

**ANNUAL REPORT: June 1, 2013 – May 31, 2014**  
**(i.e., Summer 2012, AY 2012-2013)**  
**DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY**  
**SUNY-ESF**

**NAME: Melissa K. Fierke, Associate Professor, Forest Entomology**

**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	Entomol, Stats, Projects (13 days)		3 80	Session A
FALL:	EFB101	General Biology I	3	273	
	EFB796	EFB Core Course	1	14	
SPRING:	EFB566	Systematic Entomology	3	9	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. 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:	EFB420	Internships	12	4
	EFB495	UG College Teaching	11	6
	EFB498	Independent Research	3	1
SPRING:	EFB298	Research Apprenticeship	2	1
	EFB420	Internships	13	4
	EFB498	Independent Research	6	2

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	34

**II. STUDENT ADVISING**

A. Number of undergraduates for whom you are the student's official advisor 19 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

CO-MAJOR PROFESSOR

Joelle Chille (w/ C. Whipps)	MPS	01/12
Michael Jones (w/ Sadie Ryan)	PhD	08/13

MEMBER, STEERING COMMITTEE (other than those listed above)

Zachary Smith	MS	01/13	
Molly Hassett	MS	08/13	
Cheryl Bondi	PhD	08/10	
Rebecca Walling	MS	08/12-4/14	Effects of invasive earthworms on soil nutrient distribution and ectomycorrhizal diversity

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Evisa Abolina	PhD	Chair	2013 Summer Defense: Integrated approach to estimate agricultural land availability for SRWC in Latvia
Ang Sanu Lama	MS	Chair	2013 Summer Defense: Inclusivity in Napalese timber management
Jamie Jones	MS	Examiner	2014 Vernal pools of the Northeast: plant assemblages & environmental conditions of constructed & natural ephemeral pools
Georgia Keene	MS	Examiner	
Will Helenbrook	PhD	Examiner	

**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%

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)

G.G. McGee, **M.K. Fierke**. Nutrient resources associated with establishment and long-term maintenance of emerald ash borer biocontrol agents. 8/14-9/16. McIntire-Stennis Cooperative Forestry. \$53,860. Molly Hassett.

**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.
- S.J. 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, PhD.
- C.M. Whipps, **M.K. 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**. Nutritional resources enhancing establishment and growth of emerald ash borer parasitoid populations. \$129,492. Final reviews were >3 (3 = very good, 4 = excellent).
    - M.K. Fierke** (actually ~90% Mike Jones, PhD student). Sustainability Forestry Initiative Community Grant. \$5,950. EAB in the urban environment: engaging high school students as citizen scientists.
    - S. Shaw, D. Larsen, C. King, **M.K. Fierke**. Hill Collaboration in Environmental Medicine RFP. Relating macro-scale and micro-scale landscape features to tick densities to provide actionable information to minimize Lyme disease exposure risk. \$14,250. “very highly rated”, “impressed with topic”
    - J. Duan, J. Vandenberg, D. McCullough, M. Whitmore, R. Van Driesche, J. Elkington **M. Fierke**, D. Bean. Areawide management of the invasive emerald ash borer, *Agrilus planipennis*. USDA-ARS Area Wide Pest Management RFP. \$1,000,000.

#### IV. PUBLICATIONS

##### A. Refereed Publications

- Hellman, W., **Fierke, M.K.** 2014. Evaluating buprestid preference and sampling efficiency of the digger wasp, *Cerceris fumipennis*, using morphometric predictors. *J. Insect Sci.* 14:4. Available online: <http://www.insectscience.org/14.4>
- 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.* 145:577-587.
- Foelker, C.J., J. Vandenberg, M. Whitmore, **M.K. Fierke**. 2013. Modeling *Agrilus planipennis* within-tree colonization patterns and development of a systematic subsampling plan. *Environmental Entomology.* 42:532-538.

##### B. Non-refereed Publications

- M.K. Fierke**, C.J. Foelker. 2014. Scorpionflies: Unusual Forest Insects. New York Forest Owner. In Press.

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

- C. J. Foelker, D. Parry, C.M. Whipps, **M.K. Fierke**. Spatial aggregation of pine mortality attributed to the European woodwasp, *Sirex noctilio*. 1/2014, New York Society of American Foresters Ann. Meeting, Syracuse NY. Presentation.
- C.J. Foelker, **M.K. Fierke**, D. Parry, C.M. Whipps. Developing molecular techniques to establish host-parasitoid linkages among *Sirex noctilio*, *S. nigricornis*, and native hymenopteran parasitoids. 1/2014 USDA Interagency Research Forum on Invasive Species – Annapolis, MD. Poster.
- C. J. Foelker, D. Parry, C.M. Whipps, **M.K. Fierke**. Colonization patterns of *Sirex noctilio* at a pine plantation in the Adirondacks. 10/2013 Sirex Symposium. Cornell University, Ithaca, NY.
- M. Jones, **M.K. Fierke**, S. Ryan. Understanding the emerging emerald ash borer infestation in New York. 03/2014. New York Society of American Foresters Ann. Meeting, Syracuse NY. Poster.

