

ANNUAL REPORT: June 1, 2013 – May 31, 2014
(i.e., Summer 2013, AY 2013-2014)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: J Scott Turner

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

	<i>Course number</i>	<i>Title</i>	<i>Credhrs</i>	<i>No of students</i>	<i>No of lab sect</i>
SUMMER:					
FALL:	EFB 200	<i>Physics of Life</i>	3	145	
	EFB 462	<i>Animal Physiology: Environmental & Ecological</i>	3	57	-
	EFB 662	<i>Animal Physiology: Environmental & Ecological</i>	3	3	-
SPRING:					

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)

	<i>Course number</i>	<i>Title</i>	<i>Credhrs</i>	<i>No of students</i>	<i>No of lab sect</i>
SUMMER	None				
FALL	None				
SPRING:	None				

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

None

4. Guest Lecture Activities

Two lectures in Diversity of Life (January 2014).

Two lectures in course on Bio-inspired design, Georgia Institute of Technology (Sept 2013).

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student’s official advisor 21 and unofficial advisor I have no idea what this means.

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

CO-MAJOR PROFESSOR

Tiffany Deater

MEMBER, STEERING COMMITTEE (other than those listed above)

Name	<i>Degree sought</i>	<i>Starting date (Mo & Yr)</i>	<i>Degree completed?</i>	<i>Thesis or dissertation citation</i>
Lauren Goldmann	PhD	Aug 2010	No	N/A

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Name	<i>Degree sought</i>	<i>Starting date (Mo & Yr)</i>	<i>Degree completed?</i>	<i>Thesis or dissertation citation</i>
Scott Gates	PhD	N/A	No	N/A
Inbal Brückner-Braun (Ben Gurion University)	PhD		Yes	

III. RESEARCH COMPLETED OR UNDERWAY

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

None

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)

Source	Title	Amount	Current year	Award period	Graduate Assistants supported
Human Frontiers Science Program	<i>From swarm intelligence to living buildings. Novel concepts of managing internal climates</i>	\$1,350,000	2	August 2012 to July 2015	1
New York State Energy Research & Development Authority (through contract with Terrapin Bright Green)	<i>Proof of concept: A termite-inspired "humidity sponge."</i>	\$50,000	1	May 2014 to November 2014	0

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

Source	Title	Amount	Award period	Graduate Assistants supported
National Institutes of Health	<i>Modeling termite construction behavior</i>	\$594,343	September 2014 to August 2017	2
National Science Foundation	<i>Biomimicry in Structural Topology: Manifesting Adaptable and Integrated Structural Form through Agent Based Modeling of Macrotermes Mounds</i>	\$449,384	August 2014 to August 2017	0

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

Source	Title	Amount	Current year	Award period	Graduate Assistants supported
Spencer Foundation	<i>From swarm intelligence to living buildings. Novel concepts of managing internal climates</i>	\$497,490	0	December 2014 to December 2017	1
ICOB National Science Foundation	<i>ICOB Concepts of Gas Exchange in Animal Burrow Systems</i>	\$620,428	0	September 2014 to September 2017	0

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



- Turner, J S.** In press. The semiotics of a superorganism. In: K. Kull and J. Hoffmeyer (eds) *Approaches to Semiosis of Evolution*. Heidelberg, Springer.
- J S Turner.** 2013. Homeostasis and the forgotten vitalist roots of adaptation. Ch 11 in: *Vitalism and the Scientific Image in Post-Enlightenment Life Science 1800-2010*. . S. Normandin and C. T. Wolfe (eds). Heidelberg, Springer. pp. 271-291.
- J S Turner.** 2013. Superorganisms and superindividuality. The emergence of individuality in a social insect assemblage. In: Frédéric Bouchard and Philippe Huneman (eds). *From Groups to Individuals. Perspectives on Biological Associations and Emerging Individuality*. The Vienna Series in Theoretical Biology. MIT Press. pp 219-241
- J S Turner.** 2013. Biology's second law. Homeostasis, purpose and desire. In: B. G. Henning and A. Scarfe. (eds). *Beyond Mechanism. Putting Life Back into Biology*. Lexington Books/Rowman & Littlefield. pp 183-203

B. Non-refereed Publications

- J S Turner.** 2014. Book review: *Comparative Biomechanics: Life's Physical World*, 2nd edition. Steven Vogel. *American Journal of Physics* 82(3): 531-532.
- J S Turner.** 2014. People. Interview with Scott Turner. *Zygote Quarterly* 8. Winter 2013/2014. pp. 60-71.

C.

Media

	Title/Description	 
J S Turner & C Baycura. 2013.	<i>Conversations with Scott Turner</i> Neil Murphy <i>Neil Murphy is the outgoing President of SUNY ESF.</i>	http://www.youtube.com/watch?v=IEM753HqJqA&feature=share&list=PL64DAC92FB77D480&index=14
J S Turner & C Baycura. 2014.	<i>Conversations with Scott Turner</i> Quentin Wheeler <i>Quentin Wheeler is the new President of SUNY ESF.</i>	http://www.youtube.com/watch?v=68s7yGK0t7w&list=PL64DAC92FFB77D480&feature=share&index=15
J S Turner. 2014	<i>Symbiosis 1. Introduction to symbiosis</i> <i>For Diversity of Life</i> <i>Symbiosis 2. The lichen symbiosis.</i> <i>For Diversity of Life</i> <i>Symbiosis 3. Physiology of symbiosis</i> <i>For Diversity of Life</i> <i>Symbiosis 4. Dynamics of symbiosis</i> <i>For Diversity of Life</i> <i>Symbiosis 5. Evolution of mutualism</i> <i>For Diversity of Life</i> <i>Symbiosis 6. Symbiogenesis</i> <i>For Diversity of Life</i>	https://ensemble.syr.edu/app/sites/index.aspx?destinationID=3PSBIdV/G8UyqgNXD-1afNw
JS Turner. In production	<i>Animal physiology on line</i> <i>Ongoing production of video material for the expected launch of Animal Physiology Online. 72 videos to date.</i>	https://ensemble.syr.edu/app/sites/index.aspx?destinationID=MU-bxn0C5ECxiFSbAccsKA
JS Turner & Berry Pinshow. In production	<i>Biophysical field methods on line</i> <i>Ongoing production of a joint project between SUNY ESF, Ben Gurion Univeristy of the Negev, the Cheetah Conservation Fund and the National Museum of Namibia.</i>	pending

