

**ANNUAL REPORT: June 1, 2010 – May 31, 2011**  
**(i.e., Summer 2010, AY 2010-2011)**  
**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	Gen Bio I	3	265	
SPRING:	EFB796	EFB Core Course	1	18	

**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.

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 (Urban EAB-summer)	3	1
	EFB420	Internship (Renewable energy)	5	1
	EFB496	UMEB Seminar	1	9
	EFB496	UMEB Seminar	1	8
	EFB495	Undergrad Exp/Coll Teaching	1	1
SPRING:	EFB420	Internship (Ceramb.)	4	1
	EFB496	UMEB Seminar	1	9
	EFB496	UMEB Seminar	1	8
	EFB498	Research Problems (Meropa)	1	1

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

Fall 2010 - coordinated three invasives workshops for interested local, regional and state agencies:  
 Invasive Plants - taught by Catherine Landis and Molly Farrell  
 Invasive Aquatics - taught by Kimberly Schultz and John Farrell  
 Invasive Forest Insects - taught by Melissa Fierke and Dylan Parry  
 Presented at the SUNY ESF Graduate Student Association Grant Writing Workshop

4. Guest Lecture Activities

	<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
FALL:	ENS496	Environmental Science Seminar Series	1
	EFB351	Forest Entomology	1
SPRING:	FOR496	Centennial Seminar Series	1
	EFB502	Ecology & Management/Invasive Species	1
	EFB311	Evolution (co-evolution lecture)	1

## II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 23 and unofficial advisor 4

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

Peter Rockermann	MS	05/08	05/26/11	Implications for invasion by emerald ash borer in New York: Ash abundance in riparian areas and moth assemblages in upland and wetland forests with high and low ash densities
Warren Hellman	MS	01/09	05/19/11	Evaluation use of the native digger wasp <i>Cerceris fumipennis</i> (Say) as a sampling method for New York Buprestidae
Kimberly Dean	MS	01/10		
Kalie Gerenser	MS	08/10		

### CO-MAJOR PROFESSOR

Christopher Standley	MS	01/10		
Dominick Skabeikis	MS	10/09		

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

Caitlen Snyder	MS	08/09		
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### CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Phillip Barber	MS	Examiner	12/2010	Comparison of epiphytic macroinvertebrate communities associated with an invasive ( <i>Trapa natans</i> L.) and a native <i>Nymphaea odorata</i> Aiton) macrophyte in two central New York rivers.
Karen Schmitt	MS	Chair	12/2010	Investigating the chemical mechanism initiated by electron beam irradiation of VOCs in air

## 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, 10/09–9/12. Chris Standley.

Claire Rutledge, Philip Careless, Colleen Teerling, Melissa Fierke. Degree day modeling and captive colony research for *Cerceris fumipennis*. \$48,000. (\$11,990 to ESF). USDA Forest Service. 2/11-2/12. Undergrad – Funmi Afelumo.

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.

Melissa K. Fierke. Emerald Ash Borer Rapid Response Management Strategy for New York. USDA Forest Service. \$133,315. 08/10-12/12. Research Technician – John Welsh.

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

Dylan Parry, Melissa Fierke. Quantifying Phenology and Performance of *Sirex noctilio* and its Parasitoid Complex on Different Pine Hosts. USDA Forest Service. \$87,622.

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

Melissa Fierke. Using *in situ* *Cerceris fumipennis* colonies to detect and delimit emerald ash borer infestations and improving translocation methods for monitoring at sites without established colonies. \$65,000. U.S. Forest Service.

**IV. PUBLICATIONS** (Full bibliographic citation, i.e., do not use "with Jones," or "Jones, et al."; please list only publications published, in press, or actually submitted during this reporting period --- **do not list manuscripts in preparation**).

A. Refereed Publications

Fierke, M.K., D. Nowak, R. Hofstetter. 2011. Forest Health Monitoring. In Castello, J. and S. Teale (eds) Forest Health textbook. Cambridge Press.

