

ANNUAL REPORT: June 1, 2012 – May 31, 2013
(i.e., Summer 2012, AY 2012-2013)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: Dylan Parry

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

	<u>Course No.</u>	<u>Title</u>	<u>Credit Hrs.</u>	<u>No. Students</u>	<u>No. of Lab. Sections</u>
SUMMER:	EFB-202	Ecological Monitoring -CLBS	3	80	(Entomology – 4 sections)
FALL:	EFB-504	Plant Herbivore Interactions	3	16	
	EFB-797	Insects and a Changing Climate3	1	10	
SPRING:	EFB-502	Ecol. And Mgmt. of Invasive Species	3	48	

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

	<u>Course No.</u>	<u>Title</u>	<u>Credit Hrs.</u>	<u>No. Students</u>
EFB-899	Master's Research		4	2

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

Syracuse University Project Advance – Forensic Science for High School Teachers – I taught a two-day class and field course on forensic entomology as part of a comprehensive week-long program in forensic science. This is the 8th year that I have contributed to this highly regarded workshop.

4. Guest Lecture Activities

	<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
None			

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 24 and unofficial advisor _____

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

Georgia R. Keene. MS, Started Sept. 2011.

CO-MAJOR PROFESSOR

Giovan Battista Girardi. MS. Started Sept. 2012 (with Fierke)

MEMBER, STEERING COMMITTEE (other than those listed above)

Joelle Chille (MS)

Daniel M. Cucera (MS)

Chris Foelker (PhD)

Lindsey Denhoff (MS)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

III. RESEARCH COMPLETED OR UNDERWAY

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

Forest tent caterpillar dynamics and long-term effects on forests. This research has been partially supported in some years, and bootlegged in other years. I have developed a long-term monitoring grid so as to better understand the temporal changes in abundance of this insect. Since its population cycles are approximately decadal, this represents a very long time commitment, far longer than any grant will support, and thus will continue to be bootlegged, perhaps for the duration of my career. This will be the 8th consecutive year of monitoring; I spend approximately 10% of my annual research time on this project. Other researchers are beginning to recognize the potential utility of this long-term data and some fruitful collaboration is likely to arise.

Adaptive change in gypsy moth and range expansion. I am extending some of the gypsy moth research that was originally funded by McIntire-Stennis while developing proposals to further support this research. Partial support has come from the USDA-Forest Service gypsy moth project with which I am involved (see below). I have scaled this up and have engaged in a multi-investigator, multi-institutional (8 universities/colleges) continent wide effort to incorporate climate and land use into understanding the dynamics of this invasive species, certainly the best studied invasion on Earth. We have grants pending at NSF (Macrosystems Biology)- \$3.9 Million and USDA AFRI - \$500 K). Currently, 10% of my research time.

Non-target Effects of Transgenic American Chestnut on Natural Enemies of Insect Herbivores. In conjunction with funded research on transgenic American chestnut on insect herbivores, I have been conducting spin-off research on non-target effects on insect natural enemies, particularly biological pesticides. I will pitch these pilot studies in a research grant proposal to either the EPA or USDA BRAG (or both) in the upcoming year (10% of annual research time)

Integrating Insect Herbivores into a more comprehensive understanding of forest response to climate change. I have initiated pilot research with Colin Beier and Greg Lawrence (USGS) to add an insect component to their long-term climatological work in the Adirondacks (5% of annual research time, something that will undoubtedly increase).

Developing sampling methodology for Barrens Buck Moth (with Brian Underwood and Neil Gifford (Albany pine Bush). This research is the heart of graduate student Georgia Keene's research. Barrens buck moth is one of the best indicator organisms for quality scrub-oak / pitch pines barrens but has proven difficult to census effectively. (15% of annual research time).

Comprehensive Survey of Macro-Lepidoptera at Brookhaven National Laboratory. I have engaged in an effort to inventory Lepidoptera on Brookhaven's extensive (and previously unstudied) wildlands, especially their intact central Long Island Pine Barrens community. This is a new project that just started in May (10% of research 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)

Parry, D., USDA- Forest Service. Climate Controlled Reproductive Asynchrony and Mating Success in Gypsy Moth Populations. 2011-2013. \$29,500. Although not part of Georgia Keene's thesis topic, she worked on some elements of this project and received summer support.

