

**ANNUAL REPORT: June 1, 2015 – May 31, 2016**  
**(i.e. Summer 2015, AY 2015-2016)**  
**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	160	Session A & C
FALL:	EFB101	General Biology I	3	305	
	EFB797	EFB Core Course	1	14	
SPRING:	EFB565	Systematic Entomology	1	16	
	EFB797	EFB Core Course (w/ J. Cohen)	1	15	

**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.  
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 Internship	2	2
	EFB420	Internships	8	2
	EFB495	UG College Teaching	12	8
	EFB498	Independent Research	7	3
	ESF499	Honors Thesis	7	2
SPRING:	EFB420	Internships	4	1
	EFB498	Independent Research	2	2

3. Continuing Education and Extension (short courses, workshops, etc.): None

4. Guest Lecture Activities

	<u>Course No.</u>	<u>Title</u>	<u>No. Lectures</u>
SPRING:		Ranger School – Invasive NY Insects	1

5. Other

	<u>Title</u>	<u>No. Students</u>
SUMMER:	BOCES High School Program at Cranberry Lake (7 days)	21

## II. STUDENT ADVISING

- A. Number of undergraduates for whom you are the student's official advisor 22 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	07/11-10/15	Biotic resistance to <i>Sirex noctilio</i> across multiple spatial scales
Michael Jones	PhD	08/13	
Dana Brennan	MS	5/15	
Jane Rafaldi	MPS	8/15	
Erica McPhail	MS	5/16	

### CO-MAJOR PROFESSOR

Stephanie Nicks(w/ B Folta)	MPS	08/14 - 12/15	Creation of an interpretive sign emphasizing the importance of acknowledging and understanding the impact of invasive species, specifically emerald ash borer, in the Town of DeWitt
Giuseppe Tuminello (w/ T. Volk)	MS	08/14	
Nickolas Piedmonte (w/ S. Shaw)	MS	01/15	

### MEMBER, STEERING COMMITTEE (other than those listed above)

Cheryl Bondi	PhD	08/10 - 10/15	Eastern red-backed salamanders ( <i>Plethodon cinereus</i> ) and forest floor foodwebs in relation to soil and foliar nutrient availability in Northern hardwood forests
Zachary Smith	MS	01/13 - 8/15	A temporal and comparative analysis of benthic macroinvertebrate fauna in Onondaga Lake, NY, a recovering perturbed ecosystem
Geoffrey Griffiths	PhD	08/14	
Ryan Smith	MS	08/14	
Aaron Brown	MS	08/14	
Marianos Arias	PhD	08/15	
Elizabeth Stieber	MS	08/15	

### CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Jeff Lombardo	PhD Examiner		
Dartmouth College			
Derek Corbett	MS Chair	4/16	Production of high-value chemicals from (selected) hardwood lignin samples by catalytic fast pyrolysis
Emily Gavard	MS Examiner		

## III. RESEARCH COMPLETED OR UNDERWAY

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

I am working on a project 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. 2%.

I am supervising a project (and UG technician) in collaboration with Bill Powell and Scott McArt (Cornell) to establish bumblebee microcolonies and determine effects on health and survival after feeding them blight resistant transgenic American chestnut pollen and non-transgenic controls. 2%.

NY DEC provides summer field research transportation (a vehicle 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)

C. Nowak, **M.K. Fierke**. Exploring pollinator dynamics on powerline corridors in the Northeastern United States. Electric Power Research Institute. 5 yrs. \$628,146. Will support MS Jessica VanSplinter and Erica McPhail, both MS students, as well as multiple grad & UG technicians.

**M.K. Fierke**. Geographical comparisons of the synchrony and phenology of emerald ash borer and its introduced larval parasitoids in New York State. 4/15 - 3/17. \$220,000. Cooperative Workplan with J. Gould, USDA APHIS. Supports a Research Support Specialist, Trupti Indurkar, PhD student Michael Jones, and UG technicians.

**M.K. Fierke**. Assessing compatibility of insecticides and biocontrol for controlling emerald ash borer in urban environments. 5/15 - 4/17. \$42,000. Cooperative Workplan with J. Gould, USDA APHIS. Partially supports Research Support Specialist, Trupti Indurkar, PhD student Michael Jones, and supports multiple summer UG technicians.

**M.K. Fierke**, G.G. McGee. Restoration of understory vascular plant and pollinator assemblages in post-agricultural forest of central NY. 8/15 - 9/17. McIntire-Stennis Cooperative Forestry. \$57,669. Geoffrey Griffiths, PhD.

