

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

NAME: _____

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-496	Forensic Entomology	3	12	
	EFB-797	Elton Revisited: A Half Century of Invas ion Ecology	1	16	
SPRING:	EFB-502	Ecol. And Mgmt. of Invasive Species	3	28	

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)

	<u>Course No.</u>	<u>Title</u>	<u>Credit Hrs.</u>	<u>No. Students</u>
EFB 496		Study Abroad	12	1
EFB 498		Independent Research	3	1
EFB 498		Independent Research	4	1
EFB 420		Internship	3	1
EFB 420		Internship	1	1
EFB 899		MS 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 9th year that I have contributed to this highly regarded workshop.

SUNY-Cortland: Disaster NY. A ‘disaster’ themed workshop for high school science teachers (Climate Change, Super Storms, Invasive Species, and other contemporary threats to NY). I did the invasive species component.

4. Guest Lecture Activities

<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
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II. STUDENT ADVISING

- A. Number of undergraduates for whom you are the student's official advisor 31 and unofficial advisor _____
- B. Graduate Students: (list 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

Dave Nesbitt (MPS, May, 2014)
Neil Schoppmann (MS, August 2013)
Georgia Keene, (MS, August 2011)
Wendy Leuenberger (MS May 2014)
Aaron Brown (MS May 2014)

CO-MAJOR PROFESSOR

MEMBER, STEERING COMMITTEE (other than those listed above)

Jennifer Potrikus (MS)
Joelle Chille (MPS)
Lindsey Denhoff (MS)
Chris Foelker (PhD)
Elizabeth Carpenter (PhD Syracuse University)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Tony Dong (FNRM)

III. RESEARCH COMPLETED OR UNDERWAY

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

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 9th 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 (e.g., I am currently collaborating on a pilot project with Kyle Haynes, University of Virginia).

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 a major grant proposal pending at NSF (Macrosystems Biology)- \$4.1 Million. Currently, 25% 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 and Montezuma National Wildlife Refuge. 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. In addition, I have started an inventory of the Lepidoptera in Montezuma's riparian ash forests as these will soon be threatened by emerald ash borer. These are new projects that started in May 2013 and 2014, respectively (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)

2013-2015. Grayson, K., D.M. Johnson, **D. Parry**, P.C. Tobin. Population Persistence At An Invasion Front: Climatic Limitations On The Spread Of The Gypsy Moth. USDA-AFRI. \$157,000 (2013-2015).

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

2012-2015. Powell, W., C.A. Maynard, **D. Parry**, et al. Evaluating Environmental Impact of Maturing Transgenic Blight-Resistant American Chestnut. USDA BRAG \$500,000. (*Supports Aaron Brown*)

2011-2013. **D. Parry** and P.C. Tobin. Climate Controlled Reproductive Asynchrony and Mating Success in Gypsy Moth Populations. USDA Forest Service. \$38,000. (*Summer support for G. Keene and N. Schoppmann*).

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

Johnson, **D. Parry**, P. Tobin, K. Grayson, A. Eckert, and eight other PI's. National Science Foundation (Macrosystems Ecology). **Multiscale Drivers of Invasion: Connecting Local Ecological Processes and the Human Landscape to Geographical Spread.** \$4.19 million (\$500 K to ESF). 2015-2020.

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

Parry & Beier MS. Modeling Insect Defoliation Risk For Sugar Maple in a Changing Climate. \$52,726. (Full Proposal). Note – this was recommended for funding by CoR, but Dean of Research overruled this recommendation.

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.

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

Hoven, B.M*. and D. Parry. Indirect effects of pitch pine-scrub oak barrens restoration on the natural enemies of the threatened barrens buck moth, *Hemileuca maia* (Restoration Ecology **submitted**). * **Grad Student publication**

Tobin, P.C., **D. Parry**, B.H. Aukema. 2014. The Influence of Climate Change on Insect Invasions in Temperate Forest Ecosystems.. Pp. 267-293 *in* Challenges and Opportunities for the World's Forests in the 21st Century. Forestry Sciences Volume 81, T. Fanning (ed). Springer-Academic Press.

