

ANNUAL REPORT: June 1, 2014 – May 31, 2015
(i.e., Summer 2014, AY 2014-2015)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

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

NAME: Martin Dovčiak

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

	Course No.	Title	Credit Hrs.	No. Students	No. of Lab. Sections
FALL:	EFB 435	Flowering Plts: Div, Evol, Syst.	3	16	1
	EFB 635 (grad)	Flowering Plts: Div, Evol, Syst.	3	4	1
	EFB 797	Impacts of Deer on Forests (co-taught)	1	11	-
SPRING:	EFB 445	Plant Ecology & Global Change	3	21	-
	EFB 645 (grad)	Plant Ecology & Global Change	3	10	-

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)

Course No.	Title	Credit Hrs.	No. Students
EFB 420	Prof. Internship/Env. Biol.	14	4
EFB 798	Research Problems/EFB	1	1
EFB 999	Doctoral Thesis Research	23	2

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

- ESF Outreach Seminar “Team-Based Learning: Tools, Challenges, and Rewards” (Oct. 24, ~30 attendees)
- Onondaga Lake Bioblitz-vascular plants group (Sept. 12-13, ~15 group members, hundreds of attendees).

4. Guest Lecture Activities

Course No.	Title	No. of Lectures
EFB 210	Diversity of Life I	3
EFB 326	Diversity of Plants	1

II. STUDENT ADVISING

- A. Number of undergraduates for whom you are the student's official advisor 23 and unofficial advisor 2
- 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

Completed:

- Stephen Langdon, M.S., December 2014.
(Thesis title: Vegetation structure of a black spruce peatland in the Adirondacks of New York State.)

In Progress:

- Jay Ward Wason, III., Ph.D. student since August 2011 (Ph.D. Candidate since April 2014).

CO-MAJOR PROFESSOR

In Progress:

- Monica B. Berdugo Moreno, Ph.D., since August 2012 (Ph.D. Candidate since April 2015; with R. Kimmerer)
- Michael Whalen, Ph.D. Student (since April 2015; co-advised with S. Farrell)

MEMBER, STEERING COMMITTEE (other than those listed above)

Completed (i.e., defenses passed by May 30, 2015):

- Jon Cale (Ph.D., J. Castello)
- Andrew Siefert (Ph.D., Syracuse University, M. Ritchie)
- Mason Heberling (Ph.D., Syracuse University, J. Fridley)
- Scott Sveiven (M.S., D. Leopold)
- Miguel Garmendia (M.S., G. McGee)

In Progress:

- James Johnson (M.S., D. Leopold)
- Quincey Blanchard Oliver (M.S., FNRM, C. Nowak)
- Eli Arnow (M.S., S. Diemont)
- Eugene Law (M.S., S. Diemont)
- Liza Iegorova (M.S., J. Gibbs)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Completed:

- Jennifer Potrikus (M.S., D. Fernando, Examiner)
- Molly Hassett (M.S., G. McGee, Examiner)
- Jonas Hamberg (M.S., K. Limburg, Examiner)

III. RESEARCH COMPLETED OR UNDERWAY

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

- National Park Service. “Appalachian Trail MEGA-Transect Study”. G. Lawrence, D.A. Burns, K.C. Rice, SW Bailey, R. Minocha, M. Dovčiak, D. Leopold, S. Sullivan, K.C. Weathers, A.C. Ellsworth. \$747,242; 5/2010-12/2013 (\$49,310 supported J. Quant, but current year budget to SUNY/ESF is \$0). 1% time spent.

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)

- NYSEDA; \$200,000; 2015-2016. “Effects of acidic deposition and soil acidification on forest understory plant biodiversity in the Adirondack Mountains”. T. Sullivan (PI), M. Dovčiak, G. Lawrence, T. McDonnell (\$87,001 to M. Dovčiak; M. Whalen-supported PhD student, Matt Glaub-supported research analyst).
- NYS DEC. “Evaluating deer impacts on forests of New York State”. M. Dovčiak (PI), J. Frair, J. Hurst, P. Curtis, P. Smallidge. \$312,213. 4/2014-4/2016 (M. Lesser-supported post-doctoral associate).
- Electric Power Research Institute. “Cost effectiveness of cleaning techniques for controlling human-based transport of invasive exotic plants on electric transmission line rights-of-way across New York”. C. Nowak (PI) and M. Dovčiak (Co-PI). \$414,551 (award to M. Dovčiak: \$176,184), 8/2012-8/2015 (J. Quant-supported MS-level research staff).
- Northeastern States Research Cooperative. “Global change fingerprints in montane boreal forests: Implications for biodiversity and management of the northeastern protected areas”. M. Dovčiak (PI), C. Beier, G. Lawrence, J. Battles. \$89,497. 8/2012-8/2015 (J. Wason-supported PhD student).
- SUNY ESF Seed Grant Program. “Effects of mosses on the chemistry of tree seedlings and their impacts on forest regeneration” M. Dovčiak (PI), R. Kimmerer, C. Driscoll. \$6,800. 4/2014-12/2015 (M. Berdugo-PhD student with supported field/lab work).