- 03/2014. From Lab to Landscape: Integrated Infectious Disease Research. Poster. 2<sup>nd</sup> Place.
- M. Parisio, J. Gould, J. Vandenberg, L. Baur, **M.K. Fierke**. Assessment of emerald ash borer parasitoid recovery methods within white ash stands in New York. 11/2013. Poster. New York Society of American Foresters Ann. Meeting, Syracuse NY.
- E. Kosinski, **M.K. Fierke**. Color preference in members of the order Lepidoptera: a case study in central New York. 4/2014. Poster. SUNY ESF Spotlight on Student Research.
- N. Donato, C.A. Bondi, **M.K. Fierke**, C.M. Beier. Influence of soil calcium and stand age on the structure and functional diversity of arthropods: a case study in two northern hardwood stands. 4/2014. Poster. SUNY ESF Spotlight on Student Research. Poster.
- S. Page, C. J. Foelker, **M.K. Fierke**, D. Parry, C.M. Whipps. Determining host-parasitoid linkages between *Sirex noctilio*, *S. nigricornis* molecular techniques. SUNY ESF Spotlight on Student Research. Poster.
- C. J. Foelker, D. Parry, C.M. Whipps, **M.K. Fierke**. Colonization patterns of *Sirex noctilio* at a pine plantation in the Adirondacks. 11/2013 Entomological Society of America annual meeting. Austin, TX. 1<sup>st</sup> place President's award for outstanding presentation.
- M. Parisio, J. Gould, J. Vandenberg, L. Baur, **M.K. Fierke**. Assessment of emerald ash borer parasitoid recovery methods within white ash stands in New York. 11/2013. Entomological Society of America annual meeting. Austin, TX. Poster.
- J. Chille-Cale, J. Vandenberg, M. Griggs, C.M. Whipps, **M.K. Fierke**. Repellency and Efficacy of two microbial agents for *Xylosandrus germanus*.  
11/2013. Entomological Society of America annual meeting. Austin, TX.  
09/2013. Society of Invertebrate Pathology annual meeting. Pittsburg, PN. Poster.

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

Importance of Insects. Earth Day presentation at the Museum of Science and Technology, Syracuse, NY. April 2014. 16.

E. Invited Research Presentations

- M.K. Fierke**. Girdling, Peeling and Rearing to Know: Insights into New York Forest Invaders.  
2/26/2014, SUNY Buffalo graduate seminar series, Buffalo, NY  
3/2014, USDA Agriculture and Research Station Seminar Series, Ithaca, NY  
4/17/2014 SUNY New Paltz School of Science and Engineering Colloquium seminar series, New Paltz
- C. J. Foelker, D. Parry, C.M. Whipps, **M.K. Fierke**. Clustering of mortality attributed to the European woodwasp, *Sirex noctilio*. Apr 2014. Western Forest Insect Work Conference. Sacramento, CA. Invitation to M. Fierke. Fulfilled by PhD student.
- M. Whitmore, **M.K. Fierke**, J. Vandenberg. Connecting research to the "real world": helping land managers make informed decisions. 11/2013. Entomological Society of America annual meeting. Austin, TX. Invitation to M. Fierke. Fulfilled by collaborator.

## 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.

Participated in a Bioblitz at Clark Reservation State Park

Channel 9: Story on cold temperatures killing off pests, including emerald ash borer.

<http://www.localsyr.com/story/experts-cold-could-help-derail-malicious-bugs-in-c/d/story/iJV-ThA8tkildXqcNQXm4A>

Article in the Syracuse Post Standard:

[http://www.syracuse.com/news/index.ssf/2013/06/working\\_moms\\_bring\\_home\\_more\\_m.html](http://www.syracuse.com/news/index.ssf/2013/06/working_moms_bring_home_more_m.html)

## VI. PROFESSIONAL DEVELOPMENT

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

Program Cooperator Award Onondaga County Cornell Cooperative

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

### 2. Professional Society Membership

Entomological Society of America

Canadian Entomological Society

### 3. Other Professional Activities

a. Editorial activity - None

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Arboriculture & Urban Forestry	1
Canadian Entomologist	1
Coleopterist's Bulletin	1
Economic Entomology	1
Environmental Entomology	1
Forest Ecology and Management	1
Journal of Forestry	1
Oecologia	1

Note: for 3 reviews, I mentored two of my PhD students through the review process (with permission)

Campbell Biology

Chapter 26 Diversity of Life

c. Participation (workshops, symposia, etc.)

Symposia organized

Date

Place

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

Participated as a National Academies Education Fellow in the Life Sciences at a HHMI Summer Teaching Institute at SUNY Stony Brook in August 2013 as well as a follow up weekend in March 2014.

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 search for Microbiology position

Scholarship committees: Roskin undergraduate award to outstanding female senior

Chun Wang to outstanding female senior undergraduate award

Outstanding PhD student award

Stegeman and Simeone Endowed Entomology Fellowship

B. College-level

Secretary, Faculty Governance

Faculty Governance Executive Committee

Chair, Bicycle Safety Committee – founded in January 2013 to engage 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 2013 as well as at the Freshmen Learning Community Retreat at Orenda Springs in September 2013.

