

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

NAME: Melissa K. Fierke

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:	EFB202	Entomology (4 days)		80	
FALL:	EFB101	General Biology I	3	304	
SPRING:	EFB796	EFB Core Course	1	6	
	EFB797	Scientific Retractions (Faculty Advisor)		7	

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. EFB courses currently listed with service-learning components include: 416/6/1, 486, 518, 521, 532, 446/646. None.

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>
FALL:	EFB298	Research Problems (Inverts)	3	2
	EFB420	Internship (NHI, EAB, HWA)	17	5
	EFB495	UG College Teaching	7	4
	EFB898	Professional Experience (EAB)	6	1
SPRING:	EFB498	Research Problems (Inverts)	2	1

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

None

4. Guest Lecture Activities

	<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
FALL:	ENS132	Orientation Seminar: ENVSCI	1

5. Other

	<u>Title</u>	<u>No. Students</u>
SUMMER:	BOCES High School Program at Cranberry Lake	30

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 23 and unofficial advisor 3

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

Christopher Foelker	PhD	07/11	
Michael Parisio	MS	07/12	
Gregory Russo	MPS	08/11-5/13	Monitoring and management of emerald ash borer (<i>Agilus planipennis</i>) in the Finger Lakes Region and Rochester, NY

CO-MAJOR PROFESSOR

Joelle Chille	MS	01/12	
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(w/ C. Whipps)

MEMBER, STEERING COMMITTEE (other than those listed above)

Cheryl Bondi	PhD	08/10	
Rebecca Walling	MS	08/12	

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Joyce Fassbender	PhD	External Defense Examiner	
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(The City University of New York) "Diversity, resource partitioning and species turnover in neotropical saproxylic beetles (Coleoptera: Cerambycidae, Curculionidae) associated with trees in the brazil nut family (Lecythidaceae)"

Jesse Crandall	PhD	Chair	Candidacy Exam
Jason Hamadi	MS	Examiner	"Hyporeic invertebrate response to stream restoration through bedform diversification in a northern temperate stream"
Jamie Jones	MS	Examiner	
Evisa Abolina	PhD	Chair	Defense
Ang Lama	MS	Chair	Defense

III. RESEARCH COMPLETED OR UNDERWAY

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

I am currently working to get a project off the ground to quantify dispersal of emerald ash borer parasitoids along a linear corridor. Cooperators include USDA APHIS, USDA ARS, NYDEC, NYDAM, New York State Parks, Genessee Land Trust, Scottsville Emerald Ash Borer Task Force. 5%

I organized and facilitated initial work this past spring on a recently funded grant (see below) which will officially start in August assessing impacts of emerald ash borer biological control on health of ash trees in two outlier infestations in New York State. Cooperators include USDA APHIS, USDA ARS, NYDEC, NYDAM. 5%

Field research on *Merope tuber*, a little known scorpionfly. 1%

NY DEC provides summer field research transportation (a vehicles with gas and repairs included). Also, provides support via personnel to help with EAB research.

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)

M.K. Fierke, J. Vandenburg, M. Whitmore, R. Davies. Emerald ash borer rapid response management strategy for New York State. 09/10-02/13. U.S. Forest Service. \$133,315. Christopher Foelker

Colin Beier, J. Gibbs, **M. Fierke**, M. Mitchell, M. Dovciak. Impacts of acidic deposition and soil calcium depletion on terrestrial biodiversity and food webs in Northern hardwood forest ecosystems. 08/10-10/12. Northern States Research Cooperative. \$141,488. Cheryl Bondi.

Claire Rutledge, P. Careless, C. Teerling, M. Fierke. Degree day modeling and captive colony research for *Cerceris fumipennis*. \$48,000. (\$11,990 to ESF). USDA Forest Service. 2/11-2/13.

Recently Funded:

M.K. Fierke, J. Gould, J. Vandenburg, L. Bauer. Assessing the impact of emerald ash borer biological control on the health of ash trees in two outlier infestations in New York State. 8/13-7/16. \$119,416. Northeastern States Research Cooperative. Michael Parisio.

