

**ANNUAL REPORT: June 1, 2016 – May 31, 2017**  
**(i.e., Summer 2016, AY 2016-2017)**  
**DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY**  
**SUNY-ESF**

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

**I. INSTRUCTIONAL ACTIVITIES**

1. Regular Course Offerings

	Course No.	Title	Credit Hrs.	No. Students	No. of Lab. Sections
SUMMER:	EFB202	Ecol. Monit. & BioAssessment	3	204	Session A, C, & D
FALL:	EFB101	General Biology I	3	348	
	EFB797	EFB Core Course (w/ S. Farrell)	1	9	
SPRING:	EFB797	EFB Core Course (w/ J. Cohen)	1	12	

**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)

	Course No.	Title	Credit Hrs.	No. Students
FALL:	EFB495	UG College Teaching	19	12
	EFB898	Professional Experience	6	1
SPRING:	EFB298	Research Internship	3	2
	EFB420	Internships	3	1

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

4. Guest Lecture Activities: None.

**II. STUDENT ADVISING**

A. Number of undergraduates for whom you are the student's official advisor 22 and unofficial advisor 2.

Reader on UG Honor's theses: Matt Amoia (T. Horton main advisor):

Effects of hemlock woolly adelgid on ectomycorrhizal fungi associated with eastern hemlock in central New York

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

Michael Jones	PhD	08/13	
Dana Brennan	MS	05/15–05/17	Effects of sugar resources on longevity of two emerald ash borer ( <i>Agilus planipennis</i> ) parasitoids
Jane Rafaldi	MPS	08/15–12/16	Co-occurring invasives and landowner

awareness of invasive giant hogweed  
(*Heracleum mantegazzianum*)

Erica McPhail	MS	05/16
Abigail Jago	MS	05/17
Suvo Biswas	MS	05/17

#### CO-MAJOR PROFESSOR

Giuseppe Tuminello (w/ T. Volk)	MS	08/14–12/16	Insect pollinators of a short rotation coppice willow biomass agroecosystem
Nickolas Piedmonte (w/ S. Shaw)	MS	01/15–5/17	Black legged ticks, <i>Ixodes scapularis</i> (Say), in central NY: density, distribution, and prevalence of associated human pathogens
Jessica Van Splinter (w/ C. Nowak)	MS	08/16	
Jade Johnson (w/ B. Folta)	MS	08/16	
Xue Dong (w/ B. Folta)	PhD	08/16	

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

Geoffrey Griffiths	PhD	08/14	
Ryan Smith	MS	08/14	
Elizabeth Stieber	MS	08/15	
Marianos Arias	PhD	08/15	
Patricia Kashian	PhD	08/15	
Aaron Brown	MS	08/14–05/17	Unintended impacts of the transgenic American chestnut (Fagales: Fagaceae) on Lepidopteran entomopathogen efficacy and parasitoid success

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

Jeffrey Lombardo	PhD External Examiner, Dartmouth	10/16	Climate change and the effect of temperature on southern pine beetle
Thomas Evans	PhD Examiner	05/17	Evaluation of lamprey populations with natural and artificial tags to understand evolution of lamprey life histories
Dustin Hill	MS Chair	03/17	Social and environmental vulnerability: unequal effects of point source pollution production and government sponsored industry

### 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, Genesee Land Trust, Scottsville Emerald Ash Borer Task Force. 2%.

#### 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** (co-PIs). Exploring pollinator dynamics on powerline corridors in the Northeastern United States. Electric Power Research Institute. 05/2016–08/2021. \$628,146. Supports 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. 04/15–05/18. \$360,000. Cooperative Workplan with

J. Gould, USDA APHIS. Supports PhD student Michael Jones, MS grad Suvo Biswas and several technicians.

**M.K. Fierke.** Assessing compatibility of insecticides and biocontrol for controlling emerald ash borer in urban environments. 05/15–05/18. \$66,000. Cooperative Workplan with J. Gould, USDA APHIS. Partially supports PhD student Michael Jones and 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. McIntire-Stennis Cooperative Forestry. 08/15–09/17. \$57,669. Geoffrey Griffiths, PhD.

S. Shaw, **M.K. Fierke.** Elucidating characteristics of forest/residential land interfaces associated with increased risk of tick-borne diseases. McIntire-Stennis Cooperative Forestry. 08/15–09/17. \$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. McIntire-Stennis Cooperative Forestry. 08/14–05/17. \$53,860. Molly Hassett, Stephen Pecylak, and Dana Brennan, all MS.

2. Research Proposals pending (include information as in B.1., above). None.

3. Research Proposals submitted, but rejected (include information as in B.1, above). None.

#### **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

M. Parisio, J.R. Gould, J.D. Vandenberg, L. Bauer, **M.K. Fierke.** 2017. Evaluation of Recovery and Monitoring Methods for Parasitoids Released Against Emerald Ash Borer. *Biological Control*. 106:45-53.

<http://dx.doi.org/10.1016/j.biocontrol.2016.12.009>

M.I. Jones, J. Gould, **M.K. Fierke.** 2017. Mortality of overwintering emerald ash borer associated with an extreme cold event in New York State. *Canadian Entomologist*. In press.

