

ANNUAL REPORT: June 1, 2011 – May 31, 2012
(i.e., Summer 2011, AY 2011-2012)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: Stephen Teale

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	8	1
FALL:	EFB 352	Entomology	3	82	4
	EFB 552	Entomology	3	7	4
SPRING:	EFB 217	Peoples, Plagues and Pests	3	125	

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 797	Insect Chemical Ecology Seminar (S '12)	1 cr	5 students

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

4. Guest Lecture Activities

EFB 404	Natural History Museums and Modern Science	1
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<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
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II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor: 19, and unofficial advisor: 1

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

1. Wei Xiao, MS. started Aug. 2009
2. Robert Collignon MS. started January, 2009; completed Dec. 2011; thesis title: Semiochemicals of *Philornis downsi* (Diptera: Muscidae), A parasite of passerine birds of the Galapagos Islands
3. Dominick Skabeikis, MS, started Aug. 2009; completed May, 2012; thesis title: Male pheromone of the pine sawyer beetles, *Monochamus scutellatus* and *Monochamus notatus* (Coleoptera: Cerambycidae): production, response and circadian rhythms
4. Daniel Cucura, MS, started Aug. 2009
5. Sarah Pocock, MS, started Jan., 2011
6. Kevin O'Brien MS, started Jan., 2011

7. Nicholas Helms, MS started Jan. 2012

CO-MAJOR PROFESSOR

1. Jonathan Cale (PhD)

MEMBER, STEERING COMMITTEE (other than those listed above)

1. Kim Adams (PhD)

III. RESEARCH COMPLETED OR UNDERWAY

A. Departmental Research (unsupported, boot-logged; 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. 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 was an unfunded pilot study until Jan., 2012 when funding from the Galapagos Conservancy began.

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 & S. Teale \$123,347 Sept 1, 2011-Aug 31, 2012 (Award divided among 3 PIs - \$32,233 to SUNY-ESF).
2. Alphawood Foundation, PI: Teale, S. “Asian Longhorn Beetle Research at SUNY-ESF” \$92,082; 28-JAN-2011 To 27-JAN-2013
3. Alphawood Foundation, PI: Teale, S. “Asian Longhorn Beetle Research at SUNY-ESF” \$ 92,016; 14-FEB-2012 To 13-FEB-2013
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)
5. 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 01-JUN-2010 to 18-JUL-2012
6. Galapagos Conservancy, PI: Teale, S. “Chemical attractants of *Philornis downsi*, an invasive avian parasite of the Galapagos Islands” \$50,005 01-JAN-2012 To 31-DEC-2012.

7. McIntire-Stennis Cooperative Forestry Research Program, PIs: Johnston, M., S. Teale and J. Castello. "Fresh taste from a stale pickle: An alternative proposal of beech bark disease" \$53,590 15-AUG-2011 to 30-SEP-2013

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

1. Teale, S., J.D. Wickham, F. Zhang, J. Su, Y. Chen, W. Xiao, L.M. Hanks J.G. Millar. 2011. A male-produced aggregation pheromone of *Monochamus alternatus* (Coleoptera: Cerambycidae), a major vector of pine wood nematode. *Econ. Entomol.* 104: 1592-1598.
2. Shumate, AM, SA Teale, BD Ayres, and MP Ayres. 2011. Disruptive selection maintains variation in pheromone production by the bark beetle *Ips pini*. *Environmental Entomology* 40(6): 1530-1540.
3. Wickham, J., Z. Xu and S. Teale. 2012. Evidence for a female-produced, long range pheromone of *Anoplophora glabripennis* (Coleoptera: Cerambycidae). *Insect Science*. (in press – scheduled for June 2012 **as cover article**).
4. Cale, J., S. McNulty, S. Teale and J. Castello. Accepted. The impact of beech thickets on biodiversity. *Biological Invasions*.
5. Brodie, B., J. Wickham and S. Teale. Accepted. The effect of sex and maturation on cuticular semiochemicals in *Monochamus scutellatus*, (Coleoptera: Cerambycidae). *Canadian Entomologist*.

B. Non-refereed Publications

Abstract

1. Teale, S. 2012. Asian Longhorned Beetle: Biology, Detection, Eradication. Proc. N. Amer. Forest Insect Work Conference 2011, Portland OR.

Book

2. Castello, J.D. and S.A. Teale (Eds.). 2011. *Forest Health: An Integrated Perspective*. Cambridge Univ. Press. 384 pp.

Book Chapters

3. Teale, S. A. and J. D. Castello. 2011. The Past as Key to the Future: A New Perspective on Forest Health. Pp. 3-16 In Castello, J.D. and S.A. Teale (Eds.). 2011. *Forest Health: An Integrated Perspective*. Cambridge Univ. Press. 384 pp.
4. Castello, J.D., S.A. Teale and J.A. Cale 2011. How do we do it, and what does it mean? Pp. 50-78. In Castello, J.D. and S.A. Teale (Eds.). 2011. *Forest Health: An Integrated Perspective*. Cambridge Univ. Press. 384 pp.
5. Teale, S.A. and J.D. Castello. 2011. Regulators and terminators: the importance of biotic factors to a healthy forest. Pp. 81-114. In Castello, J.D. and S.A. Teale (Eds.). 2011. *Forest Health: An Integrated Perspective*. Cambridge Univ. Press. 384 pp.