Sadie. Ryan, **M.K. Fierke**. Modeling the mother trees: the super spreader phenomenon in an emerging emerald ash borer. 8/13-9-15. McIntire-Stennis Cooperative Forestry. \$80,302. Michael Jones (starting Fall 2013)

Chris Whipps, **M. Fierke**, D. Parry. Development of molecular techniques to inform management of *Sirex noctilio*, an introduced woodwasp. 5/13-9/15. McIntire-Stennis Cooperative Forestry. \$81,235. Christopher Foelker.

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

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

Greg McGee, **M.K. Fierke**. Native plants as nutrient sources for emerald ash borer parasitoids. ESF Seed Grant. \$8,000.

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

Fierke, M.K., M. Whitmore, C. Foelker, J. D. Vandenberg, J. Carlson. 2013. Delimitation and management of emerald ash borer, *Agrilus planipennis* (Coleoptera: Buprestidae), at an outlier infestation in southwestern New York State. Canadian Entomologist. In press.

Foelker, C.J., J. Vandenberg, M. Whitmore, **M.K. Fierke**. Modeling *Agrilus planipennis* within-tree colonization patterns and development of a systematic subsampling plan. Environmental Entomology. In press.

Hellman, W., **M.K. Fierke**. Evaluating buprestid preference and sampling efficiency for the digger wasp, *Cerceris fumipennis* (Say), using morphometric and ecological predictors. J. Insect Ecology. In press.

Fierke, M.K., D.D. Skabeikis, J.G. Millar, S.A. Teale, J.S. McElfresh, L.M. Hanks. 2013. Identification of a male-produced pheromone for *Monochaums scutellatus scutellatus* and *M. notatus* (Coleoptera: Cerambycidae). Economic Entomol. 105:2029-2034.

Rutledge, C.E., **M.K. Fierke**, P. Careless, T. Worthley. 2013. First detection of *Agrilus planipennis* in Connecticut made by monitoring *Cerceris fumipennis* (Crabronidae) colonies. Journal of Hymenoptera Research. 32:75-81.

Haavik, L.J., D.J. Crook, **M.K. Fierke**, L.D. Galligan, F.M. Stephen. Partial life tables from three generations of *Enaphalodes rufulus* (Coleoptera: Cerambycidae). Environ. Entomol. 41:1311-1321.

B. Non-refereed Publications

- C. Papers Presented at Science Meetings (give title, date, occasion, and location)
- M.K. Fierke**, C. Rutledge. The thin green line: emerald ash borer in the Northeast. Eastern Branch Meeting, Entomol. Soc. of America, 3/2013, Lancaster, PA.
- M.K. Fierke**, J. Vandenberg, M. Whitmore, J. Carlson. Emerald ash borer delimitation and management in New York. Eastern Branch Meeting, Entomol. Soc. of America, 3/2013, Lancaster, PA.
- D. Bullis, C.A. Bondi, **M.K. Fierke**, C.M. Beier. Distribution of beetle families across the Northern Forest Region. SUNY ESF Spotlight on Student Research, Syracuse, NY. 4/2013. 3rd place UG poster.
- C.J. Foelker, J. Vandenberg, M. Whitmore, **M.K. Fierke**. Modeling subcortical colonization patterns of *Agrilus planipennis*. Multiple presentations.
 Joint Meeting of the New York and New England Societies of American Foresters, 1/2013, Saratoga Springs, NY. Oral presentation.
 USDA Annual Interagency Research Forum on Invasive Species, Annapolis, MD, 1/2013. Poster.
 Annual Meeting of the Entomological Society of America, 11/2012, Knoxville, TN. Poster.
- J. Chille, C. Whipps, **M.K. Fierke**. Molecular techniques elucidate cryptic relationships within the *Sirex noctilio* North American parasitoid guild. Annual Meeting of the Entomological Society of America, 11/2012 Knoxville, TN. Poster.
- C.A. Bondi, C.M. Beier, **M.K. Fierke**. Importance of soil calcium in the distribution and diet of eastern redback salamanders: Contrasting Results from Across the Northern Forest Region. *2012 Northeastern Natural History Conference*, Syracuse, NY.
- C.A. Bondi, C.M. Beier, **M.K. Fierke**. Are redback salamanders sensitive to soil calcium? Contrasting evidence from across the Northern Forest region. *Northeast Partners in Amphibian and Reptile Conservation 2012 Annual Meeting*, Crawford Notch, NH.
- D. Public Service Presentations (lectures, seminars, etc. to and for the public; give group or occasion, date(s), and attendance)
- Presentation at Utica College's Womyn's Herstory Month luncheon March 5, 2013. (~100 attendees)
 "Aspiring to be an intentional model: mother, scientist, advisor, and teacher"
- Entomology presentations: Chittenango Garden Club 6/12/12 (22 gardeners)
 Ed Smith Kindergarten classes 5/24/13 (80 students)
- Channel 3: Wild parsnip and giant hogweed:
<http://www.cnycentral.com/weather/story.aspx?id=767326#.UaydWotk-mE>
- ESF Going Green segment: Update on New York State Law on movement of invasive species
<http://buffalo.ynn.com/content/features/646284/ash-borer-beetle-killing-trees-throughout-the-state/>
- Article on cicadas in Saratogian:
<http://www.saratogian.com/articles/2013/05/07/news/doc5188615c5f797157565050.txt>
- Channel 3 & 5 Interview on new quarantine regulations on emerald ash borer
<http://www.cnycentral.com/m/news/story?id=894329#.UZGC2GS9Kc0>
- Pearson Mastering Biology meeting. 3/2013, Syracuse, NY. Presented on my experience using Mastering Biology, an online homework program developed by Pearson, Inc., the publisher of the Campbell Biology textbook we use in EFB101. The presentation was to university lecturers considering using Mastering in their classrooms. (~30)