2. Research Proposals pending (include information as in B.1., above)—None.

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

- NSF GSS Program, Full Proposal “Geography of Forest Change: Spatially Explicit Forest Community Dynamics Along Climatic Gradients”. M. Dovčiak (PI). \$298,480.

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

Published or in press:

- Dovčiak M, Hrivnák R, Ujházy K, Gömöry D. 2015. Patterns of grassland invasions by trees: insights from demographic and genetic spatial analyses. *Journal of Plant Ecology*, in press, DOI: 10.1093/jpe/rtu038.
- Westerband A, Dovčiak M, LaQuay-Velázquez G, Medeiros J. 2015. Aspect reduces soil moisture and tree cover, but not nitrogen mineralization or grass cover in semi-arid pinyon-juniper woodlands of the southwestern United States. *Southwestern Naturalist* 60 (1), in press.
- Steen DA, Osborne PA, Dovčiak M, Patrick D, Gibbs JP. 2015. A preliminary investigation into the short-term effects of a prescribed fire on habitat quality for a snake assemblage. *Herpetological Conservation and Biology*, in press.

- Álvarez-Yépez JC, Cueva A, Dovčiak M, Teece M, Yépez E. 2014. Ontogenetic resource-use strategies in a rare long-lived cycad along environmental gradients. *Conservation Physiology* 2: doi:10.1093/conphys/cou034.
- Giencke L, Dovčiak M, Mountrakis G, Cale J, Mitchell M. 2014. Beech bark disease: Spatial patterns of thicket formation and disease spread in an aftermath forest in the northeastern United States. *Canadian Journal of Forest Research* 44, 1042-1050.

Submitted (in review or in revision following review):

- Wiezik M, Svitok M, Wieziková A, Dovčiak M. Identifying shifts in leaf-litter ant assemblages (Hymenoptera: Formicidae) across ecosystem boundaries using multiple sampling methods. *PLOS ONE* (in revision).

B. Non-refereed Publications

- Nowak C, Quant J, Dovčiak M. 2014. Cost effectiveness of cleaning techniques for controlling human-based transport of invasive exotic plants on electric transmission line rights-of-way. Third Technical Update, Report No. 3002003572, Electric Power Research Institute, Palo Alto, CA.

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

- Dovčiak, M. 2015. Global change fingerprints in mountain spruce-fir forests: Implications for biodiversity and management of the northeastern protected areas. Adirondack Research Forum, Old Forge, NY, March 12.
- Lesser MR, Curtis P, Hurst J, Frair J, Dovčiak M. 2015. Deer impacts on forest regeneration at spatial scales relevant to management decisions. 71st Annual Northeast Fish and Wildlife Conference, April 19-21, Newport, Rhode Island.
- Wason J, Dovčiak, M. 2015. Evidence of elevational shifts in northeastern U.S. forest tree populations. New York Society of American Foresters Annual Meeting. Syracuse, NY, Jan. 22.
- Wason J, Dovčiak, M. 2015. Elevational distributions of tree species: Climate, land management history, or soils? New York Society of American Foresters Annual Meeting. Syracuse, NY, Jan. 22.
- Quant JM, Nowak CA, Dovčiak M. 2014. Human-based spread of invasive plants along powerline rights-of-way in New York. Connecticut Invasive Plant Working Group Symposium, University of Connecticut, Storrs, Oct. 7.
- Wason JW, Dovčiak M, Beier CM, Battles JJ. 2014. Responses of tree populations to recent climatic trends in northeastern mountain forests: Thinking beyond range margins. Ecological Society of America, Annual Meeting, Sacramento, CA. Aug. 10-15.

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

“Understanding, conserving, and managing forest ecosystems and forest edges in fragmented human-dominated landscapes”. Invited lecture at University of Connecticut, Storrs. May 19, 2015 (~25 in attendance).

