. Powell about the American Chestnut Project. 11/20/14) [READ MORE](#)

20. ESF American Chestnut Project in Washington Post
(Washington Post: Unearthed article series covered the Chestnut Project and the benefits of returning the American chestnut to eastern forests. 11/20/14) [READ MORE](#)

21. WRVO: SUNY-ESF finds success with fungus resistant American chestnut trees
(WRVO hosted an interview with Dr. Powell on the American Chestnut Project. 11/17/14) [READ MORE](#)

22. American Chestnut Project in Genetic Literacy Project
("Scientists are planning the return of an American icon in a genetically modified form." 11/14/14) [READ MORE](#)

23. Ars Technica: GMO trees could rescue American chestnut from invasive fungus
(The online science magazine Ars Technica shared an in-depth story on the success of the American Chestnut Project and the science behind the trees. 11/12/14) [READ MORE](#)

24. ScienceDaily: Blight-resistant american chestnut trees take root
(ESF scientists are growing the first American chestnut trees that can withstand the blight that virtually eliminated the tree from the eastern United States. 11/6/14) [READ MORE](#)

25. EcoRazzi: Threatened American Chestnut May be Saved by Genetic Engineering
("25 years after beginning their research, two professors at SUNY College of Environmental Science and Forestry have used genetic engineering to create a new strain of the threatened American chestnut tree." 11/6/14) [READ MORE](#)

26. LiveScience: Iconic US Tree May Be Saved by Genetic Engineering
(ESF researchers hope to produce thousands of the genetically modified chestnut trees to restore the plant to North America. 11/7/14) [READ MORE](#)

27. Science Codex: Blight-resistant American chestnut trees take root at SUNY-ESF
("Continuing research by ESF and collaborators from other institutions indicates that the transgenic trees do not affect the composition of leaf litter, the feeding habits of insects or the growth of ecologically important fungi."
11/6/14) [READ MORE](#)

28. Genetic Literacy covers Chestnut Project crowdfunder
("Save blight stricken American Chestnut? Crowd funding launches for GMO rescue" 11/7/14) [READ MORE](#)

29. [Blight-Resistant American Chestnut Trees Take Root at ESF](#)

30. American Chestnut Project in Get to Know GMOs Month
(The American Chestnut Research & Restoration Project was mentioned in an article as part of BIOtechNOW's month-long GMO feature. 10/22/14) [READ MORE](#)

31. Popular Science: GMOs-Beyond Pesticides
There are uses for GMO tech beyond pesticides and herbicides, that could have benefits for consumers, the environment, and human health. 07/28/14 [READ MORE](#)

C. Papers Presented at Science Meetings (give title, date, occasion, and location)

1. Can Genetic Engineering Help Save the American Chestnut. **Invited speaker.** 6/2/14 – 6/4/14. Joint Meeting of the Society for In Vitro Biology and Society for Cryobiology. Savannah, GA.

2. Evaluating Environmental Impacts of Maturing American Chestnut Trees Produced by Transgenic Relative to Conventional Breeding. **Invited speaker.** 6/5/14. BRAG Annual Project Director's Meeting for USDA-NIFA Biotechnology Risk Assessment Grants Program. Washington DC

3. Transgenic American chestnut trees for restoration to the forest (not field). 6/6/15. Meeting with the Environmental Protection Agency (EPA) Washington DC

4. Transgenic American chestnut demonstrates blight resistance. **Invited speaker.** 6/15/14 – 6/18/14. Biotechnology Literacy Project. Gainesville, FL

5. **Two invited presentations;** "After 110 years of fighting the blight, plantable resistant American chestnut trees have been produced" and "Are we ready to move forward with a regulatory test case?" Forest Health Initiative Annual meeting. We hosted the meeting at SUNY-ESF and gave lab and field tours. Syracuse, NY

6. Transgenic American Chestnut, a New Paradigm for Restoration. **Invited speaker by Ron Sederoff.** Departmental seminar series. 9/24/14. Raleigh, NC