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.

Serve as a science advisor to NYDEC on emerald ash borer and other forest invasives and attend meetings in Albany as needed.

Serve as co-director, along with Mark Whitmore (Cornell Natural Resources Dept), for the New York Forest Health Advisory Council. In this position I organize & facilitate annual/semi-annual meetings at ESF.

I serve on the City of Syracuse Emerald Ash Borer Task Force attending monthly meetings with other collaborators, e.g., Steve Harris, the Syracuse City Arborist, Jesse Lyons, Cornell Cooperative Extension, David Coburn, Onondaga Director of the Environment. I am a member of several sub-committees where we work on developing and implementing an emerald ash borer preparedness plan for the City of Syracuse and Onondaga County.

Answered questions from the public on insects/arthropods throughout the reporting period.

VI. PROFESSIONAL DEVELOPMENT

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

Presidential Award for Public Service/Outreach

Distinguished Teaching Award – ESF Undergraduate Student Association

B. 1. Activities in Professional Organizations (offices held, service as chairman, member, participant or consultant) - None

2. Professional Society Membership

Ecological Society of America

Entomological Society of America

Canadian Entomological Society

Society of American Foresters

3. Other Professional Activities

a. Editorial activity - None

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Environmental Entomology	2
Canadian Journal of Forest Research	1
Biological Invasions	1
Forest Ecology & Management	1
Oecologia	1

c. Participation (workshops, symposia, etc.)

<u>Symposia organized</u>	<u>Date</u>	<u>Place</u>
Eastern Branch Mtg, Entomol. Soc. of Am. Thin Green Line, EAB in the NE	3/2013	Lancaster, PN

C. Further Education/Re-training Undertaken, Leaves, Workshops, etc.

Participated in mentoring study with MS student through Rochester University and Upstate Medical Center.

Participated in Pearson's Mastering Development Summit in San Francisco, CA Feb 1 & 2 where faculty members from around the country were brought in to work with editors and software developers to discuss design changes, feature and content development and prioritization, and our students' overall experience using Mastering Biology.

Attended a Security Presentation by Jim Sahn with ESFs ITS.

Attended a Purchasing Information session by ESFs Business Affairs.

Attended a Distressed Student presentation by ESFs Student Services.

Attended a Student Disability presentation by ESFs Student Services.