Rutledge, C., W. Hellman, C. Teerling, M. Fierke. Two novel prey families for the buprestid-hunting wasp *Cerceris fumipennis* Say (Hymenoptera: Crabronidae). Coleopterists Bulletin. In press.

Eager, P.T., D.C. Allen, M.K. Fierke. Within-tree distributions of the *Sirex noctilio*-parasitoid complex and development of an optimal sampling scheme. *Envir. Entomol.* In revision.

Rockermann, P.J., C. Landis, M.K. Fierke. Abundance of ash species (*Fraxinus*) in riparian forests of New York: Implications for invasion by emerald ash borer. *Nat. Areas J.* In revision.

Standley, C., R. Hoebeck, D. Parry, D. Allen, M. Fierke. Recognition, emergence phenology, and association of the cleptoparasitoid *Pseudorhyssa maculicoxis* (Kreichbaumer) (Hymenoptera: Ichneumonidae) with *Sirex noctilio* F. (Hymenoptera: Siricidae) and its parasitoid complex in New York. *Proc. Entomol. Soc. Washington*. Submitted.

B. Non-refereed Publications

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

- M.K. Fierke, P. Eager, C. Standley, D. Parry, D. Allen. Splitting and rearing to know: new insights into the siricid-parasitoid complex. Presented at multiple venues:  
5/2011, *Sirex noctilio* Research Updates Meeting, Riverdale, MD.  
3/2011, Eastern Branch Meeting of the Entomol. Soc. of America. Harrisburg, PA.  
1/2011, USDA Annual Interagency Research Forum on Invasive Species, Annapolis, MD.
- M.K. Fierke, K. Gandhi, M. Ayers. *Sirex noctilio*: biology, parasitism and native siricids. 5/2011. North American Forest Insect Work Conference. Portland, OR.
- F. Stephen, M. Fierke, L. Haavik, J. Riggins. Causes and consequences of a red oak borer outbreak in the mountains of Arkansas. 5/2011. North American Forest Insect Work Conference. Portland, OR.
- W. Hellman, M. Fierke. Evaluating a novel Buprestidae sampling methodology: prey choice and sampling efficiency of the buprestid hunting wasp, *Cerceris fumipennis*, in New York State. 5/2011. North American Forest Insect Work Conference. Portland, OR. Poster.
- K. Dean, Vandenberg, M. Griggs, L. Beaur, M. Fierke. Assessing susceptibility of hymenopteran parasitoids of the emerald ash borer to the entomopathogenic fungus *Beauveria bassiana*. Presented at multiple venues:  
3/2011, Eastern Branch Meeting of the Entomol. Soc. of America. Harrisburg, PA.  
1/2011, New York Society of American Foresters Annual Meeting, Syracuse NY.
- K. Dean, Vandenberg, M. Griggs, L. Beaur, M. Fierke. Assessing susceptibility of hymenopteran parasitoids of the emerald ash borer to the entomopathogenic fungus *Beauveria bassiana*. Poster. Presented at multiple venues:  
5/2011. North American Forest Insect Work Conference. Portland, OR.  
1<sup>st</sup> Place Masters Division Competition.  
1/2011, USDA Annual Interagency Research Forum on Invasive Species, Annapolis, MD.
- E. Keyser, M. Fierke. Longhorned beetle assemblages in New York State. 4/2011. SUNY-ESF Spotlight on Student Research. Syracuse, NY. Poster.
- M.K. Fierke, J. Vandenburg, M. Whitmore, J. Carlson. Girdling and peeling to know: emerald ash borer research in New York. Presented at multiple venues:  
Eastern Branch Meeting of the Entomol. Soc. of America. 3/2011, Harrisburg, PA.  
New York Society of American Foresters Annual Meeting, 1/2011, Syracuse NY.
- C. Standley, D. Parry, D. Allen, M. Fierke. Evaluating emergence phenology of the exotic *Sirex noctilio* F. and the native siricid-parasitoid complex in New York. 3/2011, Eastern Branch Meeting of the Entomol. Soc. of America. Harrisburg, PA.
- C. Standley, D. Parry, D. Allen, M. Fierke. Evaluating emergence phenology of the exotic *Sirex noctilio* F. and the native siricid-parasitoid complex in New York. Poster. Presented at multiple venues:  
5/2011. North American Forest Insect Work Conference. Portland, OR.  
4/2011. SUNY-ESF Spotlight on Student Research. Syracuse, NY.  
1/2011, USDA Annual Interagency Research Forum on Invasive Species, Annapolis, MD.  
1/2011, New York Society of American Foresters Annual Meeting, Syracuse NY.  
12/2010 Annual Meeting of the Entomological Society of America. San Diego, CA.
- P.J. Rockermann, M.K. Fierke. Moth assemblages in upland and wetland forest with high and low ash densities in central New York. 3/2011. Eastern Branch Meeting of the Entomological Society of America. Harrisburg, PA.
- C.M. Snyder, S.A. McNulty, M.K. Fierke, C.M. Beier, and R.D. Briggs. Terrestrial Salamander Diet Along a Calcium Gradient in the Adirondack Park, NY. Poster. Several venues.  
12 April 2011, Spotlight on Student Research. SUNY ESF, Syracuse, NY.  
11 April 2011, 1<sup>st</sup> Annual Life Sciences Symposium. Syracuse University, NY.  
8 April 2011, Northeast Natural History Conference. New York State Museum, Albany, NY.

