

ANNUAL REPORT: June 1, 2011 – May 31, 2012
(i.e., Summer 2011, AY 2011-2012)
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>
FALL:	EFB101	General Biology I	3	280	
	EFB797	Adaptive Peaks	1	20	
	EFB797	Non-native Forest Insects Pests	1	10	
SPRING:	EFB566	Systematic Entomology	3	5	1
	EFB796	EFB Core Course	1	5	
MAYMESTER:	EFB439	Forest Health Monitoring	3	9	Field course

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	Internship (NHI, EAB, HWA)	3	3
	EFB498	Research Problems (Inverts)	1	1
	EFB498	Research Problems (<i>C. fum.</i>)	4	1
	EFB796	Teaching Exp/Gen Bio	3	1
	EFB798	Research Problems (<i>S. noct.</i>)	4	1
SPRING:	EFB498	Research Problems (EAB)	3	1
	EFB498	Research Problems (Inverts)	1	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

II. STUDENT ADVISING

- A. Number of undergraduates for whom you are the student's official advisor 24 and unofficial advisor 0
- B. Graduate Students: (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

Kimberly Dean	MS	01/10-5/12	Parasitoids and pathogens of emerald ash borer: Implications for biological control at all life stages
Kalie Gerenser	MS	08/10	
Christopher Foelker	PhD	07/11	
Gregory Russao	MPS	08/11	

CO-MAJOR PROFESSOR

Christopher Standley	MS	01/10-5/12	Emergence phenology and ecological interactions between the exotic <i>Sirex noctilio</i> , native siricids, and a shared guild of native parasitoids
Dominick Skabeikis	MS	04/11-5/12	Male pheromone of the pine sawyer beetles, <i>Monochamus s. scutellatus</i> (Say) and <i>Monochamus notatus</i> (Drury) (Coleoptera: Cerambycidae): Production, response and circadian rhythms
Joelle Chille	MS	01/12	

MEMBER, STEERING COMMITTEE (other than those listed above)

Caitlin Snyder	MS	08/09-08/11	Terrestrial salamanders and invertebrates in the Adirondack Mountains: Feeding ecology and implications of calcium
Cheryl Bondi	PhD		

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Joanna Kinsey	PhD	Chair	Candidacy Exam: Effects of light and nutrients on <i>Phaeocystis Antarctica</i> growth and organosulfur dynamics
---------------	-----	-------	---

III. RESEARCH COMPLETED OR UNDERWAY

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

Collaborative research with Larry Hanks (Univ. of Illinois) and Jocelyn Millar (Univ. California Riverside) on pheromone/lures to catch longhorned beetles 5%
NY DEC provided summer field research transportation (two vehicles with gas and repairs included). Also, provided employees 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)

- Melissa Fierke, D. Parry, D. Allen. Evaluating impacts of native parasitoids on the invasive *Sirex noctilio* in New York. McIntire-Stennis Cooperative Forestry. \$79,800, 10/09–12/12. Joelle Chille, MS.
- 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.
- 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. Northern States Research Cooperative. \$150,000. 08/10-10/12. Cheryl Bondi, PhD.
- Melissa Fierke, M. Whitmore, J. Vandenberg, J. Carlson. Emerald Ash Borer Rapid Response Management Strategy for New York. USDA Forest Service. \$133,315. 08/10-08/12. 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)

- Melissa Fierke, C. Whipps, D. Parry. Development of molecular markers for native parasitoids of *Sirex noctilio*. SUNY ESF Seed Grant. \$8,000.
- Melissa Fierke, C. Whipps, D. Parry. Superabundant invader influences parasitism of native cogeners. National Science Foundation. Preproposal.
- Sadie Ryan, M. Fierke. Modeling the mother trees: the super spreader phenomenon in an emerging emerald ash borer (*Agrilus planipennis*) infestation. National Science Foundation. Preproposal.
- Melissa Fierke, D. Parry, C. Nowak, K. Wallin. Influence of historical silvicultural treatments on colonization patterns, community interactions, and host defenses associated with *Sirex noctilio* at a long-term ecological study site. Northern States Research Cooperative. \$144,057. Preproposal.
- Melissa Fierke, M. Whitmore, J. Vandenberg, J. Carlson. Development of enhanced detection and management strategies in extant outlier infestations of emerald ash borer (*Agrilus planipennis*) in New York State. USDA-APHIS. \$99,998.
- Dylan Parry, M. Fierke. Phenology and performance of the invasive European woodwasp, *Sirex noctilio*, its parasitoids, and native siricid competitors on two species of pine. USDA-NIFA. \$265,137.

