

ANNUAL REPORT: June 1, 2009 – May 31, 2010
(i.e., Summer 2009, AY 2009-2010)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: _____

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:	EFB 345	Forest Health	3	10	1
FALL:	EFB 352	Entomology	3	70	3
	EFB 552	Entomology	3	1	1
SPRING:	EFB 217	Peoples, Plagues and Pests	3	167	0
	EFB 412	Intro. Chemical Ecology	3	11	0
	EFB 612	Intro. Chemical Ecology	3	7	0

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>
	EFB 420	Internship	3	1
	EFB 498	Indep. Study	3	1

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

4. Guest Lecture Activities

	<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
	EFB 215	Interpreting Science Through Art	2
	PSY 321	Intro to Sensation and Perception	1
	EFB 404	Natural History Museums and Modern Science	1

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 15 and unofficial advisor _____

- 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

Jacob Wickham, PhD. started Aug., 2001, completed Dec. 2009. Dissertation title: "Semiochemicals of the Asian Longhorned Beetle, *Anoplophora glabripennis* (Motschulsky)(Coleoptera: Cerambycidae)

Wei Xiao, PhD. started Aug. 2009

Paul Bryant, MS. started Aug., 2007

Robert Collignon MS. started January, 2009

Dominick Skabeikis, MS, started Aug. 2009

Daniel Cucura, MS, started Aug. 2009

CO-MAJOR PROFESSOR

Steve Letkowski (with John Castello), completed Aug. 2009. Thesis title: "Beech Bark Disease: The Relationship between Scale and *Neonectria* Lesion Densities in an Aftermath Forest"

MEMBER, STEERING COMMITTEE (other than those listed above)

Kim Adams (PhD)

Patrick Eager (MS)

Jonathan Cale (MS)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

III. RESEARCH COMPLETED OR UNDERWAY

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

1. Beech bark disease 10% – Several aspects incl. (1) relationship between the scale insect and the fungal pathogen, (2) impacts of beech thickets on forest biodiversity, (3) development of a digital image analysis methodology for measuring scale insect density, and (4) development of systemic insecticidal treatment for manipulating scale insect density.
2. Sugar maple borer pheromone identification – 2%
3. Semiochemicals for *Laricobius nigrinus*, an introduced predator of the hemlock woolly adelgid – 2%
L. nigrinus is the principal biological control agent for HWA yet determination of its establishment and dispersal has been problematic due to the lack of an effective field sampling method. This project is the first step in developing a sampling protocol. This is currently a pilot project and the preliminary results will be used to leverage funding.
4. Chemical attractants of *Philornis downsi* – 5%. This insect is a parasitic fly that attacks neonate passerine birds. It has been unintentionally introduced from South America to the Galapagos Islands where it is causing high levels of mortality among several bird species including "Darwin's finches" and the endangered mangrove finch which is down to ~50 breeding pairs. There is an urgent need for an effective means of control that will not adversely affect non-target organisms. This is currently a pilot study being conducted in collaboration with scientists from the Charles Darwin Foundation; we plan to go for full funding of the project in the coming year.

5. Contact pheromones of pine weevils – 2% *Pissodes strobi* and *P. nemorensis* are two sibling species that are able to hybridize but rarely do so in nature. We are looking at cuticular hydrocarbons as possible cues involved in premating isolation.

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)

1. USDA APHIS “Development of chemical attractants and improved trap designs to facilitate detection of exotic Cerambycidae” PIs: Millar, J.G., L. Hanks, J. Allison & S. Teale \$123,347 Jan 1, 2010-Dec 31, 2010 (Award divided among 4 PIs - \$29,268 to SUNY-ESF). Graduate student supported: R.M. Collignon
2. Alphawood Foundation, PI: Teale, S. “Asian Longhorn Beetle Research at SUNY-ESF” \$91,425 February 1, 2010 - January 31, 2011 Graduate student supported: Wei Xiao
3. Alphawood Foundation, PI: Teale, S. “Asian Longhorn Beetle Research at SUNY-ESF” \$ 81,232 FEB-03-2009 - FEB-02- 2011 Graduate student supported: Jacob Wickham, Wei Xiao
4. USDA Forest Service STDP, PIs: Teale, S., J.D. Castello, J.G. Millar. “Fungal Attractants for *Sirex noctilio* and its Parasitoids” \$123,630 July 1, 2010 - June 30, 2013 (\$40,000 in first year) (awarded, but not yet started)
5. Northeastern States Research Cooperative, PIs: McNulty, S. J.D. Castello & S. Teale. “The influence of American beech thickets on biodiversity in the northern hardwood forest.” \$34,785 October 1, 2009 – September 30, 2010, Graduate student supported: J. Cale (summer only)
6. McIntire-Stennis Cooperative Forestry Research Program, PIs: Quackenbush, L. & S. Teale. “Remote Sensing Based Classification of Forests Infested by *Sirex* Woodwasp.” \$78,236 Oct. 1, 2008 – Sept. 30, 2010. Graduate student supported: W. Zhang
7. USDA-APHIS, PI: Teale, S. “SUNY-ESF/NYSDEC, Division of Lands & Forests Partnership Technology to Combat Asian Long-Horned Beetles in New York Forests” \$437,703 June 1, 2010-May 31, 2012.

