

ANNUAL REPORT: June 1, 2015 – May 31, 2016
(i.e., Summer 2015, AY 2015-2016)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

*****PLEASE DO NOT INSERT TABLES FOR ANY CATEGORIES*****

NAME: Stewart Diemont

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

	Course No.	Title	Credit Hrs.	No. Students	No. of Lab. Sections
SUMMER:					
FALL:	EFB 496	Restoring Ecosystems: Princ. & Prac.	4	11	
	EFB 796	Restoring Ecosystems: Princ. & Prac.	4	2	
	EFB 496	Principles of Restoring Ecosystems	3	5	
	EFB 796	Principles of Restoring Ecosystems	3	<u>2</u>	
				20	
	EFB 518	Systems Ecology	4	14	
	EST 797	Complex Adaptive Systems (with Hirsch)	1	8	
SPRING:	EFB 120	Global Environment	3	101	

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.

In EFB 496 and EFB 796, Restoring Ecosystems, students worked with a neighborhood community in San Cristobal de Las Casas, Chiapas, Mexico and a faculty member at El Colegio de La Frontera in San Cristobal de Las Casas in the design of both a stream and wetland restoration that would be used in the community to reduce surface water pollution, develop community engagement with the site, and restore bird and plant diversity.

I've redesigned EFB 120 to make service learning central to the group projects. Each group (of 4-5 students) proposes and develops a project that is related to course topics and that in some way serves the sustainability of the campus, Syracuse, or regionally. EFB 120 presents what sometimes appear to be the insurmountable problems of our world, such as climate change, poverty, population pressures, and water, soil, and pollution. This project encourages the students as they develop tangible designs, processes, or products, to begin to take necessary steps to meeting these challenges, and to consider how their education at ESF, and even a small project, will address the needs of the world. Projects included childhood education programs (where they taught elementary school students about sustainability), green roof and rain garden designs, re-designed lighting programs for ESF, clothing exchange programs, elephant waste to paper (actually making usable paper!), microfiltration, and numerous others.

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:	EFB 495	Undergraduate Teaching	3	1
	ENS 899	Master's Thesis Research	3	1
	ENS 899	Master's Thesis Research	1	2
	EFB 999	Doctoral Thesis Research	1	1
	ENS 999	Doctoral Thesis Research	1	2
SPRING:	EFB 495	Undergraduate Teaching	2	1
	ENS 798	Problems/Env Sci	1	1
	ENS 899	Master's Thesis Research	3	1
	ENS 899	Master's Thesis Research	6	1
	ENS 999	Doctoral Thesis Research	1	2
	ENS 999	Doctoral Thesis Research	6	1
	EFB 999	Master's Thesis Research	1	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 120	Global Environment	1
EFB/LSA 496/696	Design With/In Nature	1

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 21 and unofficial advisor _____

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

Eli Arnow, MS, GPES-Ecosystem Restoration, August 2012
 Austin Arrington, MS, GPES-Ecosystem Restoration, January 2015
 Avalon Bunge, MS, GPES-Ecosystem Restoration, August 2015
 Tomasz Falkowski, PhD, EFB-Ecology, May 2014
 Eugene Law, MS, GPES-Ecosystem Restoration, August 2012

Law, E.P., 2016. Effects of Site Preparation and Harvesting on the Restoration of Four Native Edible Plant Species to an Old Field Ecosystem. MS Thesis, Graduate Program in Environmental Science, Ecosystem Restoration, SUNY ESF.

Isaias Martinez, PhD, GPES-Environmental and Community and Land Planning, August 2012

Shruti Mokashi, PhD, GPES-Environmental and Community and Land Planning, August 2012
Samantha Steele, MS, GPES-Ecosystem Restoration, and MS, Maxwell School, Public Administration, August 2014

CO-MAJOR PROFESSOR

Mariana Nava Lopez (with Myrna Hall), PhD, GPES-Water and Wetland Resource Studies, January 2010

Nava Lopez, M.Z., 2015. Hydrological Ecosystem Services in Mexico: Environmental Processes, Payments and Mapping, PhD. Dissertation, Graduate Program in Environmental Science, Environmental and Community and Land Planning, SUNY ESF.