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

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

- New York State DEC, Cornell Cooperative Extension. Contributing to the development of public outreach and citizen science component of the project on the impacts of deer on forests of New York State (ongoing).
- New York Power Authority. Contributing to the development of guidelines on the effectiveness of cleaning techniques for controlling transport of invasive exotic plants on power line rights-of-way in New York by vegetation management crews (ongoing).

2. Industrial and Commercial Groups, etc.—None.

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

- Provided interviews to media that contributed to several articles written with SUNY ESF mentioned:
 - “Growing deer population taking a toll on forests”, by T.J. Pignataro, TheBuffaloNews.com, Buffalo, May 25, 2015.
 - “Deer pose big problems for farmers”, by T.J. Pignataro, TheBuffaloNews.com, Buffalo, May 25, 2015.
 - “Onondaga Lake Bioblitz: More Than 400 Species in 24 Hours”. Office of Communications, SUNY ESF, Syracuse, September 18, 2014.
 - “When will we finally get relief from CNY’s terrible allergy season?” by Glenn Coin, Syracuse.com-The Post-Standard, Syracuse Media Group, June 10, 2014.
- U.S. National Park Service. Environmental monitoring and modeling support for science-based conservation of forest vegetation along the Appalachian Trail from Georgia to Maine (Vegetation team leader).
- Sierra de Alamos-Rio Cuchujaqui Biosphere Reserve, Mexico. Ecological monitoring and conservation of an endangered forest cycad, *Dioon sonorensis* (Advisor).
- Shingle Shanty Preserve and Research Station, Adirondacks, NY. Vegetation monitoring (Advisor).
- Regular interaction with the public/answering of inquiries on plant ecology, taxonomy, global change, and sustainability.

VI. PROFESSIONAL DEVELOPMENT

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

- Promoted to Associate Professor with Continuous Appointment (Tenure) (effective, Sept. 1, 2015)

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

- International Association for Vegetation Science (IAVS)- Editorial Board Member
- New York Climate Change Science Clearinghouse (NYCCSC)- Sector Expert: Agriculture and Forestry
- Mountain Research Initiative- Expert Database Member
- New York Invasive Species Research Institute- Expert Database Member

2. Professional Society Membership

- Ecological Society of America
- Botanical Society of America
- International Association for Vegetation Science
- Society of American Foresters

3. Other Professional Activities

a. Editorial activity

Journal(s)

- Journal of Vegetation Science
- Applied Vegetation Science

Responsibility

Editorial Board Member
Editorial Board Member

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
• Applied Vegetation Science	1
• Canadian Journal of Forest Research	1
• Ecology	1
• Ecology Letters	1
• Journal of Applied Ecology	2
• Journal of Forestry	1
• Journal of Vegetation Science	1
• PLOS One	1

<u>Agency</u>	<u>No. of proposals</u>
• NSERC, Discovery Grants Program, Canada	1
• NSF Earth Sciences, CAREER	1

Other

- USDA Forest Service: Member of the Review Panel on forest tree species of the northeastern U.S. (for a General Technical Report on critical loads of nitrogen for northeastern forest tree species)

c. Participation (workshops, symposia, etc.)

<u>Name of workshop, etc.</u>	<u>Date</u>	<u>Place</u>
• ESF Undergraduate Experience Retreat	January 8, 2015	Syracuse
• NYFOA: New York Forests at Risk- Working Toward a Comprehensive Solution	April 25	Syracuse
• Monthly meetings with Cornell Cooperative Extension and NYS DEC to discuss research and the development of outreach component related to the ESF study of deer effects on forests across New York State (September 2014 to May 2015, held in Ithaca or Syracuse)		

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

- “Strategies for Getting Started in the Flipped Classroom” Magna Online Seminar, Feb. 10, 2015.

D. Foreign Travel (Where, When, Purpose)

- Technical University in Zvolen, Slovakia (Aug. 5-19, 2014). Collaborative Research: Forest and forest-grassland ecotone dynamics (1 manuscript published, 1 manuscript currently in revision for PLOS One).

