

ANNUAL REPORT: June 1, 2009 – May 31, 2010
(i.e., Summer 2009, AY 2009-2010)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: Martin Dovčiak

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 202	Plant Ecol./Taxonomy Section	(3)	35	-
FALL:	EFB 535	Flowering Plants: Div., Evol, Syst.	3	12	2
	EFB 797	Adaptive Peaks (w/ M. Fierke)	1	19	-
SPRING:	EFB 445	Plant Ecology	3	24	2
	EFB 645	Plant Ecology	3	9	2
	EFB 796	Plant Ecology (lecture only)	2	1	-
	EFB 797	Adaptive Peaks (w/ M. Fierke)	1	8	-

NOTE: PLEASE INDICATE WHICH COURSE(S) HAD A SERVICE-LEARNING COMPONENT AND BRIEFLY EXPLAIN THE NATURE OF THIS COMPONENT.

EFB 797 (Adaptive Peaks) included student engagement with the academic community and host speakers, facilitating their involvement as active learners and their reflective thinking.

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 495	Undergrad Exp/Coll Teach	2	1
EFB 498	Resrch Prob / Env.& For. Bio.	7	3
EFB 798	Resrch Prob / Env. & For. Bio.	6	2
EFB 899	Masters Thesis Research	15	3
EFB 999	Doctoral Thesis Research	5	1

3. Continuing Education and Extension (short courses, workshops, etc.) – NONE.

4. Guest Lecture Activities

<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
BIO 415/615	Conservation Biology (Syracuse University)	1
EFB 326	Diversity of Plants (SUNY-ESF)	1
EFB 796	Core Course (SUNY-ESF)	1

II. STUDENT ADVISING

- A. Number of undergraduates for whom you are the student's official advisor 19 and unofficial advisor 2
- 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

Completed students:

1. Lisa Giencke, M.S., May 2010, Thesis title: Spatiotemporal Dynamics of an Adirondack Forest.

In Progress:

2. Juan Carlos Alvarez Yepiz, Ph.D., since August 2008.
3. Michael Lee Davis, M.S., since August 2008.
4. Portia Osborne, M.S., since August 2009.

CO-MAJOR PROFESSOR

In Progress:

5. Juliana Quant, M.S., since August 2009 (with D. J. Leopold).

MEMBER, STEERING COMMITTEE (other than those listed above)

1. Andrew Seifert (Ph.D., SU, M. Ritchie)
2. Patrick Raney (Ph.D., D. Leopold)
3. Yazmin Rivera (Ph.D., T. Horton)
4. Tera Galante (M.S., T. Horton)
5. Jon Cale (M.S., J. Castello)
6. Peter Rockerman (M.S., M. Fierke)
7. Samantha Knowlden (M.P.S., T. Horton)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

1. Renato Pacaldo (Ph.D. candidacy exam chair, FNRM)

III. RESEARCH COMPLETED OR UNDERWAY

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

- Diversity-stability relationships of forest herbs over 40 years at Andrews Experimental Forest (5 %).
- Plant community responses to forest harvest in the Pacific Northwest: Demonstration of Ecosystem Management Options (DEMO) study (1 %).
- Climate-vegetation gradients in the Adirondacks and potential effects of global climate change (10 %).
- Spatial dynamics and effects of beech bark disease in the Adirondacks (5 %).
- Mechanisms of coexistence in the ancient cycad *Dioon sonorensis*, Mexico (5 %).

- 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)
- USDA CSREES/McIntire-Stennis. Forest change in the Adirondacks over 40 years. \$54,034; 2010-11, (PI).
 - National Park Service. Appalachian trail MEGA-transect study. Total budget: \$747,242; 2010-13, (CoPI). (\$49,310 supports SUNY-ESF graduate student, J. Quant, and field studies carried out by SUNY-ESF).
 - NSRC, Importance of calcium for supporting biodiversity in acidified landscape. \$41,543; 2009-2010, (CoPI).
 - USDA CSREES/McIntire-Stennis. Characterization of montane forests using remote sensing. \$79,453; 2010-12, (CoPI).
 - USDA CSREES/McIntire-Stennis. Coupling local-scale climate change and forest ecosystems. \$81,271; 2010-12, (Co-PI).