MEMBER, STEERING COMMITTEE (other than those listed above)

Adam Fix (Manno), PhD, GPES-Environmental and Natural Resources Policy, August 2014
Juliana Quaresma (Luzadis), MPS, GPES-Environmental and Natural Resources Policy, August 2013
Catherine Landis (Leopold and Kimmerer), PhD, EFB-Ecology, August 2009
Molly Welsh (P. Vidon), PhD, GPES-Water and Wetland Resources Studies, August 2015

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Alison Bressler (P. Vidon), MS, GPES-Water and Wetland Resources Studies, August 2014, Thesis Examiner
Angela Stires (Endreny), MS, ERE-Ecological Engineering, August 2012, Thesis Examiner

Stires, A., 2015, Soil Fertility Mapping of a Tropical Plot in Mastatal, Costa Rica, MS Thesis, Environmental Resources Engineering, Ecological Engineering, SUNY ESF.

Sara Smith (Kimmerer), MS, EFB-Ecology, August 2012, Thesis Examiner

III. RESEARCH COMPLETED OR UNDERWAY

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

Climate change adaptation and traditional ecological knowledge in Mexico, Guatemala, and Belize (2%)

Social, ecological, and religious dimensions of sacred groves in Maharashtra, India (1%) with Shruti Mokashi, PhD advisee

Fire, field restoration, and traditional ecological knowledge in New York: Ecosystem services from four edible herbaceous species (2%) with Eugene Law and Eli Arnow, MS advisees

Zapotec agroforestry and ecosystem health in Oaxaca, Mexico (1%) with Isaias Martinez, Ph.D advisee

Food security and urban edible wilds (2%) with Avalon Bunge and Austin Arrington, MS advisees

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)

Diemont, S.A.W. and L. Quackenbush. EAGER: Understanding the potential role of Mayan traditional ecological knowledge for ecological engineering of forest restoration in Mexico. National Science Foundation. \$100,000, 5/1/12-12/31/15. Supported Tomasz Falkowski.

Klossner, R. (PI), S.A.W. Diemont S.A.W. City of Syracuse creekwalk landscaping design. Spanfelner Fund/Central New York Community Foundation, \$50,000, 12/1/12-6/1/17.

Faust, B.B. (PI), A. Anaya, V. Suarez Aguilar, S. Jimenez, F. Bautista, D. Leonard, S.A.W. Diemont. Research on irrigation and drainage functions of Maya canals at Cauich, Campeche, Mexico. National Geographic, \$19,837, 5/1/14-4/30/16.

Kimmerer, R., S.A.W. Diemont, C. Beier, E. Folta, J. Manno. Sowing synergy: A graduate program to integrate indigenous and scientific knowledge for sustainability. US Department of Agriculture National Institute of Food and Agriculture, \$642,811, 3/1/16 - 2/28/19.

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

Diemont, S.A.W., Meeting conservation and educational goals with a Lacandon Maya traditional ecological knowledge field guide (Pre-proposal), National Geographic Conservation Trust, \$20,000, 5/1/17-4/30/18.

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

Hirsch, P., S.A.W. Diemont, K. Friedman, J. Owley, K. Shockley. FEW- Towards re-integration at the food, energy, water nexus: Identifying barriers, developing pathways, navigating complexities. National Science Foundation, \$98,273.

Diemont, S.A.W. (PI), R. Briggs. Soil black carbon sequestration from prescribed forest burns, McIntire-Stennis Program, US Department of Agriculture, \$58,872.

Diemont, S.A.W. (PI). Ecosystem service response to fire and succession in agriculture: Ecology, design, and public perception. US Department of Agriculture, National Institute of Food and Agriculture, \$150,000.

Gonzalez Quintero, V., S.A.W. Diemont, L. Meji, F. Bautista, Developing ethnopedology in Panama: Revaluing the agricultural sector in indigenous communities, SENACYT (Panama national science foundation), \$118,000.

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

*Falkowski, T.B., S.A.W. Diemont, A. Chankin, D.R. Douterlungne, 2016. Lacandon Maya traditional ecological knowledge and rainforest restoration: Soil fertility beneath six agroforestry system trees. *Ecological Engineering* 92: 210-217.