##### B. Non-refereed Publications

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

- M.I. Jones, J.K. Gould, & **M.K. Fierke.** Phenology of emerald ash borer and its introduced larval parasitoids in the northeast. Poster Presentation. North American Forest Insect Working Conference, Washington D.C. July 2016.
- M.I. Jones & **M.K. Fierke.** Overwintering mortality of emerald ash borer in New York. Poster Presentation. North American Forest Insect Working Conference, Washington D.C. July 2016
- M.I. Jones, J.K. Gould, & **M.K. Fierke.** Phenology and overwintering survival of the introduced larval parasitoids of emerald ash borer in the northeast. Oral Presentation. Emerald Ash Borer Research and Technology Development Meeting, Wooster, OH. October 2016.
- M.I. Jones, J.K. Gould, & **M.K. Fierke.** Phenology and overwintering survival of the introduced larval parasitoids of emerald ash borer in the northeast. Poster Presentation. 28<sup>th</sup> Annual USDA Interagency Research Forum on Invasive Species, Annapolis, MD. January 2017.
- M.I. Jones, J.K. Gould, & **M.K. Fierke.** Studies on biological control and phenology of emerald ash borer in New York. Oral Presentation. New York Society of American Foresters Annual Meeting, Syracuse, NY. January 2017.
- M.I. Jones, J.K. Gould, & **M.K. Fierke.** Phenology and overwintering survival of the introduced larval parasitoids of emerald ash borer in the northeast. Poster Presentation. New York Society of American Foresters Annual Meeting, Syracuse, NY. January 2017.

- M.I. Jones, J.K. Gould, & **M.K. Fierke**. Biological control of emerald ash borer in New York. Oral Presentation. Baltimore Woods Nature Center, Marcellus, NY. February 2017.
  - N. Piedmonte, S. Shaw, M. Prusinski, **M.K. Fierke**. Environmental features associated with blacklegged tick (*Ixodes scapularis*) abundance and tick-borne pathogen prevalence in Onondaga County, New York. New York Society of American Foresters Conference. Syracuse, New York. January 2017. Poster Presentation.
  - N. Piedmonte, S. Shaw, M. Prusinski, **M.K. Fierke**. Biotic and abiotic factors affecting blacklegged tick (*Ixodes scapularis*) distribution and tick-borne disease prevalence in Onondaga County, New York. Entomological Society of America's XXV International Congress of Entomology (ICE 2016). Orlando, Florida. September 2016. Oral Presentation.
  - N. Piedmonte, S. Shaw, M. Prusinski, **M.K. Fierke**. Ticks and Tick-borne disease in New York State. Syracuse Chapter of the American Wildlife Conservation Foundation. Dewitt, New York. September 2016. Oral presentation.
  - 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. Washington D.C. May 2016. Poster 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. Latham, New York. February 2016. 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. Syracuse, New York. January 2016. Oral and Poster Presentation.
  - G. Tumminello, T. Volk, S. McArt, **M.K. Fierke**. Pollinator associations with willow biomass crops utilized for phytoremediation. Entomological Society of America's XXV International Congress of Entomology (ICE 2016). Orlando, Florida. September 2016. Oral Presentation.
  - D. Brennan, J. Gould, G. McGee, **M.K. Fierke**. Effects of sugar resource use and quality on emerald ash borer parasitoid longevity. Poster Presentation. 28<sup>th</sup> Annual USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2017.
  - D. Brennan, J. Gould, G. McGee, **M.K. Fierke**. Effects of sugar resource use and quality on emerald ash borer parasitoid longevity. New York Society of American Foresters Conference. Syracuse, New York. January 2016. Oral and Poster Presentation.
  - E. McPhail and **M.K. Fierke**. Powerline Rights-of-Way (ROWs) as Pollinating Insect Habitat. Pollinator Protection Symposium. November 2016. Oral presentation.
  - E. McPhail, C. Nowak, and **M.K. Fierke**. Elucidating Pollinator Assemblages Along Powerline Rights-of-Way in Ohio and New York. NYSAF Conference. Syracuse, New York. January 2017. Poster.
  - J. VanSplinter, C. Nowak, and **M.K. Fierke**. Importance of shrub cover in providing early season floral resource for pollinators. NYSAF Conference. Syracuse, New York. January 2017. Poster.
  - F. Miller, J.K. Gould, **M.K. Fierke**, M.I. Jones, J. Kaltenbach. Compatibility of insecticides and biocontrol for controlling EAB in urban environments. Emerald Ash Borer Research and Technology Development Meeting, Wooster, OH. October 2016.
  - J.K. Gould, M.I. Jones, **M.K. Fierke**. Dispersal of the parasitoid *Tetrastichus planipennis* relative to the movement of EAB populations. Emerald Ash Borer Research and Technology Development Meeting, Wooster, OH. October 2016.
  - I. Weinstein, C. Whipps, C. Foelker, **M.K. Fierke**. Establishing host-parasitoid linkages among *Sirex noctilio*, *Sirex nigricornis*, and native hymenopteran parasitoids using genetic markers. SUNY ESF Spotlight on Research. April 2017.
  - E. Steiber, A.J. Smith, B. Duffy, N. Ringler, **M.K. Fierke**, J. Lojpenberger. Evaluating a provisional macroinvertebrate lake index of biotic integrity: potential drivers of macroinvertebrate community dynamics and water quality in lakes across New York. SUNY ESF Spotlight on Research. April 2017. 2<sup>nd</sup> place.
- D. Public Service Presentations (lectures, seminars, etc. to and for the public; give group or occasion, date(s), and attendance)