7. New Technologies Solving Old Problems: The Return of the American Chestnut. 11/21/15. **Invited speaker .** Cornell Plant Biology seminar series. Ithaca, NY

8. Return of the King: The development of a blight resistant American chestnut tree. 1/16/15. **Keynote Speaker** Invitation for DNR research symposium. Cornell University, Ithaca, NY

9. Transgenic American Chestnut, a New Paradigm for Restoration. 3/9/15. Teleconference with the USDA APHIS BRS, EPA, and the FDA. Preparation for submitting regulatory review dossier. Syracuse, NY

10. Additional Tools for Solving an Old Problem: The Return of the American Chestnut. **Invited speaker.** National Research Council webinar on GE trees. 3/27/15. Broadcast nationally, but given from Syracuse, NY

11. Transgenic American Chestnut, a New Paradigm for Restoration. **Invited speaker.** 4/6/15- 4/9/15. New Genomic Solutions for Conservation Problems workshop. San Francisco, CA

12. Where there be mountains, there be chestnuts. **Invited Departmental Seminar speaker.** SUNY New Paltz, NY

D. Public Service Presentations (lectures, seminars, etc. to and for the public; give group or occasion, date(s), and attendance)

1. The American Chestnut Research & Restoration project display table and answering questions. New York State Fair. 8/24/14. Syracuse, NY (100's passed by)

2. 25 years to become an overnight success, The development of a blight resistant American chestnut tree. 9/18/15. Exemplary Researcher Award Seminar, Adaptive Peaks series, with Dr. Maynard. Syracuse, NY (estimated 50 - 60 attended)

3. Update on the Chestnut Project. 10/10/15 – 10/11/15. Annual meeting of the NY Chapter of The American Chestnut Foundation. Oneonta, NY. ~50 attending.

4. Update on the transgenic American Chestnut Project. 10/16/15 – 10/18/15. The American Chestnut Foundation (National) semi-annual board meeting. Abington, VA. ~ 40 attending.

5. Where there be mountains, there be chestnuts. 10/23/15. **Invited speaker.** SUNY Cobleskill 7th Generation Lecture series. Cobleskill, NY. ~80 attended.

6. American chestnut project. 11/5/15. radio interview - Jim Donovan WSYR (many listeners), Syracuse, NY

7. Determining chestnut blight resistance with leaf assays workshop. 11/24/15. With Andy Newhouse leading. 5 participants. Syracuse, NY

8. American chestnut project at SUNY-ESF. 1/22/15. Emeriti Lunch and Seminar with Dr. Maynard. ~ 20 attendees. Syracuse, NY

9. The Return of the King: Developing a blight resistant American Chestnut tree. 3/26/15. **Invited speaker.** Skaneateles High School sponsored talk. ~ 50 attendees. Skaneateles, NY

10. Return of the American Chestnut. 4/16/15. Spotlight on research **Keynote Presentation** with Dr. Maynard. ~15 attended. Syracuse, NY

11. Synergies between breeding and transgenic American chestnut programs. 4/24/15. Meeting, presentation, and lab tours with new national TACF president/CEO Lisa Thomson and TACF geneticist Jared Westbrook and chestnut team. 10 attending. Syracuse, NY

12. Return of the American Chestnut Restoration in New York State. 4/29/15. **NYSDEC Indian Nations Meeting.** ~20 attending. Syracuse, NY

13. Where there be mountains, there be chestnuts. 5/4/15. Cornell lecture course Issues in Social Biology – Diet to Disease DNA to Deforestation. ~ 40 students

14. Blight resistant American chestnut planting and presentation. 5/15/15. Camp Fire Club Association's Youth Conservation Day. (40 attended)

15. The Return of the King: Developing a blight resistant American Chestnut tree. 5/21/15. NY Metro ESF Alumni dinner. (numbers to be determined)

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local):
2. Industrial and Commercial Groups, etc.