B. Non-refereed Publications

Tobin, P.C., **D. Parry**, B.H. Aukema. 2014. The Influence of Climate Change on Insect Invasions in Temperate Forest Ecosystems.. Pp. 267-293 *in* Challenges and Opportunities for the World's Forests in the 21st Century. Forestry Sciences Volume 81, T. Fanning (ed). Springer-Academic Press.

Return of the Gypsy's. D. Parry. New York State Forest Owners Association Newsletter. November 2013

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

Invited

D. Parry. Egg physiology and hatch phenology across the North American range of gypsy moth: Implications for a warming world. National Gypsy Moth Review, Chicago , IL Nov 4-7, 2013

D. Parry. Panacea or Pandora's Box Redux: Non-target Effects and Classical Biological Control in the Age of Invasion. University of Vermont, Rubenstein School Seminar. Burlington, VT. March 8, 2014.

D. Parry. Changing in a Changed World: Adaptive Evolution in Invasive Species. University of Vermont, Rubenstein School Seminar. Burlington, VT. March 8, 2014

Other Submissions

Parry, D. K. Grayson, D.M. Johnson. Adaptive shifts in the phenology of egg hatch across the latitudinal range of gypsy moth (*Lymantria dispar*) in North America. Entomological Society of America 61st National Meeting, November 10-13, 2013 Austin, Texas

Parry, D., G. Keene, C. Maynard, W. Powell. Non-target effects of transgenic blight resistant American chestnut (*Castanea dentata* (Marshall) on a seasonal guild of lepidopteran folivores. Entomological Society of America 61st National Meeting, November 10-13, 2013 Austin, Texas

Grayson, K. **D. Parry**, D.Johnson, N. Krajah, D. Grim. Local adaptation in larval performance across the latitudinal range of the gypsy moth, *Lymantria dispar*, in North America. Entomological Society of America 61st National Meeting, November 10-13, 2013 Austin, Texas.

Parry, D. K. Grayson, D.M. Johnson. Adaptive shifts in the phenology of egg hatch across the latitudinal range of gypsy moth (*Lymantria dispar*) in North America. 2014 USDA Interagency Research Forum on Invasive Species. Annapolis, MD. January 2014

Grayson, K. **D. Parry**, D.Johnson, N. Krajah, D. Grim. Local adaptation in larval performance across the latitudinal range of the gypsy moth, *Lymantria dispar*, in North America. 2014 USDA Interagency Research Forum on Invasive Species. Annapolis, MD. January 2014.

Graduate Student Posters and Talks

Page SM, Foelker CJ, Parry D, Fierke MK, Whipps, CM. Determining host-parasitoid linkages between *Sirex noctilio* and *Sirex nigricornis* through molecular techniques. Spotlight on Student Research. Syracuse, NY. April 2014. Poster Presentation

Foelker CJ, Parry D, Whipps, CM, Standley CR, Fierke MK. East meets West: Eastern invasive insect species that threaten western forest ecosystems: *Sirex* woodwasp. Western Forest Insect Work Conference. Sacramento, CA. April 2014. Invited Oral Presentation

Foelker CJ, Parry D, Whipps, CM, Fierke MK. Clustering of mortality attributed to the European woodwasp, *Sirex noctilio*. Western Forest Insect Work Conference. Sacramento, CA. April 2014. Oral Presentation

Foelker CJ, Fierke MK, Parry D, Whipps, CM. Establishing host-parasitoid linkages among *Sirex noctilio*, *Sirex nigricornis*, and native hymenopteran parasitoids using molecular techniques. New York Society of American Foresters. Syracuse, NY. January 2014. Poster Presentation

Foelker CJ, Parry D, Whipps, CM, Fierke MK. Spatial aggregation of pine mortality attributed to the European woodwasp, *Sirex noctilio*. New York Society of American Foresters. Syracuse, NY. January 2014. Oral Presentation

Foelker CJ, Fierke MK, Parry D, Whipps, CM. Developing molecular techniques to establish host-parasitoid linkages among *Sirex noctilio*, *Sirex nigricornis*, and native hymenopteran parasitoids. 2014 USDA Interagency Research Forum on Invasive Species. Annapolis, MD. January 2014. Poster Presentation

Keene, G.R., D. Parry, B. Underwood, N. Gifford. Spatial ecology, phenology, and dispersal of the threatened barrens buck moth, *Hemileuca maia* (Drury), in a fragmented pine-oak barren. Entomological Society of America 61st National Meeting, November 10-13, 2013 Austin, Texas

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

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.