*Nava-Lopez, M., S.A.W. Diemont, M. Hall, V. Avila-Akerberg, 2016. Riparian buffer zone and whole watershed influences on river water quality: Implications for ecosystem services near megacities. *Environmental Processes* 3(2): 277-305.

*Law, E.P., S.A.W. Diemont, T. Toland, 2016. A sustainability comparison of green infrastructure interventions using emery evaluation. *Landscape and Urban Planning*, *revised manuscript in review*.

*Hamberg, L.J., S. Findlay, K.E. Limburg, S.A.W. Diemont, 2016. Herbivory and post-storm sediment burial as mechanisms of loss for *Vallisneria americana* in the Hudson River. *Restoration Ecology*, *revised manuscript in review*.

Toland, T., S.A.W. Diemont, 2016. Urban design toward more holistic systems: Improving discipline integration and sustainability evaluation. *Urban Ecology*, M. Hall (Ed.), Springer, *revised manuscript in review*.

* *Advisee*

B. Non-refereed Publications

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

Falkowski, TB, S.A.W. Diemont, A. Chankin, 2016, Successional changes in ecosystem structure and processes in Lacandon Maya agroforests (poster), April 12, Spotlight on Student Research and Outreach, SUNY ESF, Syracuse, New York.

Diemont, S.A.W., E. Arnow, A.B. Arrington, A. Bunge, T.B. Falkowski, E.P. Law, I. Martinez, 2016. Ecological engineering for food: Succession and wild edibles. American Ecological Engineering Society 16th Annual Meeting, Knoxville, Tennessee, *accepted, to be presented June 7*.

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

Diemont, S.A.W., E. Arnow, A. Arrington, A. Bunge, A. Chankin, T. Falkowski, E. Law, I. Martinez, 2016. Food, eco-cultural restoration and conservation. Food and Sustainability Symposium, SUNY ESF, Syracuse, New York, April 20, ~150 in attendance.

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.

Municipality of San Cristobal de Las Casas, Chiapas, Mexico. Natural wastewater treatment plant system design and siting, rain water capture, stream and wetland restoration.

Village of Lacanja Chansayab, Chiapas, Mexico. Biocultural restoration project: Creating a Lacandon Maya field guide for educating children about their own traditional ecological knowledge.

VI. PROFESSIONAL DEVELOPMENT

A. Professional Honors and Awards (for teaching, research, outreach, etc.)

College Foundation Award for Exceptional Achievement in Teaching, SUNY ESF, May 2016

B. 1. Activities in Professional Organizations (offices held, service as chairman, member, participant or consultant)

2. Professional Society Membership

American Ecological Engineering Society (since 2001)

3. Other Professional Activities

a. Editorial activity

Journal (s)

Responsibility

Other (books, symposia, etc.)

b. Reviewer

Journal(s)

No. of manuscripts

Restoration Ecology

1

Ecological Engineering

3

Agency

No. of proposals

Other

Washington State University Extension - Master Naturalist Ser.

1

c. Participation (workshops, symposia, etc.)

Name of workshop, etc.

Date

Place

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

D. Foreign Travel (Where, When, Purpose)

Chiapas, Mexico, various locations, July 5 – August 29, 2015. NSF-supported research on traditional ecological knowledge (TEK) of the Maya, working with doctoral students Tomek Falkowski. Taught ESF course EFB 496/796 Restoring Ecosystems: Principles and Practice August 18 – 28, 2015 with 13 students (11 undergraduate students and 2 graduate students), Chiapas, Mexico. Travelled to Ottawa, Canada with Emanuel Carter (Department of Landscape Architecture) to meet with representatives from Vitoria-Gasteiz, the 2012 European Union Green City, to explore teaching, research, and service collaboration.

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

Assessment Committee, Environmental Biology Undergraduate Program

B. College-level

Graduate Program in Environmental Science, Ecosystem Restoration, Area Leader
Center for Native People and the Environment, Advisory Board
Academic Governance Awards Committee
Academic Governance Library Committee, Chair
Academic Governance Executive Committee
Society for Ecological Restoration Club, Adviser

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.