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

- NSRC, Impacts of acidic deposition and soil calcium depletion on terrestrial biodiversity and food webs. \$149,831; 2010-13, (CoPI).
- NASA – Roses 2009, Characterization and monitoring of montane forest ecosystems using satellite multi-sensor data fusion (CoPI).

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

- NSRC, Multi-sensor data assimilation to characterize ecosystem health of montane forests. \$110,765; 2010-12, (CoPI).
- SUNY-ESF Seed Grant Program, Validation of high-resolution interpolated climate data using instrumental monitoring and analysis. \$8,000 (CoPI)

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

- Sprugel, D.G., K.G. Rauscher, R. Gersonde, **M. Dovčiak**, J.A. Lutz, C.B. Halpern, 2009. Spatially explicit modeling of overstory manipulations in young forests: Effects on stand structure and light. *Ecological Modelling*, 220, 3565-3575.
- **Dovčiak, M.**, and C.B. Halpern, 201x. Diversity-stability relationships in forest herb populations during four decades of community assembly. *Ecology Letters*, in review.
- Álvarez-Yépiz, J.C., **M. Dovčiak**, and A. Búrquez, 201x. Persistence of a rare ancient cycad: effects of environment and demography. *Biological Conservation*, in review.
- Beier, C.M., A.M. Woods, K. Hotopp, J.P. Gibbs, M.J. Mitchell, **M. Dovčiak**, D.J. Leopold, G.B. Lawrence, B.D. Page, 201x. Variability in land snail and amphibian communities along a soil calcium gradient in northern hardwood forests of the Adirondack Mountains, New York. *Ecological Applications*, in review.

B. Non-refereed Publications – None.

C. Papers Presented at Science Meetings (give title, date, occasion, and location) – None.

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

Invited seminar, Department of Biology, Syracuse University, December 4 (~30 attendees)

Invited public lecture, Syracuse Botanical Club, November 2, 2009 (~15 attendees)

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local): – None

2. Industrial and Commercial Groups, etc. – None

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

1. Jowonio School – ongoing consulting and management of toxic plants (poison ivy) along the trail system used by preschool children.

VI. PROFESSIONAL DEVELOPMENT

A. Professional Honors and Awards (for teaching, research, outreach, etc.) – None

B. 1. Activities in Professional Organizations (offices held, service ...) – None

2. Professional Society Membership

Ecological Society of America

Adirondack Research Consortium

3. Other Professional Activities

a. Editorial activity – None.

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Biological Invasions	2
Journal of Vegetation Science	1
Plant Ecology	2
Forest Science	1

c. Participation (workshops, symposia, etc.)

Name of workshop, etc.

Date

Place

The Appalachian Trail Mega-transect meeting, NADP, Oct. 6-7, 2009, Saratoga Springs, NY.

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

Ecological Society of America, Ecological Education Webinar
Hardy L. Shirley Faculty Mentoring Colloquium, Syracuse, NY, January 6, 2010.
Syracuse University CAREER Info Session, April 8, 2010.

D. Foreign Travel (Where, When, Purpose)

Technical University in Zvolen, Slovakia, July 2009: Consultations and preparation of a manuscript on Norway spruce invasions on plant diversity in mountain grasslands.

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

Chair, Committee for Robert Burgess Graduate Scholarship in Ecology
Worked with Terry Ettinger to develop EFB greenhouse collections (ongoing)

B. College-level

Empire Innovation Search (member of the Climate Change Thematic Committee)
Committee on Research (member)
Beech Working Group (member)
Council for Geospatial Modeling and Analysis (member)
Center for Urban Environment (core faculty member)