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

- Robert Burgess Graduate Scholarship in Ecology, Chair
- Graduate Program Advisory Committee, member
- Scientist-in-Residence and Roosevelt Forest Ecologist, Roosevelt Wild Life Station

B. College-level

- Ad hoc reviewer for the Fulbright Program at SUNY ESF
- CSTEP program mentor
- Graduate Program in Environmental Science–Ecosystem Restoration Program, member
- Graduate Program in Environmental Science–Environmental Monitoring and Modeling Program, member
- Beech Working Group, member
- Center for Urban Environment, member

C. University-wide, including Research Foundation– None.

D. Post-doctoral Research Associate Mentoring (list name(s) of post-docs and period of employment)

- Dr. Mark Lesser: March 31, 2014 to July 30, 2015 (co-advised by J. Frair).
- Dr. Juan C. Alvarez-Yepiz: May 11 to August 30, 2014.
- Additional mentoring and supervision of research staff: Juliana Quant, M.S., Research Analyst: May 11, 2014 to December 30, 2015 (co–advised with C. Nowak).

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.

Students: I taught Flowering Plants: Diversity, Evolution, and Systematics (EFB 435/635) to the highest enrollment in this class since I started to teach it at ESF (20 students), and Plant Ecology and Global Change (EFB 445/645) to an average enrolment for that class (31 students). I also co-taught a seminar with a post-doctoral associate in my lab, Dr. Mark Lesser. I have started to experiment with Team-Based Learning™, especially by including team as well as individual based testing and group exercises in the Flowering Plants class; this was meant by positive comments of the vast majority of students and increased my own enjoyment of the class. I continued to contribute to our large departmental course, EFB 210-Diversity of Life I, by providing lectures on Flowering Plants, and I contributed a guest lecture to EFB 326-Diversity of Plants. I graduated my 11th graduate student (5th MS student), my third PhD student advanced to candidacy this Spring, and I have recruited 3 new PhD students (one started this April, supported by NYSERDA funding, and two more are coming in the Fall). Most of my previously completed graduate students and several undergraduate researches continue to be successful, with professional positions at universities or in environmental consulting firms such as Jones Ecological Research Center, UC Berkley, University of Arizona, University of Miami, or O'Brian & Gere. Four of my former students published papers with me this past academic year as first authors or co-authors, and several additional manuscripts with former students are currently in advanced stages of preparation.

Department/College: I continued to represent College/Department in my broader professional service, which included serving as a PI, co-PI, or collaborator in larger collaborative research groupings that included: (1) Cooperation with NYS DEC and Cornell Cooperative Extension on a research project “Evaluating deer impacts on forests of New York State” (supporting Dr. Mark Lesser), (2) Cooperation with New York Power Authority on a research project “Cost effectiveness of cleaning techniques for controlling human-based transport of invasive exotic plants on electric transmission line rights-of-way across New York” (supporting one of my recent graduates, J. Quant, as a full-time Research Analyst), (3) Cooperation with several state and federal land and forest management agencies in New York, Vermont, New Hampshire, and Maine in establishing climate and forest vegetation monitoring network across latitudinal and elevational gradients of the northeastern U.S. as a part of a research projects “Global change fingerprints in montane boreal forests: Implications for biodiversity and management of the northeastern protected areas” (supporting J. Wason), (4) Collaboration with US Geological Survey, US Forest Service, and Carry Institute on the “Appalachian Trail Mega-Transect Study”, and (5) newly funded project by NYSERDA on plant diversity in the Adirondacks and acid deposition (supporting Mike Whalen and Matt Glaub). In addition, I continued to serve as the Chair for the Selection Committee for the Burgess Graduate Scholarship in Ecology, and as a member of the Graduate

Program Advisory Committee. At the college level, I served as a faculty mentor in the CSTEP program, a member in two of the GPES Areas (Ecosystem Restoration, Environmental Monitoring and Modeling), a faculty member in the Center for Urban Environment, ESF Beech working group, and I offered a college wide seminar on Team-Based Learning via ESF Outreach Office.

Self/Professional Development: My greatest accomplishment this past cycle was to be promoted to associate professor with tenure in our department. I am also proud for becoming an editorial board member in two flagship journals of the International Association for Vegetation Science (*Journal of Vegetation Science*, *Applied Vegetation Science*) and for being invited to give a seminar at the University of Connecticut. Importantly, I have significantly focused on further development of my teaching by including Team Based Learning into teaching my classes, and I was pleased to note that the students responded to this positively. My teaching also benefited from taking part in ESF winter retreat focused on Undergraduate Experience at ESF. In terms of research, I have published (or have in press) 5 refereed papers (1 first-authored), and I have one other manuscript in revision and several (3-4) in advanced stages of preparation (to be submitted this summer). Importantly, I developed a NSF GSS full proposal (as a sole PI) “Geography of Forest Change: Spatially Explicit Forest Community Dynamics Along Climatic Gradients”; although it was not selected for funding, it received an encouraging and constructive feedback and it was ranked within the top 36% of proposals providing favorable framework for a resubmission. My summer travel to Slovakia continued to enhance my research on woody invasions of grasslands (a manuscript in revision and resubmission to *PLOS One* this summer).