Students

I enjoy working closely with students on their research and exploring new ways to teach. This year I advised nine graduate students and served on the committee or examiner of seven other students. I continued to modify my courses, seeking to make them more enriching for students. My advisees are investigating traditional ecological knowledge (TEK) and environmental restoration in the northeastern US, southern Mexico, and western India. They are researching the ecological and society needs, mechanisms, and implications of TEK. Other advisees are looking at urban restoration. Once again, their work is at the critical intersection of nature and culture. They consider ecosystem services, paying special attention to the provisioning of food. Three of my advisees graduated this year, two with MS degrees and one with a PhD. All three have continued in academia with PhD fellowships and post-doctoral work. Writing with me, four advisees submitted their graduate work to peer-reviewed international journals this year, two are already published, two in the final review. Turning to my courses, I made major modifications to the project work in EFB 120 Global Environment this year, making service learning central to the project. I wanted to assist students in understanding their tangible role in addressing some of the environmental problems they learn about in EFB 120. I did this to address what students and faculty had described to me as a course need. Students needed to feel a sense of hope with their future and the future of the planet in order to, as the ESF motto encourages, "improve their world." In this same vein I formalized into a permanent course EFB 434/634 Ecosystem Restoration Design, a course that I teach in Mexico and the US. This course has service learning at the core of the group project. Students this year designed a wetland and stream restoration for a neighborhood community in San Cristobal de Las Casas, Mexico.

Department/ College

I served the college and department in a number of ways this year. Among the most critical of these was the work that I did on the Academic Governance (AG) Executive Committee. Entering the 2015-16 academic year, I was the sole member of the AG Library Committee, which made me the de facto Chair, and put me on the Executive Committee.

Little did I know that this year would be a critical (and quite time consuming) year for the Executive Committee, as we considered new directions and shared governance for ESF. On the Library Committee, once it was further populated, we advised the library on several issues, including faculty, staff, and student access to materials that are being removed from the collection. I also served Academic Governance as a member of the Honors Committee; we advised on honorary degree recipients and Chancellor's Awards for service, teaching, and research. I continued as the Area Leader of the Ecosystem Restoration area of the Graduate Program in Environmental Sciences (GPES), an area that I developed four years ago. The area continues to be strong and has one of the highest applicant pools in GPES. I also continued in my advisory role for the Center for Native Peoples and the Environment (CNPE) and the ESF student chapter of the Society for Ecological Restoration (ESF SER). The CNPE is entering an exciting new phase, as we develop our teaching and research partnerships with Salish Kootenai College and Hopa Mountain through our USDA Higher Education Challenge grant. ESF SER worked on a number of local restoration projects, and members attended the Mid-Atlantic regional conference of SER.

Self Professionally

I continue to explore the links between ecological resilience and traditional, local, or indigenous knowledge and design. During the past decade much of my work has been focused in Mesoamerica, in particular a few villages in Mexico. This year I expanded my focus and have begun looking at other communities in southern US, northern Mexico, Guatemala, Belize, and the Iberian Peninsula in Europe. I planned a series of preliminary interviews that I will conduct this summer, from which I would like to begin to understand climate change recognition and adaptation in traditional food ecosystems. I have researched traditional food systems that are new to me in Europe as I consider research that I would like to conduct during a sabbatical. I have worked with Emanuel Carter, Department Landscape Architecture, and scientists and designers from Vitoria Gasteiz in Spain in planning a new field course. I am excited by these new directions, but I remain committed to my work in New York and southern Mexico. This year I completed my NSF-funded project looking at TEK and ecosystem restoration in Mexico. This project has already yielded several papers and conference presentations (two papers this year). We are better understanding succession in these systems and how Lacandon Maya farmers contribute to ecosystem services that they use (e.g., food and raw materials) while accelerating soil nutrient regeneration. We have also determined how bird communities respond to TEK design. For this project I created a long-term study site that I evaluate with students (both graduate advisees and students in EFB 434/634) how TEK restoration compares to more conventional forms of forest restoration. This year I worked both with my graduate advisee and students in my course in this evaluation. In New York I expanded my work with food systems by advising four MS students in this area: two working in Syracuse with edible wilds and two working in rural New York with old field restoration. I am presenting this work at the American Ecological Engineering Society Annual Meeting. What I am proposing is that food can be part of ecological engineering design; it is currently largely absent.