- N. Piedmonte, S. Shaw, M. Prusinski, **M.K. Fierke**. Environmental features associated with blacklegged tick density and tick-borne disease prevalence in Onondaga County. TNT Dewitt Community Meeting. Dewitt, New York. December 2016. Oral Presentation. 40 people.
- 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. Dewitt, New York. March 2016. Oral Presentation. 25 people.

### Media

- Southeastern Neighborhood Association: Ticks and Tick-borne Disease in Onondaga County. April 2016. Syracuse NY. ~70 attendees (including Syracuse Mayor Miner). [http://www.syracuse.com/outdoors/index.ssf/2017/03/deer\\_tick\\_warning\\_suny\\_esf\\_tells\\_students\\_to\\_be\\_on\\_lookout\\_this\\_winter.html](http://www.syracuse.com/outdoors/index.ssf/2017/03/deer_tick_warning_suny_esf_tells_students_to_be_on_lookout_this_winter.html)
- “County Cuts Down Number of Ash Trees to Prevent Emerald Ash Borer Spread.” Interviewed by Iris St. Meran. Spectrum News, Syracuse, NY, 1 March 2017. Television. <http://www.twcnews.com/nys/central-ny/news/2017/03/1/county-cuts-down-large-number-of-ash-trees-to-prevent-spread-of-emerald-ash-borer.html>
- <http://www.localsyr.com/news/local-news/ticks-could-be-out-in-high-numbers-in-2017/690258397>

### E. Invited Research Presentations

- Chris Nowak and **M.K. Fierke**. A first year of exploring pollinator dynamics on powerline corridors in the continental United States. 08/2016. Webinar. Electric Powerlines Research Institute Advisory meeting, New Orleans, La.
- **M.K. Fierke & Chris Nowak**. Pollinator dynamics on powerline corridors in the continental United States. 08/2016. Webinar. Electric Powerlines Research Institute Advisory meeting, Newport Beach, Ca.
- **M.K. Fierke**. Forest Entomology and Beyond: Ticks/Lyme and Pollinators. 03/2017, SUNY Potsdam, NY.
- M.I. Jones & **M.K. Fierke**. Emerald ash borer in New York. New England Kiln Drying Association, Johnstown, NY, May 2017. Deferred to PhD student.

## V. PUBLIC SERVICE

### A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local): None
2. Industrial and Commercial Groups, etc.: None

### 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.
- Serve on the Advisory Board for New York Natural Heritage’s efforts on native New York pollinators.

## 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>
Canadian Journal of Forest Research	1

- c. Participation (workshops, symposia, etc.): None

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

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

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

### A. Department-level

Graduate Program Advisory Committee – Revised the EFB Graduate Student Handbook  
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  
Co-Chair, Bicycle Safety Committee  
Sustainability 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

## 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 close to 350 students in freshman GenBio this past fall for which I supervised three graduate and 12 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 this year with Shannon Farrell, who does the Philosophy of Science section half of the class. Our main goal for the course is to get grads off to a good start in the department, forming a supportive cohort of students. I also co-facilitated the spring core course with Jonathan Cohen with the primary goal of all grads writing a solid research proposal. I've written >30 UG student recommendation letters with many resulting in successful internships or positions. 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. My graduate students have presented at many venues, locally and nationally. I currently have five graduate students working out of my lab as well as five ESF undergraduates hired on multiple research projects for the summer. I have taken on my first international student who will be working on monitoring emerald ash borer parasitoids.

I spent a considerable amount of time revising EFB's Graduate Handbook. I served on several 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. 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 new 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. Our research on pollinator conservation is exciting and I look forward to 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 teach Systematic Entomology Spring 2018 and will continue my outreach and service efforts on behalf of ESF and EFB. I will attend the 2017 Entomological Society of America conference as well as others 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 continuing research on 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 2017**

a. Course(s) to be offered: 3 sessions of EFB202 (~180 students), teach sampling/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.

We have an UG hired to continue work on tick phenology in Onondaga County this summer and will work with Nick (who just finished his MS) in writing up his manuscripts.

I will again be investing time in coming up to speed on and working on pollinators in OH & NY this coming summer.

- c. University, professional society, and public service  
Director, Cranberry Lake Biological Station

## 2. Fall Semester 2017

- 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, & pollinator research.

- c. University, Professional society, and public service  
EFB Associate Chair  
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 2018

- a. Course(s) to be offered: EFB566 Systematic Entomology    3 credits

- b. Proposed research activity: Emerald ash borer, ticks, & pollinator research.

- c. University, professional society, and public service  
EFB Associate Chair  
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