C. University-wide, including Research Foundation – None

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 (1) EFB 535 Flowering Plants: Diversity, Evolution, & Systematics (taught for the first time under this new name and a new course description), (2) EFB 445/645/796 Plant Ecology, (3) EFB 202 Plant Ecology & Taxonomy module at CLBS, and co-taught (4) EFB 797 Adaptive Peaks (two semesters). Enrollment in EFB 535 doubled and students seemed to have enjoyed it as suggested by well above average course evaluations. Student enrollment and satisfaction in EFB 445/645 was on the level of the previous two years. EFB 445/645 was a complicated course to teach in current structure and since it had not been updated since the mid 1980's, I redeveloped the course under the new heading EFB 445/645 Plant Ecology & Global Change (to be offered next Spring). I built publicly available course websites for both EFB 535 and 445/645 (linked to the ESF online catalogue) and improved the current Blackboard-based websites for both courses (these include all lecture slides, lab assignments, student PowerPoint presentations ("featured plants"), video clips, exam reports/suggested answers, links to assigned readings, and class announcements). I have worked with Terry Ettinger to better develop the greenhouse collection of flowering plants that could be used in the class (more remains to be done). In addition to my regular offerings, I gave guest lectures in EFB 326-Diversity of Plants, EFB 796-Core Course, and BIO 415/615-Conservation Biology (Syracuse University). Outside the classroom, I successfully graduated my first MS student, served as an MP (or Co-MP) to 5 graduate students (1 Ph.D., 4 M.S.), served on steering committees for 7 other graduate students (incl. one from Syracuse University), mentored 3 undergraduate research students (incl. a NSF UMEB student and a HWF Roosevelt student), and officially advised 19 undergraduates.

Department/College: My main contributions to departmental and college activities in terms of research included participation as a CoPI in a large multi-agency, multi-investigator NPS-funded research project, the Appalachian Trail

Mega-transect Acid Deposition Effects Study. This research has a NPS produced web page and good potential to garner national attention. At the College level, I served on CoR, Climate Change thematic sub-committee for the Empire Innovation Faculty Search, CGMA, was a founding member of a Beech Working Group, and a core faculty in CUE. Outside of ESF, I continued my service as a reviewer for major peer-reviewed journals (6 manuscripts, 4 journals)— activities that contribute to the name recognition of both the college and the department. At the departmental level I continued to serve as the Chair for the Selection Committee for the Robert Burgess Graduate Scholarship in Ecology.

Self: Professionally, this was a good year – I continued building my research group which included five graduate students in total (1 Ph.D. and 4 M.S. students) this year, and I have successfully graduated my first MS student. I have become a CoPI on a NPS-funded multiagency project lead by USGS (Appalachian trail MEGA-transect study) with a total budget of \$747,242 (\$49,310 supports SUNY-ESF graduate student field research). I was also a CoPI on a NSRC research on Ca importance for biodiversity (with Colin Beier et. al.) and participated on three newly funded research proposals (as a PI or CoPI) funded by USDA CSREES/McIntire-Stennis Program. I also continued to be involved as a collaborator on three multi-year research projects at the University of Washington, Seattle; I co-authored a manuscript from one of these studies (Cedar River restoration study; published in *Ecological Modeling*) and I am a lead author on another one (Andrews LTER vegetation dynamics; currently in review in *Ecology Letters*). I coauthored two other manuscripts that are currently in review (one in *Biological Conservation*, one in *Ecological Applications*) based on projects that I was involved with since arriving to SUNY-ESF. I presented my work at a couple of interesting venues— as an invited seminar at Syracuse University Biology Department and an invited talk at Syracuse Botanical Club.

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)

Research: I am currently a CoPI on a new, large NPS-funded collaborative study (the Appalachian Trail Mega-transect Study of Acid Deposition Effects) and I am currently initiating the vegetation component of this study; I am co-supervising site selection and plot set-up this summer, and analyses and manuscript preparation later during the year. In addition, I am planning to recruit a student and initiate and participate in preparations for the field work within the three McIntire-Stennis-funded proposals for studies of various aspects of forest dynamics and climate change in the Adirondacks (field work to start next summer). In the short-term, I am planning to complete a DEMO bryophyte study from the PNW and submit a manuscript from that study as well as finalize and submit manuscripts from the western Carpathian study of Norway spruce invasion and from BBD study at the HWF. I am also planning to prepare several substantial proposals for research funding—these will be centered on the successful proposals from this year's McIntire-Stennis program. I will present my research at the ESA meeting in Pittsburgh this summer and at the Conference on Global Change and the World's Mountains in Perth, UK in September. I will visit the Technical University in Zvolen, Slovakia, to discuss preparation of manuscripts in progress and new collaborative opportunities.