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)

I am welcoming one new doctoral student and plan to see one doctoral student and three master's students graduate next year. With my incoming doctoral student we are planning to work on ecological restoration in Mesoamerica. I will teach EFB 120 again with the service learning group projects and will continue service learning in EFB 434/634 in Mexico. With both courses I am hoping to continue working with the City of Syracuse and Syracuse City School District. With EFB 434/634 I plan to work with the city of San Cristobal de Las Casas, Mexico and the village of Lacanja Chansayab, Mexico. I have begun planning a May-mester field course in Spain with Emanuel Carter that could be offered as early as 2017; the course would be on urban ecosystem design. As part of our USDA grant, I will work with Salish Kootenai College, Hopa Mountain, and others in the Center for Native Peoples and the Environment in developing a graduate program at ESF on the integrations of indigenous and scientific knowledge for sustainability.

I will continue my work with Academic Governance on the Honors, Library and Executive Committees and as Area Leader in Ecosystem Restoration in the Graduate Program in Environmental Science. I will plan for a sabbatical year by working with faculty who could take over these positions while I am away. I will also continue to serve the community through work with the Syracuse City Schools under a continued grant with the City of Syracuse. ESF

students and I will be sampling plant and insect community with elementary school students. I will also continue to work with the community of Lacanja Chansayab, Mexico on TEK-based restoration and education and with San Cristobal de Las Casas on natural wastewater treatment and ecosystem restoration.

This year I am planning to submit for funding support for research in the areas of ecosystem restoration, TEK, food security, urban ecosystems, and climate change adaptation. I will continue developing research and teaching ideas for my sabbatical. I would like with this sabbatical to open up new research and teaching areas in climate change adaptation, urban ecosystems and agroecosystem design. I would also like to learn a new language that could use in my future research. At present I am focusing my work in the Iberian Peninsula of Europe, but I am aware that this focus could expand or change. I will also continue my work within Latin America. I am particularly interested in how indigenous ecosystem management leads to climate change adaptation. I will conduct preliminary interview this summer. I will also work with my graduate students in submitting manuscripts for research we have completed on old field restoration, urban food systems, and Zapotec and Maya TEK management.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2016

a. Course(s) to be offered

b. Proposed research activity

I will work on manuscripts related to past research, submit for funding, work with graduate students on thesis and dissertation research, conduct preliminary interviews on climate change adaptation in villages in Mexico, Guatemala, and Belize, conduct sampling of our long-term TEK ecosystem restoration experiment in Mexico. Research with others from CNPE, Salish Kootenai College, and Hopa Mountain on best ways forward for a program at ESF in the integration of indigenous and scientific knowledge for sustainability.

c. University, professional society, and public service

2. Fall Semester 2016

a. Course(s) to be offered

EFB 120 Global Environment
EFB 434/634 Ecosystem Restoration Design

b. Proposed research activity

I will work on manuscripts related to past research, submit for funding, work with graduate students on thesis and dissertation research, analyze preliminary interviews on climate change adaptation in villages in Mexico, Guatemala, and Belize, and analyze data from our long-term TEK ecosystem restoration experiment in Mexico. Research with others from CNPE, Salish Kootenai College, and Hopa Mountain on best ways forward for a program at ESF in the integration of indigenous and scientific knowledge for sustainability.

c. University, Professional society, and public service

Graduate Program in Environmental Science, Ecosystem Restoration, Area Leader
Center for Native People and the Environment, Advisory Board
Academic Governance Awards Committee
Academic Governance Library Committee, Chair

Academic Governance Executive Committee
Society for Ecological Restoration Club, Adviser

3. Spring Semester 2017

a. Course(s) to be offered

EFB 518 Systems Ecology

b. Proposed research activity

I will work on manuscripts related to past research, submit for funding, work with graduate students on thesis and dissertation research, analyze preliminary interviews on climate change adaptation in villages in Mexico, Guatemala, and Belize, and analyze data from our long-term TEK ecosystem restoration experiment in Mexico. Research with others from CNPE, Salish Kootenai College, and Hopa Mountain on best ways forward for a program at ESF in the integration of indigenous and scientific knowledge for sustainability.

c. University, professional society, and public service

Graduate Program in Environmental Science, Ecosystem Restoration, Area Leader
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