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 2015

a. Course(s) to be offered– None.

b. Proposed research activity

- Supervise field work for the NYSERDA grant on plant diversity in the Adirondacks
- Contribute to developing final products for the ERPI study of the cleaning techniques impacts on plant invasions in New York power-line corridors, especially to the development of the final report and manuscripts for peer-review
- Work with co-authors to finalize and submit the manuscript on Deer Impacts on Forests in NYS, and to continue developing public outreach component in collaboration with Cornell University.
- Prepare final report and move along two manuscripts from the NSRC study of forest growth across elevational ecotones in the northeastern US.
- Work with co-authors to revise and resubmit a manuscript on shifts in ant communities across ecotones in western Carpathians.
- Work with co-authors to finalize and submit a manuscript from the AT Mega-Transect Study.
- Feedback for the submission and revisions of *Dioon sonorensis* manuscripts drafts.
- Analyze two diversity-stability datasets from collaborators from the University of Washington and University of Minnesota to prepare two independent manuscripts.
- Revise the NSF GSS proposal to expand the current work on elevational or latitudinal vegetation-climate-deposition gradients.
- Prepare a new proposal for sabbatical funding.
- Contribute to ESA Annual Meeting presentations (presenters Wason, Lesser, Quant).

- Travel to Technical University in Zvolen, Slovakia, to finalize a manuscript and discuss future collaborations.

c. University, professional society, and public service

Committee service as appropriate.

2. Fall Semester 2015

a. Course(s) to be offered

- EFB 435/635 *Flowering Plants: Diversity, Evolution, & Systematics*, while continuing to increase the portion of the class taught using team-based active learning approaches.
- Flowering plants sections in *Diversity of Life I* (EFB 210)

b. Proposed research activity

- Finalize and submit two diversity-stability papers with collaborators from University of Washington and University of Minnesota.
- Supervise data analyses for the NYSEDA grant on plant diversity in the Adirondacks
- Contribute to the final products for the ERPI study of the cleaning techniques impacts on plant invasions in New York power-line corridors (final report and manuscripts for peer-review).
- Work with co-authors on any revisions needed for manuscripts on Deer Impacts on Forests in NYS, and to continue developing public outreach component in collaboration with Cornell University. Develop follow-up analyses on forest herbs vs deer herbivory.
- Work with co-authors to develop third and fourth manuscript from the NSRC study of forest growth across elevational ecotones in the northeastern US. Revisions on the first two manuscripts as appropriate.
- Work with co-authors to finalize and submit a second manuscript from the AT Mega-Transect Study.
- Finalize and submit the NSF GSS proposal to expand the current work on elevational or latitudinal vegetation-climate-deposition gradients.
- Submit a proposal for a sabbatical funding to EU Marie-Curie Program.

c. University, Professional society, and public service

- Continue current service in College-wide commitments—RWLS, GPES, CSTEP, CUE, and Beech Working Group, as well as departmental commitments such as chairing the Burgess Scholarship in Ecology and membership in GPAC. Other service as appropriate.
- Continue serving as an editorial board member for *Journal of Vegetation Science* and for *Applied Vegetation Science*.
- Look for possibilities of greater involvement in ESA, BSA, SAF, and/or journal editorial boards.
- Look for an opportunity to (co-)organize a professional workshop or discussion group at the ESA next summer

3. Spring Semester 2016

a. Course(s) to be offered

- EFB 445/645 *Plant Ecology & Global Change*, with an increased application of student-centered and active learning approaches, including team-based learning.
- Provide a guest lecture in *Diversity of Plants*, and potentially other guest lectures as appropriate.

b. Proposed research activity

- Revise and resubmit NSF DEB pre-proposal on global change and plant invasions
- Revisions of manuscripts and proposals submitted in summer and fall as appropriate.
- Completing manuscripts carried over from summer/fall 2015.
- Supervise and manage data analyses and manuscript preparation for the NYSERDA Study
- Prepare proposals for funding to continue and expand the current work on elevational or latitudinal vegetation-climate-deposition gradients, potentially integrating deer browse.

c. University, professional society, and public service

- Continue with the activities carried out during Fall 2015 (as described above).