Teaching: After completing a year of co-teaching EFB 797-Adaptive Peaks, I am planning to offer another seminar, EFB 797-Advanced Plant Ecology & Global Change Seminar (1 credit); my and other plant ecology students have been requesting an advanced seminar in plant ecology persistently for quite some time and my having completed Adaptive Peaks will provide me with time to offer such a seminar. In the spring, I am starting to offer a new course, EFB 445/645- Plant Ecology & Global Change (3 credits), which is geared toward increasing enrollment in the course. I will continue working with Terry Ettinger to better develop the greenhouse collections, focusing on the needs of EFB 535.

Service & Professional Development: Continue my current service in College-wide committees – CoR, CGMA, CUE, and Beech Working Group, and continue serving as a Chair for the departmental Burgess Scholarship in Ecology, and other committees as appropriate.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2010

a. Course(s) to be offered – None

b. Proposed research activity

(i) Continue developing and submitting research proposals related to current McIntire-Stennis grants

(ii) Complete & submit two manuscripts for peer-review:

Dovčiak M, Ujházy K, Hrivnák R, and Gömöry D. Patterns of tree invasions into grasslands: insights from demographic and genetic spatial analyses. *Journal of Ecology*.

Giencke L, Dovčiak M, Mountrakis G, Mitchell M. Spatiotemporal dynamics of beech bark disease: fine-scale patterns, mechanisms and consequences of disease spread. *Ecol. Appl.*, or *CJFR*.

(iii) Complete the analyses of bryophyte responses to retention harvests in the PNW forests (DEMO study), prepare a manuscript draft, and present oral talk at the ESA meeting in Pittsburgh.

(iv) Complete setting-up research plots for the Appalachian Trail Mega-transect Study.

(v) Visit the Technical University in Zvolen, Slovakia, to discuss current manuscripts in preparation (Dovčiak *et al.*, Janisova *et al.*), and other collaborative opportunities.

c. University, professional society, and public service

Committee service as appropriate.

2. Fall Semester 2010

a. Course(s) to be offered

EFB 535 Flowering Plants: Diversity, Evolution, and Systematics (3 credits)

EFB 797 Advanced Plant Ecology & Global Change Seminar (1 credit)

b. Proposed research activity

(i) Oral presentation at the Global Change and the World's Mountains, Perth, UK, September 2010.

(ii) Complete DEMO bryophyte study (incl. a submission of a manuscript).

(iii) Supervise vegetation and related analyses within the Appalachian Trail Mega-transect study.

(iv) Start preparation of the Adirondack research projects funded by McIntire-Stennis grants.

(v) Continue research proposal development/submission on global climate change effects on plant communities, plant invasions, and forest dynamics/biodiversity.

c. University, Professional society, and public service

Continue current service in College-wide committees – CoR, CGMA, CUE, and Beech Working Group, and continue serving as a Chair for the departmental Burgess Scholarship in Ecology, and other committees as appropriate.

3. Spring Semester 2011

a. Course(s) to be offered

EFB 445/645 Plant Ecology & Global Change (3 credits) (new course!)

b. Proposed research activity

- (i) The Appalachian Trail Mega-transect Study: Complete analyses from the first field season, prepare a draft manuscript and prepare the second field season.
- (ii) The Adirondack climate-vegetation studies (McIntire-Stennis): Prepare the first field season.
- (iii) Continue research proposal development/submission on global climate change effects on plant communities, plant invasions, and forest dynamics/biodiversity.

c. University, professional society, and public service

Continue current service in College-wide committees – CoR, CGMA, CUE, and Beech Working Group, and continue serving as a Chair for the departmental Burgess Scholarship in Ecology, and other committees as appropriate.