6. Parry, D. and S.A. Teale. 2011. Alien invasions: the effects of introduced species on forest structure and function. Pp. 115-162. In Castello, J.D. and S.A. Teale (Eds.). 2011. Forest Health: An Integrated Perspective. Cambridge Univ. Press. 384 pp.
7. Castello, J.D. and S.A. Teale. 2011. What did we learn, and where does it leave us?: Concluding thoughts. Pp. 344-355. In Castello, J.D. and S.A. Teale (Eds.). 2011. Forest Health: An Integrated Perspective. Cambridge Univ. Press. 384 pp.

C. Papers Presented at Science Meetings

1. Teale, S., J.D. Wickham, F. Zhang, J. Su, Y. Chen, W. Xiao, L.M. Hanks J.G. Millar. A male-produced aggregation pheromone of *Monochamus alternatus* (Coleoptera: Cerambycidae), a major vector of pine wood nematode. (Poster) Int. Soc. Chem. Ecol., Simon Fraser Univ., Burnaby, B.C. 25 July, 2011
2. Brodie, B., J. Wickham and S. Teale. The effect of sex and maturation on cuticular semiochemicals in *Monochamus scutellatus*, (Coleoptera: Cerambycidae). (Poster) Int. Soc. Chem. Ecol., Simon Fraser Univ., Burnaby, B.C. 25 July, 2011
3. Teale, S. Field-screening of chemical attractants in China to detect Asian cerambycids in the U.S. (oral pres.) 23rd USDA Interagency research Forum on Invasive Species, 11 January, 2012, Annapolis, MD (Invited)
4. Teale, S. Chemical attractants of *Philornis downsi*. Workshop to develop an action plan for the control of *Philornis downsi*, Feb. 1, 2012, Puerto Ayora, Santa Cruz Island, Galapagos Islands, Ecuador

VI. PROFESSIONAL DEVELOPMENT

B. **Activities in Professional Organizations**

Professional Society Membership

International Society of Chemical Ecology
Entomological Society of America

Other Professional Activities

Reviewer

	<u>Journal(s)</u>	<u>No. of manuscripts</u>
1.	Insect Science	1
2.	Psyche	1
3.	Entomologia Experimentalis et Applicata	1
4.	Journal of Chemical Ecology	1
5.	Environmental Entomology	1
6.	Annals Entomol. Soc. Amer.	1
7.	Journal of Applied Entomology	1

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| 8. | Proteome Science | 1 |
| 9. | Journal of Economic Entomology | 1 |

D. Foreign Travel (Where, When, Purpose)

China, July, 2011 – Fujian Prov. (Pingtan Island, Fuzhou, Sanming), Heilongjiang Prov. (Harbin, Laoshan);
Research on chemical attractants of longhorned beetles.

British Columbia, July, 2011 – Simon Fraser Univ, Burnaby, BC – to attend the annual meeting of the
International Society of Chemical Ecology

Ecuador, February, 2012 – To conduct field research on *Philornis downsi*, an invasive insect parasite of birds
in the Galapagos Islands.

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

Search Committee Chair – Invertebrate Conservation Biologist

B. College-level

Secretary, ESF College Governance

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.

1. Within the past 12 months, I have taken two graduate students to China and one undergrad to Galapagos to conduct field research. In China, we worked with faculty and graduate students from the Fujian Agricultural and Forestry University in Fuzhou initiating field experiments designed as part of a broader project that is identifying pheromones in several species of longhorned beetles that are considered high risk for introduction to the U.S. This project is also expanding our knowledge of this important but poorly understood group of forest insects. In 2011, we travelled extensively in Fujian Province including to Pingtan Island in the Taiwan Strait and to Sanming in the mountainous interior. We also worked in Heilongjiang Province in northeastern China with faculty and students from the Northeastern Forestry University in Harbin. In Heilongjiang we also conducted field experiments with the Asian longhorned beetle. These projects address very serious invasive forest pests in both Asia and the U.S. from both applied/management and basic (pheromone biology) perspectives.
2. I am very pleased to have received funding from the Galapagos Conservancy to identify chemical attractants in *Philornis downsi*, a fly that is an avian parasite, not native to Galapagos, and is severely impacting species of Darwin's finches and other passerines. This was a boot-legged project before this year, but funding enabled me to bring one of our outstanding conservation biology honors students to Galapagos to conduct important behavioral studies in February. This project makes a nice connection between insect chemical ecology and conservation biology.
3. The textbook that John Castello and I co-edited (and wrote several chapters) Forest Health was published by Cambridge Univ. Press in August, 2011. A recent review of the book, which was published in *Ecology* was very favorable.
4. The course, EFB 217 Peoples, Plagues and Pests continues to very successful. The enrollment dropped this year by about 25%. This is likely due to curricular changes that require fewer General Education courses.

5. My introductory entomology courses (EFB 351 Forest Entomology and EFB 352 Entomology) continue to grow and have received very favorable evaluations. In 2011, my introductory Entomology course had 90 students making it one of the largest, if not the largest, entomology course in the country.