B. Unfunded Service to Governmental Agencies, Public Interest Groups, etc.

Advisor to the NY chapter of The American Chestnut Foundation
 Science advisory board member of the national American Chestnut Foundation

VI. PROFESSIONAL DEVELOPMENT

A. Professional Honors and Awards (for teaching, research, outreach, etc.)

B. 1. Activities in Professional Organizations (offices held, service as chairman, member, participant or consultant)

2. Professional Society Membership
 American Phytopathological Society
 American Association for the Advancement of Science
 International Society for Horticultural Science

3. Other Professional Activities

a. Editorial activity

<u>Journal (s)</u>	<u>Responsibility</u>
<u>Other (books, symposia, etc.)</u>	

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
-------------------	---------------------------

<u>Agency</u>	<u>No. of proposals</u>
---------------	-------------------------

USDA APHIS BRAG program	1
-------------------------	---

Other

Lowe-Wilcox/Zabel award student proposals

c. Participation (workshops, symposia, etc.)

<u>Name of workshop, etc.</u>	<u>Date</u>	<u>Place</u>
-------------------------------	-------------	--------------

- C. Further Education/Re-training Undertaken, Leaves, Workshops, etc.
- D. Foreign Travel (Where, When, Purpose)

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

Coordinator for the undergraduate Biotechnology major

Awards Ceremony: Gave the Distinguished Scholar in Biotechnology and Joseph & Ruth Hasenstab Memorial Scholarship. Took photos of the event for the department.

B. College-level

Director of the Council on Biotechnology in Forestry

Roosevelt Wild Life Station Scientist in Residence

IBC (Institutional Biosafety Committee) member

C. University-wide, including Research Foundation

D. Foreign Travel (Where, When, Purpose)

VIII. SUMMARY OF SIGNIFICANT ACTIVITIES AND ACCOMPLISHMENTS DURING THIS REPORTING PERIOD, ESPECIALLY THOSE MOST NOTEWORTHY AND RELATIVE TO THE COLLEGE'S AND DEPARTMENT'S MISSION.

One paragraph on each of the following (**i.e., three paragraphs total**) would be most helpful: this past year, what have you done for our students, department/college, and self professionally? NOTE: The information in this section (along with the supporting specific information elsewhere in this report) should be your strongest case for being considered for a discretionary raise (when available), which I'll continue to award based on your contributions to the department and college this reporting period.

Last year's most significant accomplishment was to prove we have developed blight resistant American chestnut trees. This year we are building on that accomplishment by moving to the next stage, preparing for the long, expensive, and complicated federal regulatory review. There will be many unique facets to this process because nobody has tried to deregulate a genetically engineered organism to be used for ecosystem restoration. SUNY-ESF will be the first.

First we must gather significant public support. To accomplish this, we have reached out to the press and have initiated at least 31 news items (articles, blogs, radio, and TV) in a single year, with a Ranger school article and a NYFOA article written and just waiting to be published. The American chestnut project is one of the three most reported ESF projects this year and produced over double the 14 news reports on the chestnut project last year. Julia Allis in the communications office said, "it is safe to say that the Chestnut Project is one of our top 5 news stories **ever**." For web traffic, the Chestnut Project is responsible for our second-highest spike this year (25,000 visitors on Nov 13-14, behind Top 10 Species last May). All pages taken together, the Chestnut Project website had 31,781 unique page views between May 13, 2014 to May 13, 2015. Julia also wrote, "Between those three stories last year (Top 10 Species, Lonesome George, and American chestnut), I am seeing a sea change in how ESF gets recognized and talked about in science news and social media. We are getting more new traffic to our site and social media, and

more of that traffic originates outside the northeast US (our international numbers are also going up). We are getting mentioned and talked about more on social media. It has also led to new contacts for us at a high level of potential media exposure. News articles are also now making an effort to include the college's name (historically they tended to trim it out, and now they are sometimes even slipping it into photo captions just to make sure we get mentioned), and journalists and media organizations have subscribed to our social media accounts to monitor them for potential news stories. So congratulations! The Chestnut Project has played a key role in increasing ESF's visibility!"