Whipps, C. M. Fierke, **D. Parry**. McIntire-Stennis. 2013-2015. Development of Molecular Techniques to Inform Management of *Sirex noctilio*, an Introduced Woodwasp. \$52,000. Supports Chris Foelker

Fierke, M., **D. Parry** and D. Allen. McIntire-Stennis. Evaluating Impacts of Native Parasitoids on *Sirex noctilio* in New York. \$79,000. 2009-2012. (provided support for Chris Standley and partially, Joelle Chille)

W. Powell, C. Maynard, **D. Parry**, C. Nowak, R. Briggs. USDA Biotechnology Risk Assessment Grants (BRAG) program. Evaluating Environmental Impacts Of Transgenic American Chestnut Trees To Chestnut Trees Produced By Conventional Breeding. \$499,985. 2012-2015. Will support one graduate student in my lab (to be recruited)

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

Johnson, D.M., K. Haynes, P.C. Tobin, **D. Parry**. USDA AFRI Population dynamics across an invasion front: Geographic, anthropogenic, and ecological drivers of species spread. \$500,000. 2014-2017.

Grayson, K.L. D.M. Johnson, **D. Parry**, P.C. Tobin. Population Persistence at an Invasion Front: Climatic Limitations on the Spread of Gypsy Moth. USDA AFRI \$199,000. 2014-2017.

Johnson, D.M., **D. Parry**, K. Haynes, A. Eckert, S.J. Agosta, R.J. Brinkerhoff, R.J. Dyer, M. Lieu, P.C. Tobin, B. Aukema, K.F. Raffa. J.D. Holland. NSF-DEB - Emerging Frontiers: Macrosystems Biology. Collaborative Research: Multi-scale drivers of invasion: Connecting local ecological processes and the human landscape to geographic spread. \$3,950,000. 2014-2019.

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

Parry, D., K. Grayson, D.M Johnson. National Science Foundation. Preliminary Proposal: Assessing adaptive changes to the ecology of a widespread, generalist invasive insect along a latitudinal gradient. **Note: we were advised by NSF directors to withdraw this proposal because of significant overlap with our larger NSF Macro-system Biology proposal.**

Parry & Beier MS. McIntire-Stennis. A Bioclimatic Model of Insect Defoliation Risk for Sugar Maple in a Changing Climate. \$52,726. (Full Proposal)

Parry, D. & C. Beier NSRC. Modeling Insect Defoliation Risk For Sugar Maple in a Changing Climate. Northeast States Research Cooperative, Theme 3. \$95,868 (Full Proposal)

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

D. Parry, B.H. Aukema. 201x. Interactive Effects of Climate Change and Insect Invasions in Temperate Forests. BioScience. Submitted MS. 05/2013.

Parry, D. 201x. Fitness costs of hatch asynchrony in an outbreak insect and its implications for a changing climate. PLOS1. Submitted. 05/2013.

B. Non-refereed Publications

Tobin, P.C., **D. Parry**, B.H. Aukema. 2013. The Influence of Climate Change on Insect Invasions in Temperate Forest Ecosystems. *In Press (Dec. 2013 release date)*. In *Challenges and Opportunities for the World's Forests in the 21st century*, T. Fanning (ed). Springer Academic Press.

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

Parry, D. Climate, Adaptation, and Range Expansion in Invasive Insects. Invited symposia talk. Entomological Society of America National Meeting. Knoxville, TN Nov. 11-14, 2012.

Keene, G.R., D. Parry, B. Underwood, N. Gifford. Distribution, phenology, and dispersal of barrens buck moth in the Albany Pine Bush Preserve. Northeast Natural History Conference, Springfield, MA.