D. Foreign Travel (Where, When, Purpose)

None

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

Graduate Program Advisory Committee

EFB's representative, Urban Ecology minor, attend meetings and student capstones

Engaged with faculty searches for Wildlife and Toxicology

Scholarship committees: Roskin undergraduate award to outstanding female senior

Outstanding PhD student award

Stegeman invertebrate ecology graduate award

Simeone Endowed Entomology Fellowship

Izen Ratzlaff Award

B. College-level

Chair, Committee on Public Service and Outreach

Faculty Governance Executive Committee

Chair, Bicycle Safety Committee – founded in January 2013 and engaging stakeholders at ESF, SU and the City of Syracuse to increase cycling safety for ESF commuters

Campus Climate Change Committee

Athletics Committee

ESF Learning Community - Participated in ESF's professional Learning Community Retreat in June 2012 as well as at the Freshmen Learning Community Retreat at Orenda Springs in September 2012.

Graduate Assistant Colloquium on Teaching and Learning Blackboard training

Development of a college biology course, in collaboration with Outreach and local high school teachers and administrators, to be offered in local high schools

December and May Senior Soirees

C. University-wide, including Research Foundation

None

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.

In the fall semester, I taught General Biology for the fifth year with >300 students. I supervised three graduate and four undergraduate teaching assistants along with their workshops and grading - all went smoothly with overall class evaluations again strong for the two lecture sections. I facilitated the EFB Core Course for graduate students this past semester where the main goal was a solid research proposal. I oversaw five internships summer 2012, including several Natural History and Interpretation internships as well as two in Environmental Science and a Conservation Biology honor's thesis. Two students worked on research projects under me this past fall/spring, one sorted samples for invertebrates along a calcium gradient and another evaluated beetle data from the same research project. The second project resulted in a 3rd place showing at the ESF Spotlight on Research event with >100 competitors. This past year, I wrote 17 UG student recommendation letters and many of these resulted in successful internships or positions. I am happy with the current state of my research program and the progress of my graduate students. We've had several publications come out and I am still working with several others on their publications. Two of my graduate students presented at the Annual USDA Invasive Insect meeting in Annapolis and three at the National Entomological Society meeting in Knoxville, TN this past year. A new MS started in August and is working with the NYDEC and USDA APHIS this summer developing/refining trapping for emerald ash borer parasitoids. Another MS student is working with collaborators at USDA ARS on a potentially economically important ambrosia beetle. My PhD student presented his research proposal on *Sirex noctilio* and is off to a good start with a couple of publications and several presentations at local, regional and national meetings.

I served on six departmental and college committees as well as taking an active part in the ESF Learning Community, working with other faculty on student retention and success, and serving as the departmental representative on the Urban Ecology minor. This past spring I founded a new Bicycle Safety Committee, which is under the umbrella of the Campus Climate Change Committee and am working with ESF partners, Syracuse University engineers, planners and safety officials as well as the City of Syracuse Transportation Planner to make bicycling a safer commuting option for faculty, staff and students. I've continued my outreach efforts, doing presentations and media interviews, however, I now pass most opportunities to my graduate students who are doing an excellent job of taking them on, being enthusiastic and getting our science out there. Two of my grads have presented entomology lectures at Bryant and Stratton this past year and another will be doing so over the summer.

A particularly noteworthy opportunity this past year was an invitation to be the keynote speaker at Utica College's Womyn's Herstory Month luncheon. My presentation, "*Aspiring to be an intentional model: mother, scientist, advisor, and teacher*", was well received and attended with ~100 students, staff, faculty and community members. Another honor was being asked to participate in Pearson's annual Mastering Biology Summit in San Francisco, CA. Fourteen faculty were invited from around the country to participate in this event, to share their experiences and to provide feedback on new ideas and innovative tools. Other professional development has included attending conferences and accepting invitations to present my lab's research. This past spring I again organized a symposium at the Eastern Branch Annual Meeting of the Entomological Society of America on emerald ash borer. I continue to work closely with the NY-DEC and collaborators with Cornell Natural Resources and the USDA-Ag and Research Station as well as cultivating other collaborators within ESF, e.g., Sadie Ryan and Chris Whipps, as well as agencies, e.g., USDA Forest Service and USDA Agriculture and Plant Health Inspection Service.

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)

I will be attending a week teaching institute (with Greg McGee) sponsored by Howard Hughes Medical Institute at SUNY Stonybrook in August on incorporating active learning in large classrooms This fall I will again be teaching EFB101, General Biology, and aim to develop and incorporate both active learning as well as a service learning component. I will facilitate the EFB Core Course in the spring semester and teach Systematic Entomology and then teach Forest Health Monitoring in the Maymester. I will continue my outreach and service efforts on behalf of ESF and EFB and will explore professional development avenues, including attending conferences and workshops in the coming year as my teaching load allows.