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

1. USDA Forest Service FHP, PIs: Teale, S. & J.G. Millar. “Chemical Attractants for *Laricobius nigrinus*” 1 Sept. 2010 – 31 August 1012 \$79,762

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

1. NSF- Geography and Spatial Sciences, PIs: Quackenbush, L., Im, S. Teale, J. van Ardt. “Multiscale remote sensing tools to support management of invasive insect outbreaks”

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

Shumate, A.M., S.A. Teale, B.D. Ayres and M.P. Ayres. Submitted. Disruptive selection maintains variation in pheromone production by the bark beetle *Ips pini*. Environmental Entomology.

B. Non-refereed Publications

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

“Forest health and wildlife populations” S. Teale, 1 Oct. 2009, Fourteenth Annual Pine Barrens Research Forum, Brookhaven, NY.

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

“Alien Invasions” Presentation to the Fabius Historical Society (open to public), 20 Sept., 2009, Fabius, NY

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

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

2. Industrial and Commercial Groups, etc.

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

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

International Society of Chemical Ecology
Entomological Society of America

3. Other Professional Activities

a. Editorial activity

Journal (s)

Responsibility

Other (books, symposia, etc.)

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
J. Chem. Ecol.	1
<u>Agency</u>	<u>No. of proposals</u>
National Science Foundation	1
<u>Other</u>	

D. Foreign Travel (Where, When, Purpose)

Xalapa, Mexico, March, 2010, INECOL

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 this year, I taught six courses to 266 students including Chemical Ecology which I had not been taught since Dietland Muller-Schwarze's retirement. This was essentially a new course because I had not taught it since 2003. John Castello and I taught Peoples, Plagues and Pests for the second time. This course saw a 50% increase in enrollment over last year for a total of 167 students and again received very favorable evaluations. We intend to continue teaching this course every spring with the goal of introducing students to microorganisms and invertebrates in a way that is interesting and relevant.

Another significant effort this year was pulling together our book on Forest Health, with John Castello and I as co-editors.. The ms is nearly finished and will be submitted to Cambridge Univ. Press by July 31. Although my principal role is as a co-editor, I am also a co-author of 5 of the 11 chapters. The main objective of the text is to elevate forest health from a fuzzy concept to an objective theoretical framework. At the same time the book brings together under a single cover the principal disciplines that interface directly with forest health. If successful, this book will represent a significant paradigm shift in forest health. This book grew out of our Forest Health course, not our research programs.

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)

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2010

a. Course(s) to be offered

EFB345 Forest Health

b. Proposed research activity

Field work in China to assess the attractiveness of potential semiochemicals of the Asian longhorned beetle and other Asian species of Cerambycidae.

Field and laboratory work investigating chemical attractants of *Sirex noctilio* and its parasitoids.

2. Fall Semester 2009

a. Course(s) to be offered

EFB351 Forest Entomology

EFB551 Forest Entomology

b. Proposed research activity

Laboratory work to identify chemical attractants of the Asian longhorned beetle.

Laboratory work investigating chemical attractants of *Sirex noctilio* and its parasitoids.

3. Spring Semester 2010

a. Course(s) to be offered

EFB 217 Peoples, Plagues and Pests

EFB 570 Insect Physiology

b. Proposed research activity

Laboratory work to identify chemical attractants of the Asian longhorned beetle.

Laboratory work investigating chemical attractants of *Sirex noctilio* and its parasitoids.