Keene, G.R., D. Parry, B. Underwood, N. Gifford. Distribution and phenology of the barrens buckmoth in a threatened barrens ecosystem. Entomological Society of America National Meeting. Knoxville, TN Nov. 11-14, 2012. **Note: Georgia's poster won the prestigious student competition for best poster.**

Parry, D. Range Expansion and Invasive Forest Insects: Interactive Effects of Adaptation and Climate Change. Invited Seminar, The Rubenstein School of Environment and Natural Resources, University of Vermont. Burlington, VA. March 18, 2013.

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

Pine Bush Discovery Seminar Series. Why call the Pine Bush Home? The Enigmatic Ecology of the Barrens Buck Moth. Albany NY. April 18th, 2013

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.

Member, New York State Invasive Species Advisory Council

Albany Pine Bush Preserve. I have continued a long-standing relationship with the Albany Pine Bush preserve. The director, Neil Gifford, and I have collaborated on numerous projects, and I provide consultation on the effects of management on insect species that are of conservation concern. Although there is no direct compensation, we benefit through free labor from preserve staff and cheap housing for graduate students. Brian Hoven (MS 2010), in particular, was availed significant Pine Bush resources during the implementation of his project. MS student, Georgia Keene, is currently living and working at the Preserve. As a goodwill ambassador for ESF, I was able to connect Bill Shields

with the APBP, facilitating opportunities for honors student internships within the preserve. Currently Amanda Dillon (MS), Chris Standley (MS), and Steve Campbell (ESF Post-Doc) are all full time Pine Bush employees highlighting the connection ESF has with this preserve.

NY DEC. I share ecological information on insect defoliators and exotic forest pests with Jerry Carlson, head of Forest Protection for NY-DEC. In addition, I have been running a pilot study on the use of forest tent caterpillar pheromone as a monitoring tool and coordinating sites with the DEC so that we can compare their traditional sampling methods with this new tool. The DEC will fund trapping costs (fuel, pheromone, traps, etc.). Jerry has been providing a state vehicle and gas, which given the thousands of miles of driving this project entails, is a real important contribution.

Project Advance – Syracuse University, Forensics for High School teachers. I continue to run a two-day workshop each summer for the best and brightest high school science teachers in the state. I run a forensic entomology lab for them and teach them how to introduce this material into their own teaching programs. As forensic science is a great way to gain and keep student interest in biology, this program is in high demand. Although I get a token honorarium, the time investment is significant and thus is functionally un-compensated.

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)

Member, New York State Invasive Species Advisory Council (Not sure whether this should be listed here or as unfunded governmental service (or in both). It does have a designated legislative charter and is composed of professionals.

Member, New York Forest Health Advisory Group. Share information, collaborate and coordinate activities of academic and government agencies involving major threats to the health of New York's forests.

2. Professional Society Membership

Ecological Society of America
Society for Conservation Biology
Entomological Society of America

3. Other Professional Activities

a. Editorial activity

Journal (s)

Responsibility

Other (books, symposia, etc.)

Organized and moderated a session on Insect Diversity and Conservation at the Northeast Natural History Meeting.

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Bulletin of Entomological Research	(2)
Environmental Entomology	(1)
Oecologia	(1)
Biological Control	(1)

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

MacIntire-Stennis. Read, reviewed and ranked 8 pre-proposals, 4 full proposals
 ESF Seed Grants Read, reviewed and ranked 3 Proposals

c. Participation (workshops, symposia, etc.)

<u>Name of workshop, etc.</u>	<u>Date</u>	<u>Place</u>
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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 – Conservation Biology Major

-Chair the LeRoy C. Stegeman Award in Invertebrate Ecology committee; evaluate applications, and present award (as I have done since 2003)

-Ad hoc committee member, Burgess Award.

-Member GPAC (Graduate x Advisory Committee)

- Member CCAC

B. College-level

- Member, Committee on Research. Committee members evaluated and ranked McIntire-Stennis pre-proposals and full proposals, reviewed and ranked Seed Grant Proposals, determined exemplary ESF researcher, and organized and convened the Spotlight on Research.

- Judge, Spotlight on Research (Ranked a subset of graduate student posters)

- Member and stand in Chair (for Ken Tiss), Academic Integrity Committee. Convened hearings for students accused of academic integrity violations, evaluated the evidence, upheld or dismissed cases based on the documentation, and recommended punishments where appropriate.