D.

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

Swarm cognition and swarm construction. 2nd Delft International Conference on Complexity, Cognition, Urban Planning and Design. Delft Technical University. 10-12 October 2013.

Homeostasis, adaptation and the problem of biological design. Darwin Keynote Speaker. Indiana State University. 25 March 2014.

The extended organism. Scale, adaptation and the nature of the individual. Invited presentation to the 2013 annual meeting of the International Society for the History, Philosophy and Social Studies of Biology. Montpellier, 10 July 2013.

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

Interview on *Science Friday*. 28 March 2014. <http://www.sciencefriday.com/segment/03/28/2014/robot-builders-with-bugs-for-brains.html>

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

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

2. Industrial and Commercial Groups, etc.

Consultant on project “*Proof of concept: A termite-inspired “humidity sponge.”* Terrapin Bright Green and Freeform Construction, with NYSERDA.

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

Member. Science Advisory Board. Cheetah Conservation Fund.

VI. PROFESSIONAL DEVELOPMENT

b. 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

b. Other Professional Activities

b. Editorial activity

Journal(s)

Bio-Complexity

Intelligent Buildings International

Responsibility

Editorial board

Guest editor to

special issue on

biomimetic

architecture

- 1 EFB 200 Physics of Life was offered for the fifth time. Its enrollment continues to be strong.
- 2 EFB 462 was offered for the last time as a regular course, with continued healthy enrollment.
- 3 I am continuing production for the planned rollout of Animal Physiology Online, which will be launched in Fall 2014. To date, 72 videos have been produced. Production will continue into the fall semester.
- 4 Work continued on my research project funded by the Human Frontiers Science Program (HFSP), for which I am the Principal Investigator. We have conducted two research expeditions to Bangalore, India and Namibia. This project expand upon my previous work on termite mounds to include work on advanced fluid mechanics, neurobiology of termite swarms, species diversity of termite-built structures, and application to novel methods of wind-driven control of built environments.
- 5 The Memorandum of Understanding between ESF, Ben Gurion University, the National Museum of Namibia and the Cheetah Conservation Fund in Namibia has begun development. We are negotiating a visit in October 2014 by several students in Landscape Architecture, under the direction of Dr Margaret Bryant, to visit CCF to assist in several planning projects. Tentative plans are being made with Dr Melissa Fierke for a field course in entomological biodiversity to be conducted in Namibia in May 2015. We have just completed filming of an online biophysical field methods course with Prof Berry Pinshow of Ben Gurion University. My graduate student, Ms Tiffany Dieter, has just completed filming of a short documentary on coexistence of predators and commercial farming in Namibia.
- 6 I have served as chair of the newly established standing Committee on Technology. Our principal activity for the year was producing a strategic planning document, *ESF's Digital Future*, which we expect to shape the College's technology profile in the coming years.
- 7 As part of my chairmanship of the Technology Committee, I serve as a member of the Executive Committee of Faculty Governance. As part of that service, I was a principal program planner for the January 2014 Faculty Mentoring Colloquium, and as a planner for a proposal for a Conversations in the Disciplines event to be held next academic year. The proposal was successful.

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)

- 1 This year will see the first offering of EFB 462 Animal Physiology as an on line course. Production for this series is ongoing.
- 2 I continue to serve as the chair of the Standing Committee on Technology. We will be meeting with President Wheeler over the summer to begin moving forward on the vision outlined in *ESF's Digital Future*.
- 3 I will continue to work to establish an international campus in Namibia. We have established the Cheetah Conservation Fund facility in Namibia as the best venue for this project.
- 4 My ongoing book project that was begun during my sabbatical in 2010 (working title: *Purpose and Desire. Biology's Second Law*) is near the end of its third, and final rewrite, and I expect to complete the manuscript this summer and begin moving the book to publication.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2014
 - a. Course(s) to be offered
None
 - b. Proposed research activity

Continue HFSP project
Complete book manuscript

c. University, professional society, and public service
Standing Committee on Technology

2. Fall Semester 2014

a. Course(s) to be offered
EFB 200 Physics of Life
EFB 462/662 Animal Physiology (online)

b. Proposed research activity
Continue HFSP project

c. University, Professional society, and public service
Standing Committee on Technology

3. Spring Semester 2012

a. Course(s) to be offered
none currently planned

b. Proposed research activity
Research expedition(s?) to Namibia, India, Israel.

c. University, professional society, and public service

1. Summer 2012

a. Course(s) to be offered

b. Proposed research activity
Research expedition(s?) to Namibia, India, Israel.

c. University, professional society, and public service
Standing Committee on Technology