

ANNUAL REPORT: June 1, 2016 – May 31, 2017
(i.e., Summer 2017, AY 2016-2017)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: Danilo D. Fernando

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

	<u>Course No.</u>	<u>Title</u>	<u>Credit Hrs.</u>	<u>No. Students</u>	<u>No. Sections</u>	<u>No. of Lab.</u>
SUMMER:						
FALL:	EFB 427/627	Plant Anatomy & Development	3	19	2	
SPRING:	EFB 326	Plant Evol, Diversification & Consv	3	33	2	
	BTC 497	Research Design & Prof Dev't	1	24	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.

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 2016				
	BTC 420	Internship in Biotechnology	3	2
	EFB 420	Prof Internship/Envr Biology	4	1
	EFB 495	Undergraduate Exp/Coll Teaching	3	1
	EFB 498	Independent Research/Envi Bio	3	3
	EFB 796	Plant Genome, Evol & Diversity	3	1
	EFB 899	Masters Thesis Research	3-6	2
Spring 2017				
	BTC 498	Research Problem/Biotech	3	1
	EFB 298	Research Internship/Envrn Biology	1	2
	EFB 495	Undergraduate Exp/Coll Teaching	3	1
	EFB 899	Masters Thesis Research	4-10	2
	EFB 999	Doctoral Thesis Research	3	1

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

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4. Guest Lecture Activities

<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
BTC 132	Biotechnology Orientation Seminar	1

EFB 210	Diversity of Life	2
EFB 535	Flowering Plants: Diversity, Evolution and Systematics	1

II. STUDENT ADVISING

- A. Number of undergraduates for whom you are the student's official advisor 15 and unofficial advisor 6
- B. Graduate Students: (list 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

Michael J. Serviss, MS Program, Started on August 2014

Masoumeh Khodaverdi, Ph.D. Program, Started on January 2017

CO-MAJOR PROFESSOR

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MEMBER, STEERING COMMITTEE (other than those listed above)

Yao Xiao, Ph.D Program, Started on August 2013 – Biology Dept, SU

Kristen Haynes, Ph.D. Program, Started on August 2014, EFB

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

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III. RESEARCH COMPLETED OR UNDERWAY

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

Effects of paclobutrazol on flower initiation in *Actinidia arguta* (5%)

Prothallial cell development in *Wollemia nobilis* and *Podocarpus* sp. (5%)

Reproductive biology, intraspecific genetic variation and phylogeography in sugar maple (15%)

- 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)

USFWS-GLRIP. Phylogeography, intraspecific variation and conservation genetics of American hart's-tongue fern (AHTF, *Asplenium scolopendrium* var. *americanum*). \$25,000. March 2017 to November 2017. PI: DD Fernando. Research Assistants: Joshua Weber-Townsend (full-time for summer 2017), Masoumeh Khodaverdi (part-time for summer 2017).

Range-Wide Genetic Analyses of American Hart's-Tongue Fern (*Asplenium scolopendrium* var. *americanum*) - Part II: Michigan, Tennessee, Alabama and Ontario (Canada). USF&WS Cortland Office;

\$18,923. Research Assistant: Joshua Weber-Townsend (summer salary). PI: DD Fernando. June 8, 2015 to June 7, 2016.

NYS DEC Section 6 Endangered and Threatened Species Monitoring and Management. American hart's tongue fern genetics and reintroduction. \$20,000. PI: DD Fernando. June 1, 2016 to August 2017. Research Assistant – Mike Serviss (Part-time for Fall 2016).

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

NYS DEC Section 6 Endangered and Threatened Species Monitoring and Management. Population census counts and improvement of American hart's-tongue fern populations through augmentation and introduction. \$20,000. PI: DD Fernando; co-PI: DJ Leopold.

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

USDA McIntire Stennis. Genetic Variations in Sugar Maple (*Acer saccharum*) in the Adirondacks: Implications for Harvesting Practices, Forest Health and Climate Change. \$ 54,000. PI: DD Fernando; coPIs: D Kiernan and C Beier.

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

Bouchard JR, Fernando DD, Bailey SW, Weber-Townsend J and Leopold DJ. Contrasting Patterns of Genetic Variation in Central and Peripheral Populations of *Dryopteris fragrans* (fragrant wood fern), and Implications for Colonization Dynamics and Conservation. International Journal of Plant Science (in press).

Salazar AM and Fernando DD. Isolation and Sequence Analysis of Secretory Proteins Associated with Pollen Germination in Loblolly Pine (*Pinus taeda*). Submitted to Proteomics.

B. Non-refereed Publications

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

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

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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.

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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

3. Other Professional Activities

a. Editorial activity

<u>Journal (s)</u>	<u>Responsibility</u>
Tree Physiology	Editorial Review Board Member

Other (books, symposia, etc.)

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Tree Physiology	1
Tree Genetics and Genomes	1

<u>Agency</u>	<u>No. of proposals</u>
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National Science Foundation	6
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USDA-AFRI Grant Conference	1
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Other

c. Participation (workshops, symposia, etc.)