I personally have given 27 public seminars to scientists and lay people this year and have more scheduled out to Jan. 2016. I have even reached out to the Haudenosaunee peoples of New York and received positive. I have learned to use social media such as Twitter (@ChestnutPowell) and Facebook (<https://www.facebook.com/groups/esfchestnut/?fref=nf>) to help promote the chestnut project and ESF. The chestnut project's webpages has also been updated (<http://www.esf.edu/chestnut>). These webpages include videos such as my TEDx talk with 11,531 views, a small stem assay with 3,364 views, the 10,000 Chestnut Challenge with 1,588 views, etc. We have developed mailing lists of over 1000 chestnut supporters. I have worked with TACFNY to establish a "mother" tree program where we have distributed over 1200 wild type nuts this year for people to plant as they wait for the transgenic trees. All this is essential to reach out to the public. We need their help to get the chestnut through the regulatory process. There is a significant anti-GMO movement that may try to stop the deregulation of the blight resistant trees. Therefore, we need strong public support to counter any roadblock they try to erect. We are building that foundational support.

The regulatory process will also cost significant amount of funds. In addition to work at ESF, we may need to hire regulatory lawyers at \$425/hr to help complete parts of the submission. Just as one example, if we are required to do animal feeding studies, they will cost a minimum of \$25K. But we are working closely with experienced regulatory people and have already receive some pro bono help. We are actively seeking new sources of funding because the typical federal granting agencies do not fund this type of applied regulatory work.

So we are being creative. This year, with the development office, we launched the first ESF crowd funding campaign called the 10,000 Chestnut Challenge. In just 30 days it raised over \$100,000, double what was expected. But this is only the start of the predicted \$3 million needed over the next 5 years to complete the regulatory review. So we are seeking funding from a variety of sources as seen in the grants section of this report, including a legislative grant of \$100,000 that we hope will continue for a few years. And, like the RWLS, we are seeking large donors to ensure we complete the review process in a timely manner and are free to begin the restoration of the American chestnut tree.

The American chestnut Research & Restoration project is the foundation of a larger goal to make ESF a center for biotechnology based tree restoration. Even though we are developing the American chestnut in a not-for-profit way, there are spin-offs that may help establish an ESF tree restoration center (or "legacy tree center"). We are now finalizing a deal with Z's Nutty Ridge LLC to produce tissue cultures of important agriculture chestnut trees such as "Colossal". This is a small start but it could provide royalties to further our research and allow us to expand into helping other tree species. We currently have the expertise and leadership to do this. But if there is ever a gap in our support, we could loose this valuable opportunity to other universities.

All this benefits our students, department, and college by providing research opportunities for the students and enhanced visibility and prestige for the department and college.

IX. A. FUTURE PLANS, AMBITIONS, AND POTENTIAL CONTRIBUTIONS FOR YOUR OWN PROFESSIONAL DEVELOPMENT AND THE ENHANCEMENT OF THE PROGRAM IN ENVIRONMENTAL AND FOREST BIOLOGY (brief summary)

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2012

a. Course(s) to be offered

I will continue to offer research projects at the graduate, undergraduate, and high school.

b. Proposed research activity

I will continue to focus the chestnut research including the new breeding component added last year to increase the genetic diversity of our blight resistance enhanced, transgenic American chestnut trees. I will continue to work with the government regulators (USDA, EPA, and FDA) to Sheppard the American chestnut tree through the review process.

c. University, professional society, and public service
Same high standards as before.

2. Fall Semester 2011

a. Course(s) to be offered
I will return to teaching EFB307 Principles of Genetics & EFB308 Genetics Lab.

b. Proposed research activity
Same high standards as before focusing on chestnut and the regulatory review.

c. University, Professional society, and public service
Same high standards as before.

3. Spring Semester 2012 –

a. Course(s) to be offered
BTC425 and EFB625 Plant Biotechnology

b. Proposed research activity
I will continue all my research as before

c. University, professional society, and public service
as before