C. University-wide, including Research Foundation

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 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, which I'll continue to award based on your contributions to the department and college this reporting period.

Students: In January I became the coordinator of the undergraduate major in Conservation Biology (152 students). In addition to the myriads of petitions and assessment requirements, this also entailed attending open houses and accepted student receptions to promote the major, and EFB and ESF in general.

I teach demanding rigorous classes and refuse to use multiple-choice despite the significant time spent grading written answers. In spring 2013, I again taught EFB-502, continuing to add new components to this course to keep it fresh and current in this rapidly developing field and I turned over more than 20% of the lecture material this year. Not recognized by either the Chair or the College, is the large input effort required to teach a course of this size (48 students) with continued utilization of labor-intensive written exams, term papers, and projects. Having previously taught a large service course with TA support, I can attest that instructing a demanding upper division course without TA's is considerably more time demanding. While it would be easy to use a SCANTRON format, my philosophy has always been that the value of multiple choice tests are very limited and that student learning is best when they are required to synthesize material in solving the kind of problems they will encounter in the real world. Perhaps this is why this course continues to get excellent evaluations from the majority of students that take it every year.

I served on CCAC as well as GPAC this year. In addition, I oversaw the Stegeman Award process and was once again able to provide two well-deserving students with an award and some supplemental funds for research.

Department and College: I served on two college-wide committees this year, CoR and have been a member and stand-in chair for hearing academic integrity violations. I represent the college's interests and perspective as a member on the NY State Invasive Species Advisory Committee, a group of governmental, non-profit, private sector, and academic organizations who function to advise NY State on invasive species issues and help to craft legislation that effectively combats targeted species or pathways. Although budget cuts have taken a toll on the organization, we were still able to play a large role in developing and changing the forth-coming 'clean-boat' bill that the governor signed into law this year.

Self: I have begun two collaborations with researchers working on climate change, one on integrating insects into understanding the effects on forests (Colin Beier and Greg Lawrence - USGS), and another with multiple investigators (particularly Derek Johnson and Kristine Grayson at VCU and Patrick Tobin with the US Forest Service) looking at the effects of climatic shifts on invasive insects. My association with the transgenic American chestnut program has also proved fruitful we (Powell et al.) received another round of significant USDA funding (500 K) to continue research on the system. This proposal was the number 1 ranked proposal in the USDA BRAG competition.

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)

My biggest focus over the next year will be a continued effort to broaden and my program at ESF. Our climate change / invasive insect work is beginning to bear some fruit – our research group (VCU, ESF, Forest Service) will have 2 presentations at the National Entomological meeting in Austin, Texas in November and two more at the USDA Annapolis meeting. In addition, I will be giving invited symposia talk at the National Gypsy Moth meeting in Illinois in November.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2013

a. Course(s) to be offered

EFB-202, Entomology Section, May 29-June 2, 2013

b. Proposed research activity

-USDA BRAG – large scale bioassays of the experimental chestnuts with several insect species.

-USDA Forest Service – Mating success and climatic asynchrony experiments with gypsy moth.

-Coupling ongoing long-term forest tent caterpillar research with sugar maple climate change plots.

c. University, professional society, and public service

SUPA – Forensic Entomology for Teachers Workshop (June 24-25)

NY Invasive Species Advisory Council (two Albany meetings, 2 teleconference, and a joint meeting with the ISC in July)

2. Fall Semester 2013

a. Course(s) to be offered

EFB 496/696 Forensic Entomology

EFB 797 Invasion Ecology, Revisiting Elton at a half century

b. Proposed research activity

Gypsy moth / climate change

c. University, Professional society, and public service

-Coordinator, Major Conservation Biology

-CCAC

-GPAC

-NY Invasive Species Advisory Council

3. Spring Semester 2014

a. Course(s) to be offered

EFB 502 Ecology and Management of Invasive Species

EFB 797 Insects and Climate Change

b. Proposed research activity

USDA BRAG supplemental or full proposal

c. University, professional society, and public service

-Coordinator Conservation Biology

-CCAC

-GPAC

-NY Invasive Species Advisory Council