A new PhD student co-advised by Sadie Ryan and I will be starting in the fall on our McIntire-Stennis grant. He has a strong background in forest entomology and will be using dendroentomological techniques to model dispersal of emerald ash borer. I am very much looking forward to continuing working with my continuing and new graduate students, mentoring them through graduate school, facilitating their research projects, making sure they publish their results, and cultivating professional positions for them. I plan to again attend several conferences this coming year and will be presenting an invited talk at the Annual Entomological Society of America meeting in November 2013. All of my current graduate students will attend and present their research, and we will all be doing outreach and recruiting graduate students into our entomology program at ESF. I will also attend the Invasives Meeting in Annapolis MD in Jan 2014 with my graduate students where we will present our research. I will continue to write grants to fund new students and am determined to explore other avenues of funding considering the reality of reduced funding opportunities for traditional entomological research.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2013

- a. Course(s) to be offered: Entomology section of EFB202 at Cranberry Lake
Facilitate BOCES high school program at Cranberry Lake

b. Proposed research activity

I will be spending a great deal of time this coming summer releasing EAB parasitoids and then deploying traps and monitoring them weekly for a parasitoid dispersal study south of Rochester on a 15 km stretch of the Genesee Greenway. I am working closely with many cooperators: NYDEC, NYDAM, New York State Parks, Genesee Land Trust, Monroe County Emerald Ash Borer Task Force.

I have already spent a couple of weeks this past spring and will continue into the summer and next year working on assessing the impact of emerald ash borer biological control on the health of ash trees in Ulster/Green and Cattaraugus Counties.

I will also be deploying longhorned beetle traps in a collaborative research project with Larry Hanks (Univ. of Illinois) and Jocelyn Millar (Univ. California Riverside) on pheromone/lures to catch longhorned beetles. David Bullis, an ESF UG will be helping with this project.

Chris Foelker (PhD) will continue his research on *Sirex noctilio*.

Joelle Chille (MS) is working with John Vandenberg, a collaborator with USDA-ARS on ambrosia beetles. She is funded for this project via a Sussman fellowship.

Mike Parisio (MS) is doing an internship with the NYDEC and is in charge of deploying PPTs for EAB. He will be starting his research this summer comparing different trapping methods for EAB parasitoids in collaboration with the NYDEC Delmar field lab.

Michael Grober, a new undergraduate transfer student, will be working on field trapping for *Meropa tuber*, a little known mecopteran.

c. University, professional society, and public service

I will attend the Learning Community Retreat in June and will give presentations at the Graduate Teaching Assistant Colloquium as well as Freshman Orientation.

I will be reviewing the diversity chapters for Campbell Biology for the next edition.
I will be reviewing and developing questions for Campbell 10 Biology Test Bank.
I will review manuscripts as the opportunity arises and I have time for.

2. Fall Semester 2013

- a. Course(s) to be offered - EFB101. Gen Bio I: Organismal Biology and Ecology 3 credits
EFB797 Invasive Forest Insect Pests Seminar 1 credit

b. Proposed research activity

S. noctilio, emerald ash borer, longhorned beetle and *Merope tuber* research.

c. University, professional society, and public service

Chair, Bicycle Safety Committee
Campus Climate Change Committee
Chair COPSO
Secretary Faculty Governance
Faculty Governance Executive Committee
Athletics Committee
Graduate Program Advisory Committee
Learning Community member
Review manuscripts and grants as called upon and as time permits

3. Spring Semester 2014

a. Course(s) to be offered

EFB796 EFB Core Course 1 credit
EFB566 Systematic Entomology 3 credits

b. Proposed research activity

S. noctilio and emerald ash borer research.

c. University, professional society, and public service

Chair, Bicycle Safety Committee
Campus Climate Change Committee
Secretary, Faculty Governance
Faculty Governance Executive Committee
Athletics Committee
Urban Ecology minor
Graduate Program Advisory Committee
Review manuscripts and grants as called upon and as time permits

4. Maymester 2014

a. Course(s) to be offered

EFB439 Forest Health Monitoring 3 credits