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

- Dean, K., J. Vandenberg, M. Griggs, L. Beaur, **M.K. Fierke**. 2012. Assessing susceptibility of hymenopteran parasitoids of the emerald ash borer to the entomopathogenic fungus *Beauveria bassiana*. J. Insect Pathology. 109:303-306.
- Standley, C., R. Hoebeck, D. Parry, D. Allen, **M. Fierke**. 2012. Detection and identification of two new native hymenopteran parasitoids with *Sirex noctilio* in North America. Proc. Entomol. Soc. Washington. 114:238-249.
- Eager, P.T., D.C. Allen, **M.K. Fierke**. 2011. Within-tree distributions of the *Sirex noctilio*-parasitoid complex and development of an optimal sampling scheme. Envir. Entomol. 40:1266-1275.
- Fierke, M.K.**, D.D. Skabeikis, J.G. Millar, S.A. Teale, J.S. McElfresh, L.M. Hanks. Identification of a male-produced pheromone for *Monochaums scutellatus scutellatus* and *M. notatus* (Coleoptera: Cerambycidae). Economic Entomol. In review.
- Fierke, M.K.**, C. Foelker, M. Whitmore, J. D. Vandenberg, J. Carlson. Delimitation and management of

emerald ash borer, *Agilus planipennis* (Coleoptera: Buprestidae), at an outlier infestation in southwestern New York State. *Forest Ecol. & Management*. In review.

Eager, P.T., D.C. Allen, **M.K. Fierke**. Parasitism of *Sirex noctilio* (Hymenoptera: Siricidae) in North America by a suite of native hymenopteran parasitoids. *Canadian Entomol.* In review.

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 review.

B. Non-refereed Publications

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

C. Standley, D. Parry, D. Allen, **M. Fierke**. Degree day emergence of *Sirex noctilio* (F.) and its native siricid complex in New York. Poster.

1/2012, New York Society of American Foresters Ann. Meeting, Syracuse NY. Presentation.

1/2012, USDA Annual Interagency Research Forum on Invasive Species, Annapolis, MD.

C. Foelker, J. Welsh, J. Vandenberg, M. Whitmore, J. Carlson, **M. Fierke**. Delimitation and management of an *Agilus planipennis* infestation in southwestern New York State. Poster.

1/2012, New York Society of American Foresters Annual Meeting, Syracuse NY.

1/2012, USDA Annual Interagency Research Forum on Invasive Species, Annapolis, MD.

K. Dean, J. Vandenberg, M. Griggs, L. Beaur, **M. Fierke**. Assessing susceptibility of hymenopteran parasitoids of the emerald ash borer to the entomopathogenic fungus *Beauveria bassiana*. Entomological Society of America, Annual National Meeting, Reno, NV. Nov. 15, 2011.

W.E. Hellman, **M.K. Fierke**. Individual wasp size and prey selection in *Cerceris fumipennis*. Entomological Society of America, Annual National Meeting, Reno, NV. Nov 15, 2011. Invited 20 min symposium.

C.E. Rutledge, C. Teerling, P.D. Careless, **M.K. Fierke**. Degree day modeling for *Cerceris fumipennis*. Entomological Society of America, Annual National Meeting, Reno, NV. Nov. 15, 2011. Invited 20 min symposium.

Stephen, F. M., L.J. Haavik, **M.K. Fierke**, J.J. Riggins, L.D. Galligan, R.N. Coulson, and J.M. Guldin. 2011. Innocuous native wood borer goes rogue: causes and consequences of a red oak borer outbreak in Arkansas, Entomological Society of America, Annual National Meeting, Reno, NV. Nov. 15, 2011. Invited 20 min symposium.

M.K. Fierke, J. Vandenberg, M. Whitmore, J. Carlson. Girdling and peeling to know: delimitation and management of emerald ash borer in southwestern New York State. August 2011 Emerald Ash Borer National Research and Technology Development Meeting, Wooster, OH.

K. Dean, J. Vandenberg, M. Griggs, L. Beaur, **M. Fierke**. Assessing susceptibility of hymenopteran parasitoids of the emerald ash borer to the entomopathogenic fungus *Beauveria bassiana*. August 2011 Emerald Ash Borer National Research and Technology Development Meeting, Wooster, OH.

C. Foelker, **M. Fierke**, J. Welsh, J. Vandenberg, M. Whitmore, J. Carlson. Delimitation and management of a Tier II infestation in southwestern New York State. August 2011 Emerald Ash Borer National Research and Technology Development Meeting, Wooster, OH.

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

M.K. Fierke. Girdling, peeling, splitting and rearing to know: emerald ash borer and *Sirex noctilio* research in New York State. Presented at multiple venues:

3/2012, Cornell University Geneva Campus Agriculture Station. 30 people.

1/2012, Cornell University. Ithaca, NY. 25 people.

10/2011, Utica College Seminar Series, Utica NY. 50 people.

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local):
2. Industrial and Commercial Groups, etc.

Presented on my experience with 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 in Albany to a university lecturers considering using Mastering in their classrooms.

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

VI. PROFESSIONAL DEVELOPMENT

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

None

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	1
Economic Entomology	1
Canadian Entomologist	1
Forest Ecology & Management	1
Journal of Chemical Ecology	1

<u>Agency</u>	<u>No. of proposals</u>
None	

Other
None

c. Participation (workshops, symposia, etc.)