NY State Invasive Species Advisory Council

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

Entomological Society of America

Entomological Society of Canada

Ecological Society of America

3. Other Professional Activities

a. Editorial activity

<u>Journal (s)</u>	<u>Responsibility</u>
The Canadian Entomologist	Subject Editor (Forest Entomology / Insect Ecology)
<u>Other (books, symposia, etc.)</u>	
Encyclopedia of the World's Pest Insects Commonwealth Agricultural Bureau International (CABI)	Subject Editor (Lymantriidae – Tussock moths)

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Biological Invasions	1
Ecology	1
Ecology Letters	1
Journal of Forestry	1
Canadian Entomologist	6 (as editor)
Canadian Journal of Forest Research	1

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

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)

Quebec and Ontario, Canada – August 2013: research collections

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

Coordinator - Conservation Biology Major (132 students)

CCAC – committee member
GPAC – committee member
Stegeman – Chair and award presenter
Dence – Chair and award presenter
Outstanding PhD Award committee - member

B. College-level

C. University-wide, including Research Foundation

D. Post-doctoral Research Associate Mentoring (list name(s) of post-docs and period of employment)

Dr. Kristine Grayson based at Virginia Commonwealth University; funded by USDA post-doctoral fellowship for two years for \$157,000; D. Parry co-mentor (with D.M. Johnson VCU)

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.

Students: In January 2013 I became the coordinator of the undergraduate major in Conservation Biology. In addition to the myriads of petitions and assessment requirements, I promote the college at accepted student recognition events and open houses, field questions from prospective students and parents, and write letters to the top potential recruits.

I teach demanding rigorous classes and refuse to use multiple-choice despite the significant time spent grading written answers. In spring 2014, 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 like this using labor-intensive written exams, term papers, and projects. Similarly, my forensic entomology course is a 2/3rds hands on field course that requires an enormous time investment prepping and maintain samples following recommended BMP for criminal investigation, field activities, and staging mock crime scenes. Although the FTE's are low, these are the kinds of courses that set ESF apart from competing institutions and give students value for their dollar. Through some analysis by GPAC (I am a member), it is very apparent that we are lacking in true (not co-listed) graduate courses and seminars. With that in mind, I taught the very well received graduate seminar on Charles Elton's seminal book on invasive species in the fall and will continue to offer these types of seminars going forward (new graduate level conservation of invertebrates course with R. Rundell for fall 2014). I also served on CCAC as and oversaw the Stegeman Award and Dence awards process and was again able to provide three well-deserving students with an award and some supplemental funds for research. I devote considerable time to helping my grad students acquire small grants and have been successful with both G. Keene (2013) and N. Schoppmann getting Sussman funding. In addition, G. Keene won best student poster honors in 2013 at the National meeting of the Entomological Society, as did Chris Foelker (M.K. Fierke MP) with myself as co-PI.

Department and College: 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 collaboration 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. We submitted a \$3.9 million NSF grant that was very well received for a first submission (1 Excellent, 1 Excellent/ Very Good, 3 very goods). In April we resubmitted this proposal after extensive revising it and going above and beyond what the panel summary and individual reviewers asked for. We are cautiously optimistic that we can get this large proposal funded soon.

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 IUFRO world congress in Salt Lake (October) – this is a big deal as there are relatively few speaking slots at this meeting.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2014

a. Course(s) to be offered

EFB-202, Entomology Section, July 8-13

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 (July 1-2)

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

2. Fall Semester 2014

a. Course(s) to be offered

EFB 504 Plant-Herbivore interactions

EFB 797 Invertebrate Conservation (with R. Rundell)

b. Proposed research activity

Gypsy moth / climate change

Invited presentation at IUFRO World Congress

c. University, Professional society, and public service

- Coordinator, Major Conservation Biology
- CCAC
- GPAC
- NY Invasive Species Advisory Council
- Subject Editor The Canadian Entomologist

3. Spring Semester 2015

- 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