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

New York emerald ash borer research & management. Presented at several venues:

NY Ag and Markets outreach and survey workshop. August 2010, Buffalo, NY. 25.

NYDEC ReLeaf Conference, July 2010, Geneva, NY. 100.

ESF Going Green segment: Emerald ash borer insecticide

[http://centralny.ynn.com/content/features/going\\_green/543433/going-green--emerald-ash-borer-insecticide/](http://centralny.ynn.com/content/features/going_green/543433/going-green--emerald-ash-borer-insecticide/)

## V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local): None

2. Industrial and Commercial Groups, etc.:

Entomology presentation to local teachers coordinated through ESF Outreach.

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

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

Participated in several meetings as part of the NYDEC scientific advisory response team for emerald ash borer.

Ithaca, NY, October, 2010

Bath, NY, March, 2011

I'm also working with Steve Harris, the Syracuse City Arborist, and Jesse Lyons, Cornell Cooperative

Extension, on developing and implementing an emerald ash borer preparedness plan for the City of

Syracuse and Onondaga County. I've presented to the Syracuse city council on the importance of this.

## 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

Journal(s)  
Environmental Entomology

No. of manuscripts

2

Economic Entomology	2
Northeastern Naturalist	1

<u>Agency</u>	<u>No. of manuscripts</u>
USDA – Ag. and Research	1

Other  
None

c. Participation (workshops, symposia, etc.)

<u>Symposia organized</u>	<u>Date</u>	<u>Place</u>
New York Society of American Foresters Emerald Ash Borer	1/2011	Syracuse, NY
Eastern Branch Mtg, Entomol. Soc. of Am. Pests of Woody Plants	3/2011	Harrisburg, NY
North American Forest Insect Work Conf. Invasive Wood Borers	5/2011	Portland, OR
<u>Workshop attended</u>	<u>Date</u>	<u>Place</u>
USDA <i>Sirex noctilio</i> Research Meeting	5/2011	Riverdale, MD

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

*Cerceris fumipennis* Knowledge Exchange, Archebold Biological Station, FL, 4/2011  
New York Logger Training, Game of Logging, 9/2010

D. Foreign Travel (Where, When, Purpose)

None.