<u>Name of workshop, etc.</u>	<u>Date</u>	<u>Place</u>
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C. Further Education/Re-training Undertaken, Leaves, Workshops, etc.

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D. Foreign Travel (Where, When, Purpose)

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VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

Director, EFB Graduate Program
Member, Graduate Program Advisory Committee
EFB New Graduate Student Orientation, Fall 2016
EFB New Graduate Student Orientation, Spring 2017
SU Biology Dept Faculty Search Committee, Fall 2016

B. College-level

C. University-wide, including Research Foundation

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 (i.e., three paragraphs total) 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 (when available), which I'll continue to award based on your contributions to the department and college this reporting period.

For the Students: This past academic year, I taught EFB 427/627 (Plant Anatomy and Development), EFB 326 (Plant Evolution, Diversification and Conservation), BTC/EFB 420 (Research Apprenticeship), BTC 497 (Research Design and Professional Development), EFB 495 (Undergraduate Experience in College Teaching) and BTC/EFB 498 (Independent Research in Biotechnology/Environmental Biology). I also gave invited lectures in other classes (BTC 132, EFB 210 and EFB 535), and served as curriculum adviser to 15 undergraduate students. Overall, at least 100 undergraduate students have been served through this capacity. In addition to the classroom interactions with the students in all the courses I taught this past academic year, I also interacted with many of them out of the lecture and lab periods through involvement in their respective laboratory research projects and/or writing assignments. Many of the students also came in during my office hours for clarifications, questions and/or conversations on various topics including practical applications of concepts covered in the lectures and labs. I have been personally involved in the training of several undergraduate students in my lab through independent research, internship and apprenticeship. I have revised my course EFB 326 from Diversity of Plants to Plant Evolution, Diversification and Conservation. This revised course requires students to have already taken EFB 210 (Diversity of Life) and thus it meant major revisions in most of my lecture topics and power point presentations. This revised course is more advanced now and utilizes recent journal articles on the subject of plant evolution, diversification and conservation. I worked with my graduate students on various aspects of the laboratory and/or field components of their research projects, draft manuscripts, grant/fellowship applications, and poster/oral presentations.

For the department/college: I served as EFB's Graduate Director for the 10th year and my major responsibilities included the following: 1) acted on various petitions concerning different aspects of EFB graduate program requirements and policies; 2) reviewed and signed on various forms required for the completion of different degrees and majors (e.g., 2A, 3B, 4 and 6A); 3) replied to inquiries concerning EFB graduate program (through email, phone, and/or personal appearances) from several potential applicants and current graduate students; 4) processed almost 100 graduate applications (for both spring 2016 and fall 2017) that involved the review of each application for initial assessment and designation of faculty reviewers, followed up on the completion of the reviews on each application, summarized the reviews for each application, and submitted EFB's recommendation for each accepted and rejected applications to the Dean of Instructions and Graduate Studies; 5) provided formal orientations (fall and spring semesters) to new graduate students regarding EFB graduate program; 6) provided information orientation to new faculty about EFB graduate application and review procedures; 7) I also worked with EFB Secretaries on the update and improvement of the various

facets of the EFB's Graduate Webpage, graduate application filing system, and continued the survey on the most effective means of attracting/recruiting graduate students; and 8) As a member of EFB's Graduate Program Academic Committee and ESF's Graduate Council, I provided connections between the department and college on issues pertaining to graduate degree program offerings and requirements, admission/review process, policies, and other related matters.

For professional accomplishments: The following are what I consider as significant accomplishments for this academic year: 1) I have been invited to be a member of the Editorial Review Board of Tree Physiology; 2) I have also been invited to be a member of an NSF Proposal Panel Review; 3) My grad student, Joshua Weber-Townsend, has successfully finished his Master of Science degree; 4) After teaching EFB 326: Diversity of Plants for about 15 years, I have improved on it through the development of a new course (EFB 326: Plant Evolution, Diversification and Conservation); and 5) I served in the search committee at SU Bio Dept for the new Plant Physiological Ecologist.

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 2017

a. Course(s) to be offered

b. Proposed research activity

Genetics, Propagation and Reintroduction of American hart's-tongue fern

Genetics and Reproductive Biology of *Acer saccharum* in the Northeast US

Write papers and grant applications

Revise lab manual in EFB 326

c. University, professional society, and public service

2. Fall Semester 2017

a. Course(s) to be offered

EFB 427/627: Plant Anatomy and Development

b. Proposed research activity

Genetics, Propagation and Reintroduction of American hart's-tongue fern

Genetics and Reproductive Biology of *Acer saccharum* in the Northeast US

Write papers and grant applications

c. University, Professional society, and public service

3. Spring Semester 2016

a. Course(s) to be offered

EFB 326: Plant Evolution, Diversification and Conservation

BTC 497: Research Design and Professional Development

b. Proposed research activity

Genetics, Propagation and Reintroduction of American hart's-tongue fern

Genetics and Reproductive Biology of *Acer saccharum* in the Northeast US

Write papers and grant applications

c. University, professional society, and public service