S. Shaw, **M.K. Fierke**. 8/15 - 9/17. Elucidating characteristics of forest/residential land interfaces associated with increased risk of tick-borne diseases. McIntire-Stennis Cooperative Forestry. \$59,694. Nick Piedmonte, MS.

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 & Stephen Pecylak, both MS.

**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. Partially funded: Michael Parisio, Nick Piedmonte & Dana Brennan, all MS.

S.J. Ryan, **M.K. Fierke**. Modeling the mother trees: the super spreader phenomenon in an emerging emerald ash borer. 8/13 - 5/16. McIntire-Stennis Cooperative Forestry. \$80,302. Partially funded 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 - 10/15. McIntire-Stennis Cooperative Forestry. \$87,235. Partially funded Christopher Foelker, PhD.

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

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

#### IV. PUBLICATIONS

##### A. Refereed Publications

- D.D. Skabeakis, S.A. Teale, **M.K. Fierke**. 2016. Diel rhythms in *Monochamus*: production of and response to a male-produced aggregation pheromone. *Environmental Entomology* - doi: 10.1093/ee/nvw044
- D.D. Skabeakis, **M.K. Fierke**, S.A. Teale. 2016. Field response of *Monochamus scutellatus scutellatus* and *Monochamus notatus* (Coleoptera: Cerambycidae) to the male-produced pheromone, 2-(Undecyloxy)-ethanol, and host volatiles. *Journal of Economic Entomology* 109:1120-1225.
- C.J. Foelker, C. Standley, D. Parry, **M.K. Fierke**. Complex ecological relationships among an assemblage of indigenous hymenopteran parasitoids, the exotic woodwasp (*Sirex noctilio*; Hymenoptera: Siricidae), and a native cogener. *Canadian Entomologist* 00: 1-11.
- C.J. Foelker, **M.K. Fierke**, C. Standley, D. Parry, C.M. Whipps. Host tissue identification for cryptic hymenopteran parasitoids associated with *Sirex noctilio*. *Agric & Forest Entomol.* 18:91-94.
- C. Rutledge, **M.K. Fierke**, P. Careless, C. Teerling. Degree day model for emergence of *Cerceris fumipennis* in Northeastern America based on field observations. *Annals of the Entomological Society* 108: 971-977.
- M. Hassett, G.G. McGee, J.R. Gould, **M.K. Fierke**. Habitat characteristics and sugar resources at New York State emerald ash borer parasitoid release sites. *Biocontrol* – submitted.

## B. Non-refereed Publications

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

- M.I. Jones, J. Gould, & **M.K. Fierke**. “Phenology of emerald ash borer and its introduced larval parasitoids in the northeast.” Oral Presentation. National Entomological Society of America Conference, November 2015, Minneapolis, MN.
- M.I. Jones, J. Gould, & **M.K. Fierke**. “Phenology of emerald ash borer and its introduced larval parasitoids in the northeast.” Poster Presentation. 27<sup>th</sup> Annual USDA Interagency Research Forum on Invasive Species, January 2016, Annapolis, MD.
- M.I. Jones, J. Gould, & **M.K. Fierke**. “Phenology of emerald ash borer and its introduced larval parasitoids in the northeast.” Oral Presentation. New York Society of American Foresters Annual Meeting, January 2016, Syracuse, NY.
- M.I. Jones, J. Gould, & **M.K. Fierke**. “Phenology of emerald ash borer and its introduced larval parasitoids in the northeast.” Oral Presentation. Northeastern Forest Pest Council, March 2016, Kingston Ontario, CA.
- N. Piedmonte, S. Shaw, **M.K. Fierke**. Effects of Habitat and Forest Cover on Blacklegged Tick (*Ixodes scapularis*) Distribution in Onondaga County, New York –Entomological Society of America Integrated Tick Management Symposium: Solving America's Tick-Borne Disease Problem. May 2016. Washington D.C. Poster Presentation.
- N. Piedmonte, S. Shaw, M. Prusinski, **M.K. Fierke**. Blacklegged Ticks (*Ixodes scapularis*) and Tick-borne Disease in Onondaga County, NY. Dewitt Deer Management Committee Meeting. March 2016. Dewitt, New York. Oral Presentation.
- N. Piedmonte, S. Shaw, M. Prusinski, **M.K. Fierke**. Enhanced Surveillance of Blacklegged Tick (*Ixodes scapularis*) Density and Tick-borne Disease Prevalence in Onondaga County, NY. New York State Department of Health Tick Workshop. February 2016. Latham, New York. Oral and Poster Presentation.
- N. Piedmonte, S. Shaw, M. Prusinski, **M.K. Fierke**. Blacklegged Tick (*Ixodes scapularis*) Density and Tick-borne Disease Prevalence in Onondaga County, NY. New York Society of American Foresters Conference. January 2016. Syracuse, New York. Oral and Poster Presentation.
- N. Piedmonte, S. Shaw, **M.K. Fierke**. Ticks and Tick-borne Disease in Onondaga County. Cornell Cooperative Extension Train-the-Trainer event. November 2015. Dewitt, New York.
- N. Piedmonte, S. Shaw, **M.K. Fierke**. Ticks and Tick-borne Disease in Onondaga County. Public Forum on Deer and Tick Management. October 2015. Dewitt, New York.
- G. Tumminello, T. Volk, S. McArt, **M.K. Fierke**. Pollinator Diversity Associated with Willow Biomass Crop. Nov 2015 Entomological Society of America National Meeting. Minneapolis, MN
- G. Tumminello, T. Volk, S. McArt, **M.K. Fierke**. Pollinator Diversity Associated with Willow Biomass Crop. New York Society of American Foresters 2016 Annual Meeting. Jan 2016. Syracuse, NY
- I. Newcomb, C.J. Foelker, **M.K. Fierke**. 4/2016. Testing a cost effective woodborer lure for