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

A. Department-level

EFB Curriculum and Course Assessment Committee  
Graduate Program Advisory Committee  
Scholarship committees: Roskin undergraduate award to outstanding female senior  
Outstanding undergraduate teaching assistant award  
Burgess outstanding PhD student award in ecology  
Stegeman invertebrate ecology graduate award

B. College-level

Preorientation for Underrepresented Students 8/2010  
Committee on Public Service and Outreach  
Faculty sponsor for the ESF Women's Basketball team  
Member of the ESF Learning Community  
Participated at the Freshmen Learning Community Retreat at Orenda Springs  
Blackboard training at the Graduate Assistant Colloquium on Teaching and Learning  
Served on the Dean of Student Services search committee  
Judged GSA Spotlight on Student Research posters

May Student Award dinner

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 third year with >260 students. I supervised two graduate TAs, and an undergraduate TA 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. I was happy with the end of the course with a 74 class average and class evaluations were similar to last year with a 4.2 and 4.3 for the two lecture sections. I worked with two undergraduates in the spring semester, Liz Keyser and Candi Finger, on data gathered in the summer from our longhorned beetle traps. Liz wrote an excellent paper and presented her findings at the Spotlight on student research on NY longhorned beetle diversity. Candi went through all the specimens and wrote a paper on a little known mecopteran, the earwig scorpionfly. I facilitated two internships in 2010, one was a urban forestry position with the City of Rochester preparing for emerald ash borer and the other was an alternative energy summary with a student in Environmental Science. I am supervising two internships this summer. One is an ESF student working with the NY-DEC finding and monitoring native digger wasp colonies and the other is a sophomore at SUNY Fredonia who is monitoring traps hung in girdled ash trees in and around Randolph in SW NY for EAB as well as traps in Allegany State Park for Cerambycids. I helped coordinate the Core Course Seminar series this past spring and stepped in to help facilitate Robin Kimmerer's UMEB seminar in both the fall and the spring.

I am happy with the progress of my current cadre of graduate students. Two of my graduate students, Peter Rockermann and Warren Hellman, defended their thesis research in May and both are in the process of writing and submitting manuscripts. A manuscript that Warren contributed to was recently accepted and is in press and Pete is working on revisions for a manuscript he submitted earlier in the year. Kimberly Dean has written and will be submitting a manuscript shortly on her research during the summer of 2010 on evaluating susceptibility of emerald ash borer parasitoids to a fungus. She has presented this research both orally and in poster form at several venues and most recently got first place in the masters poster division at the North American Forest Insect Work Conference. Kim will be doing a summer internship with the NYDEC on hemlock woolly adelgid as well as pulling soil samples and doing molecular evaluations to identify and then test for virulency against emerald ash borer. Chris Standley's work on the *Sirex noctilio*-parasitoid complex is impeccable and has yielded interesting new insights. He has recently submitted a manuscript on a unique cleptoparasitoid he found and was recognized as the Stegeman outstanding masters student in invertebrate studies at ESF. He has presented his findings at several conferences and was featured in the Syracuse Post Standard this past fall. Kalie Gerenser received a Sussman fellowship for her work on ecosystem and biomass dynamics associated with the loss of ash in NY state parks. She is doing research in NY state parks in the Great Lakes basin and is sponsored by Melissa Plemmons with NY State Parks.

I've continued my outreach efforts giving presentations in and around Syracuse. I pass on outreach opportunities to my graduate students and they are doing an excellent job of taking these on, being enthusiastic and getting our science out there, e.g., Kim presented at a local middle school Career Day on Entomology, Chris, Pete and I manned the entomology display in the ESF booth at the 2010 New York State Fair. I've continued to serve as an active part of the ESF Learning Community committee as well as the EFB curriculum committee and the Graduate Program Advisory Committee and I also coordinate two EFB scholarships and reviewed applications for

two others. I co-facilitated the EFB Core Course for graduate students with Karin Limburg this past semester. We had the students develop an EFB graduate handbook and implemented a research proposal component, both of which were well-received.

Professional development has included attending conferences and presenting my lab's research. This past spring I organized symposia at the NY Society of American Foresters annual meeting, the Eastern Branch Meeting of the Entomological Society and the North American Forest Insect Work Conference, the premiere forest entomology conference that occurs every five years. I have continued 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 (e.g., Therese Poland, USFS) to help with emerald ash borer research and management as new infestations are identified.