<u>Name of workshop, etc.</u>	<u>Date</u>	<u>Place</u>
New York Society of American Foresters		

Forest Invaders	1/2012	Syracuse, NY
ESF Mentoring Colloquium	2/2012	Syracuse, NY

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

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

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
 Scholarship committees: Roskin undergraduate award to outstanding female senior
 Outstanding PhD student award
 Burgess outstanding PhD student award in ecology

B. College-level

Chair, Committee on Public Service and Outreach
 Faculty Governance Executive Committee
 Athletics Committee
 ESF Learning Community, Participated at the Freshmen Learning Community Retreat at Orenda Springs
 Graduate Assistant Colloquium on Teaching and Learning Blackboard training
 Academic Integrity hearing committee
 Development of a college biology course, with Outreach, to be offered in local high schools
 ad hoc committee on bicycle facilities
 December and May Senior Soiree

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 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, 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 fourth year with >280 students. I supervised three graduate TAs along with their workshops and grading - all went smoothly. I continued to make use of blackboard, posting assignments, quizzes, grades, etc. and contacted students that were doing poorly. A new tool I implemented with exemplary results was an online homework/learning program, Mastering Biology, offered through our textbook publisher. The students were extremely complimentary of the program and I was happy with the end of the course results of a 75.5% class average. Based on my positive experience with the program, I was asked to give presentations by Pearson representatives. Overall class evaluations were again strong for the two lecture sections though, there was an end of the semester rush with catching students breaching ESF's academic integrity code (13 students, 19 over the entire semester). I worked closely with our Judicial Coordinator to reach satisfactory

conclusions. This past semester I was asked to serve on an Academic Integrity panel to hear a case with a second violation and this helped me to better understand the procedures and importance of bringing these cases forward.

I coordinated a seminar on Forest Pests for Entomology/Forestry graduate students this past fall and taught Systematic Entomology, a graduate level course essential to our entomology program, in the spring semester. I used the foundations of the Insect Diversity course I taught in 2009 to build this course and the lab was again coordinated with Kim Adams. I also taught Forest Health Monitoring this past Maymester, a required field course for our Forest Health major. I coordinated field trips and organized guest lectures from Forest Service personnel and other experts here at ESF. The class culminated in an independent field project, which far exceeded my expectations as a learning experience for the students, evidenced by a group paper and a presentation.

I facilitated three internships in summer 2011. Two were with the NYDEC Lands and Forests, including one student working with hemlock woolly adelgid and another on emerald ash borer. I also facilitated a Natural History and Interpretation internship. Three students worked on research projects under me this past fall/spring. One sorted samples for invertebrates along a calcium gradient, another evaluated soils data to determine where *Cerceris fumipennis* colonies are most likely to be found, and the third worked on developing a woodpecker survey for emerald ash borer.

I am happy with the current state of my research program and the progress of my graduate students. Three of my MS graduate students defended this past spring. Two of them already have publications in hand and the third is second author on a paper in review. I am still working with three of my previous graduate students on their publications as well. A new MS started in my lab in Jan. She is developing molecular markers to identify parasitoids of *S. noctilio* and so will be co-advised by Chris Whipps. My new PhD student is off to a good start on his dissertation research on *Sirex noctilio* and was the recipient of both the Stegeman and Silverborg 2012 departmental awards for invertebrate and forest health studies in EFB. He has presented at three venues since starting in Aug. 2011, is a coauthor on a paper we recently submitted and is first author on another that will be sent off shortly. With the help of my graduate students and collaborators we made a final push over spring to finish up the emerald ash borer delimitation and management project I initiated two years ago. It was an extremely satisfying culmination to this effort and I look forward to wrapping up our publications.

I've continued my outreach efforts, doing presentations, e.g., Termite Trails for ESF's Take Your Kids to Work Day, and interviews, however, I pass most opportunities on 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. Myself and my grads manned the entomology display in the ESF booth at the 2011 New York State Fair. I've continued to serve as an active part of the ESF Learning Community committee as well as and the Graduate Program Advisory Committee and I also serve on several scholarships committees reviewing applications. I facilitated the EFB Core Course for graduate students this past semester where the main goal was a solid research proposal and I co-facilitated the Adaptive Peaks seminar in the fall.

Professional development has included attending conferences and accepting invitations to present my lab's research. We attended an emerald ash borer conference in Wooster Ohio in August where I presented a talk and two of my grads displayed posters. This past spring I again organized a symposia at the NY Society of American Foresters annual meeting on Forest Invaders and two of my grads presented posters at this venue and one gave a talk. Two of my graduate students presented posters at the Annual USDA Invasive Insect meeting in Annapolis and another gave a talk at the National Entomological Society meeting in Reno, NV. I gave presentations at Utica College as well as Cornell University (both in Ithaca and the Geneva Ag Station) on my lab's research and I continue to work closely with the NY-DEC and collaborators with Cornell and the USDA-Ag and Research Station as well as cultivating other professionals (e.g., National Grid and Arborjet) and researchers.

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)

3. Spring Semester 2013

a. Course(s) to be offered

EFB796 EFB Core Course 1 credit
Spring break short course on using PCORD

b. Proposed research activity

S. noctilio and emerald ash borer research.

c. University, professional society, and public service

Chair, COPSO

Faculty Governance Executive Committee

Graduate Program Advisory Committee

Review manuscripts and grants as called upon and as time permits