Hymenoptera:Siricidae and Coleoptera:Cerambycidae in New York State. Poster. ESF Spotlight Symposium, April 2016, Syracuse, NY.

J. Carpentier, M.I. Jones, **M.K. Fierke**. 4/2016. Detection of emerald ash borer and associated biological control parasitoids on insecticide treated trees vs. untreated control trees: A case study in Syracuse, NY. Poster. ESF Spotlight Symposium, April 2016, Syracuse, NY.

B. Wierzbicki, N. Piedmonte, **M.K. Fierke**. Habitat associations of *Ixodes scapularis* (Acari:Ixodidae) in Syracuse, NY. April 2016. SUNY ESF Spotlight on Research.

J. Gould, G. Cook, **M.K. Fierke**, F. Miller, and J. Kaltenbach. "Compatibility of Insecticides and Biocontrol for Controlling EAB in Urban Environments". USDA Interagency Research Forum on Invasive Species – 1/2016. Annapolis, MD.

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

Southeastern Neighborhood Association: Ticks and Tick-borne Disease in Onondaga County. April 2016. Syracuse NY. ~70 attendees (including Syracuse Mayor Miner).

E. Invited Research Presentations

**M.K. Fierke**. Girdling, Peeling and Rearing to Know: Insights into New York Forest Invaders. 4/2016, Ranger School, Wanakena, NY.

## V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local):

2. Industrial and Commercial Groups, etc.

Reviewed three chapters and edited/developed questions for Pearson's Campbell Biology textbook.

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

Serve on the City of Syracuse Emerald Ash Borer Task Force attending meetings with other collaborators, e.g., the Syracuse City Arborist, Cornell Cooperative Extension, Onondaga Director of the Environment.

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.)

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

2. Professional Society Membership

Entomological Society of America

3. Other Professional Activities

a. Editorial activity – Associate Editor, Forest Science (Society of American Foresters)

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Economic Entomology	1
Environmental Entomology	1
Forest Science	1
Biocontrol	1
Canadian Entomologist	1
Pest Management Science	1

Graduate Women in Science (GWIS) Fellowship Review Committee – 15 applications

- c. Participation (workshops, symposia, etc.)  
New York ReLeaf Conference symposia, SUNY ESF, July 16-17, 2015

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

None

- D. Foreign Travel (Where, When, Purpose)

None

## **VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)**

- A. Department-level

Co-chair Graduate Program Advisory Committee

Scholarship committees: Roskin undergraduate award to outstanding female senior

Chun Wang to outstanding female senior undergraduate award

Outstanding PhD student award

Lanier, Stegeman, and Simeone Endowed Entomology Fellowships

- B. College-level

Secretary, Faculty Governance

Faculty Governance Executive Committee

Core team to advise SUNY on ESF issues

Co-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

Sustainability Committee

IQAS Committee

Space Renovation Committee

Athletics Committee

First Year Experience Committee

Graduate Assistant Colloquium on Teaching and Learning Blackboard training

ESF in the HS biology course, in collaboration with Outreach and local high school teachers and administrators, now offered in 4 local high schools