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

Organized and led an activity for Take Your Daughters/Sons to Work Day for the ESF Women's Caucus on the Importance of Insects. April 29, 2014. 37 participants in 2 one hour sessions.

December and May Senior Soirees

C. University-wide, including Research Foundation

Conversations in the Discipline grant: K. Donaghy, P. Hirsch, **M.K. Fierke**, S. Turner, P. Vidon, S. Weiter. \$5,000. Depolarizing the Environment: Thinking broadly about science, policy and politics.

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

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.

One extraordinary highlight of last summer was attending a week Summer Teaching Institute workshop funded by Howard Hughes Medical Institute at SUNY Stony Brook. It was an information packed week extolling backward course design, active learning techniques, developing teachable units, and appreciating diversity. I used much of what was covered in the STI when I taught General Biology for the sixth year with >270 students. I supervised three graduate and six 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 where the main goal was get grads off to a good start in the department, forming a supportive cohort of students as well as writing a solid research proposal. I oversaw eight internships summer and fall 2013, including six in EFB and two in Environmental Science. Two students worked on research projects under me this past fall/spring and both presented at ESF's Spotlight on Research. I've written >20 UG student recommendation letters with many resulting in successful internships or positions and I nominated an advisee for a SUNY Chancellor's Award, which she received. 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. Three of my graduate students presented at the Annual USDA Invasive Insect meeting in Annapolis, the New York Society of American Foresters meeting and three at the National Entomological Society meeting in Austin, Tx this past year. A new PhD started in August and is working with several urban foresters on emerald ash borer management. My MS student is working with collaborators at USDA ARS and APHIS on emerald ash borer parasitoids and both were recently invited to present at an EAB symposia at the annual ESA meeting in Portland OR this coming fall. My other PhD student passed his candidacy exams and is going into his last summer of field research on *Sirex noctilio*. He has presented his research at local, regional and national meetings - winning a 1<sup>st</sup> place Presidential Award at the Austin ESA meeting this past fall - and is writing up several publications. I have accepted multiple invitations to speak on my labs research this past year at local, state and regional meetings. I have also had to turn down a couple of invitations. Particularly noteworthy was an invitation to present at the Western Forest Insect Work Conference, which I recommended my PhD student do instead, and he was able to garner a couple of travel grants to do so.

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. I have continued my efforts on our ESF Bicycle Safety Committee and have been working with ESF partners, Syracuse University engineers, planners and safety officials as well as the City of Syracuse Transportation Planner, and multiple neighborhood groups to make bicycling a safer commuting option for faculty, staff and students at ESF. I've continued my entomology 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 we continue to represent EFB at the NY State Fair.

Lastly, I was recognized as an Outstanding Cooperator at the Onondaga Cornell Cooperative Extension 2013 annual meeting for my participation with the Onondaga County Emerald Ash Borer Task Force.

#### **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)**

This fall I will again be teaching EFB101, General Biology, and I aim to develop and incorporate more active learning in the classroom. I will facilitate the EFB Core Course in the fall semester with a new emphasis on philosophy of science (co-taught with Christopher Foelker, my finishing PhD student). I also plan to develop a new seminar on scientific writing in the spring semester with the goal of all students producing a research

proposal. 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 MS student will be starting in the fall in my lab and an MPS student co-advised by myself and Beth Folta will also be starting. I am very much looking forward to continuing working with these new graduate students as well as my continuing ones, 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 the National Entomological Society of America conference in Portland OR this coming fall and have funding so that all of my current graduate students can attend and present their research. 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 2015 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 2014

- a. Course(s) to be offered: Entomology, stats & supervise projects for CLBS EFB202  
Facilitate BOCES high school program at CLBS

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.

Chris Foelker (PhD) will finish his last field season of research on *Sirex noctilio*.

Mike Parisio (MS) is finishing his last field season of EAB research this summer.

Mike Jones, (PhD) will be working in several NY EAB infestations gathering dendroentomological data on establishment and landscape data on dispersal.

Ryan Crandall, (UG), will be working in the lab and developing his Forest Health capstone project.

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 review manuscripts as the opportunity arises and I have time for.

### 2. Fall Semester 2014

- a. Course(s) to be offered - EFB101. Gen Bio I: Organismal Biology and Ecology 3 credits  
EFB796 EFB Core Course (w/ C. Foelker) 1 credit

b. Proposed research activity

*S. noctilio*, emerald ash borer, and *Merope tuber* 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  
Co-Chair EFB Graduate Program Advisory Committee  
Learning Community member  
Review manuscripts and grants as called upon and as time permits

3. Spring Semester 2015

a. Course(s) to be offered

EFB797	Classic Literature	1 credit (w/ M. Dovciak)
EFB797	Scientific Writing & Research	1 credit

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  
Co-Chair EFB Graduate Program Advisory Committee  
Review manuscripts and grants as called upon and as time permits

4. Maymester 2015

a. Course(s) to be offered:

I am planning to work with Scott Turner to develop a Field Entomology course in Namibia.