#### **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 the lecture section of Biology. I will also teach Insect Diversity and Forest Health Monitoring as well as co-facilitating the EFB Core Course in the spring semester. I will continue my outreach and service efforts on behalf of ESF and EFB and will explore professional development avenues, including attending conferences in the coming year as my teaching load allows. I have also agreed to take on additional advising responsibilities in EFBs Natural History and Interpretation program.

I have a PhD student that will start this summer on managing emerald ash borer. He did his masters degree at Arizona working on bark beetles and comes highly recommended. I will continue to work with my past and present graduate students to publish their research and I will be writing more grants to continue funding new students. I am very much looking forward to continuing working with my continuing and new graduate students, mentoring them through graduate school, facilitating their research projects and making sure they publish their results. I have high hopes for future funding for *Sirex noctilio* research as well as emerald ash borer. I plan to again attend several conferences this coming year with my graduate students with the anticipation that they will be presenting their research.

#### **B. PROJECTED ACTIVITIES FOR NEXT YEAR**

##### **1. Summer 2011**

a. Course(s) to be offered – Teaching the Entomology section of EFB202 at Cranberry Lake

b. Proposed research activity

Continuing collaboration with Larry Hanks, University of Illinois-Urbana, and Jocelyn Millar, University of California-Riverside, evaluating efficacy of synthetic compounds for catching cerambycid beetles at four sites in NY.

Continuing research on emerald ash borer infestation in Randolph NY as well as Chili NY with my collaborators, Mark Whitmore with Cornell Natural Resources Dept., John Vandenberg with the US Ag and Research Station based out of Cornell, and Jerry Carlson with the NYDEC.

Chris Standley, a continuing masters student, will continue his research developing a phenology and degree day model for the *Sirex noctilio* parasitoid complex.

Kim Dean, a continuing masters student, will be working as a DEC intern this summer on hemlock woolly adelgid and continuing her masters research documenting potential entomopathogens for EAB near Randolph NY.



Funmi Afelumo, an undergraduate student, will be working with the native digger wasp, *Cerceris fumipennis*, helping develop a degree-day model, finding colonies in western NY, monitoring colonies and developing protocols for translocating wasps.

Kaytlynn Walters is a junior at SUNY Fredonia and a native to Randolph NY. She is on a paid internship with me this summer to monitor traps for EAB in Randolph as well as monitoring a set of traps set up in the Allegany State Park for the Cerambycid trapping.

Amy Chianucci, an ESF undergrad, is interning with the NYDEC, searching for and monitoring *Cerceris fumipennis* colonies in eastern NY.

John Welsh, lab research technician, is working on emerald ash borer management research in Randolph and Chili, NY.

Chris Foelker, a new PhD student, will start in July on emerald ash borer research and management.

- c. University, professional society, and public service
  - Committee on Public Service and Outreach
  - EFB curriculum committee
  - Review manuscripts as requested and as time permits

## 2. Fall Semester 2011

- a. Course(s) to be offered
  - EFB101. General Biology I: Organismal Biology and Ecology      3 credits
  - Invasive Forest Pests Seminar      1 credit
- b. Proposed research activity
  - S. noctilio* and emerald ash borer research.
- c. University, Professional society, and public service
  - Chair, COPSO
  - EFB curriculum committee
  - Review manuscripts and grants as called upon and as time permits
  - A new MPS student, Greg Russo, will start and will help develop an EAB preparedness plan for Syracuse and Onondaga County with Steve Harris, City of Syracuse Arborist, and Jesse Lyons, Cornell Cooperative Extension.

## 3. Spring Semester 2010

- a. Course(s) to be offered
  - EFB796      Insect Diversity      3 credits
  - EFB797      EFB Core Course      1 credit
- b. Proposed research activity
  - S. noctilio* and emerald ash borer research.
- c. University, professional society, and public service
  - Chair, COPSO
  - EFB curriculum committee
  - Review manuscripts and grants as called upon and as time permits