December and May Senior Soirees

- C. University-wide, including Research Foundation

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

E. Research Support Specialist (list name(s) and period of employment): Trupti Indurkar, 7/15 - current

### **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.

I had over 300 students in freshman GenBio this past fall for which I supervised three graduate and eight undergraduate teaching assistants along with their workshops and grading - all went smoothly with overall class evaluations again strong for the two lecture sections. I co-facilitated the fall 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, and this year, Shannon Farrell co-facilitated and did a wonderful job on the Philosophy of Science section. I also co-facilitated the spring core course with Jonathan Cohen with the primary goal of all grads writing a solid research proposal. I oversaw two summer internships. Three students worked on research projects under me this past summer/fall/spring and all presented at ESF's Spotlight on Research. I've written >20 UG student recommendation letters with many resulting in successful internships or positions. My first PhD student finished and is now working as the WI Gypsy Moth coordinator. He won outstanding PhD student in EFB as well as many other awards during his time at ESF. I am happy with the current state of my research program and the progress of my current 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 will present at the National Entomological Society meeting in Florida and have presented at many other venues as well. I currently have six graduate students working out of my lab as well as seven ESF undergraduates hired on multiple research projects for the summer, a just finished high school student, and two Brazilian student volunteers.

One achievement of note this past year is the development and release of EFB's first ever Graduate Handbook. This was a team effort led by the Graduate Program Advisory committee, especially Danny Fernando, EFB's Graduate Coordinator and Jonathan Cohen (co-chair of the committee). I worked closely with Academic Governance and Administration as part of a Core Team on challenges we faced in the past year. I served on several other college committees as well as taking an active part in the ESF First Year Experience Committee, working with other faculty on student retention and success. Within this group, I spearheaded development of an undergraduate advising handbook, which was endorsed by Academic Governance and provided to all faculty this past spring. 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.

I have continued building relationships and received continued funding on emerald ash borer research – all of which contributes to recognition and employment opportunities for students as they graduate from my lab. Working on the tick/Lyme research has been rewarding and has contributed to informing the actions of local and county efforts on deer management. A new research direction in my lab is on pollinator conservation. I look forward becoming more knowledgeable about and contributing to this extremely important topic relevant to entomological/conservation issues.

### **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 General Biology as well as co-facilitating EFB's Core Courses in the fall and spring semesters. 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.

I am very much looking forward to continuing work with my graduate students, mentoring them through graduate school, facilitating their research projects, making sure they publish their results, and cultivating professional positions for them. I look forward to embarking on a new study area, pollinators, with Chris Nowak and wrapping up projects, including the tick/Lyme project and the NSRC EAB project.

**B. PROJECTED ACTIVITIES FOR NEXT YEAR**

1. Summer 2016

a. CLBS Co-Director: Oversee 3 sessions of EFB202 (205 students), teach entomology & stats  
Facilitate BOCES high school program

b. Proposed research activity

I will be spending time on the EAB studies my lab is funded for - including the Phenology and IPM grants as well as the parasitoid dispersal study south of Rochester. We are working closely with many cooperators: NYDEC, NYDAM, New York State Parks, Genesee Land Trust, Monroe County Emerald Ash Borer Task Force. We have already spent a couple of weeks this past spring and will continue into the fall working on assessing the impact of emerald ash borer biological control on the health of ash trees in Ulster/Green and Cattaraugus Counties.

Time will be spent on wrapping up the tick research in Onondaga County and I will be investing a lot of time in coming up to speed on and working on pollinators in OH & NY this coming summer.

c. University, professional society, and public service

I will remain on the committees I am currently serving on 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 2016

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

b. Proposed research activity

Emerald ash borer, ticks/Lyme, & pollinator research.

c. University, professional society, and public service

Secretary Faculty Governance

Faculty Governance Executive Committee

Co-chair, Bicycle Safety Committee

Sustainability Committee

First Year Experience Committee

Athletics Committee

EFB Graduate Program Advisory Committee

Review manuscripts and grants as called upon and as time permits



3. Spring Semester 2017

a. Course(s) to be offered

EFB797          Scientific Writing & Research (w/ J. Cohen)          1 credit

b. Proposed research activity

*S. noctilio* and emerald ash borer research.

c. University, professional society, and public service

Co-Chair, Bicycle Safety Committee

Campus Climate Change Committee

Secretary, Faculty Governance

Faculty Governance Executive Committee

Athletics Committee

Urban Ecology minor

EFB Graduate Program Advisory Committee

Review manuscripts and grants as called upon and as time permits