

ANNUAL REPORT: June 1, 2011 – May 31, 2012
(i.e., Summer 2011, AY 2011-2012)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: Kimberly L. Schulz

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

Course No.	Title	Credit Hrs.	No. Students	No. of Lab. Sections
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SUMMER:

EFB 496 (02)	Aquatic Ecosystems of the Adirondacks	39	1	
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FALL:

EFB 424	Limnology: Study of Inland Waters	3	54	1
EFB 624	Limnology: Study of Inland Waters	3	13	1
EFB 524	Limnology Practicum	2	20	2

SPRING:

EFB 423	Marine Ecology	4	79	5
EFB 495	Undergraduate Exp/Coll Teach	5 tot	3	n/a
EFB 623	Marine Ecology (grad)	5	6	labs with 423+ separate seminar
EFB 797	Special Topics/Marine Ecology	1	3	n/a

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.

EFB 524, Limnology Practicum, had a significant service learning component for the second time this year. Students worked with a local lake association (Song Lake Association) to develop their independent projects on topics that were both scientifically relevant and of interest to the homeowners. About half of student time in the course was devoted to developing and performing these independent projects, in co-operation with homeowners, and culminating in a scientific poster session and reception in 12 Illick Hall during finals week that was open to the public and attended by approximately 25 members of the Song Lake Association and community. The projects resulted in an expanded database of water quality and species presence data that will be useful to the homeowners in lake management decisions. Among other projects, the students looked at spatial heterogeneity in a wide range of water quality parameters throughout the lake, and followed up on previous work last year related to two rare macrophyte (pond weed) plants in the lake as well as an endangered fish, the lake chubsucker, which has not been seen in NY for 60 years (my lab is following up on these discoveries along with Don Stewart and Chris Whipps' groups). After the ESF poster

presentation, the students were invited by a larger lake association, COFOKLA, of which the Song Lake Association is a member, to present their posters at a meeting on April 18, 2012 (after the fall term limnology class), and 8 students brought the class posters to this kettle lake association's meeting and met with the regional lake association members. This service learning component seemed highly beneficial for both students and the public, and I hope to continue similar efforts in the future with this class.

2. Non-Scheduled Course Offerings (e.g., 496, 899, 999)

	Course No.	Title	Credit Hrs.	No. Students
FALL	EFB 420	Internship/EFB	6	2
	EFB 496	Study Abroad	12	1
	EFB 498	Research Prob/EFB	9	4
	EFB 899	Masters Thesis Research	3	2
	EFB 999	Doctoral Thesis Research	13	3
	EST 400	Senior Paper	3	1
SPRING	EFB 420	Internship/EFB	4	1
	EFB 498	Research Prob/EFB	17	7
	EFB 798	Research Prob/EFB	2	1
	EFB 899	Masters Thesis Research	8	4
	EFB 999	Doctoral Thesis Research	17	3

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

Graduate Colloquium Teaching Lab and Field Classes August 25, 2011

Graduate Student Panelist on Defenses February 24, 2012

4. Guest Lecture Activities

	Course No.	Title	No. of Lectures
FALL	EFB 132	EFB Freshman Seminar	1 (twice)
	EFB 415	Ecological Biogeochemistry	1
	ESC 132	Environmental Science Seminar	1
SPRING	EFB 202	Diversity of Life	8 lectures and 4 labs

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 26 and unofficial advisor 7

In addition advise a large number of independent projects (EFB), senior projects (Env Sci and ES) and honor's projects (David Andrews - won honor's project award and Dan Symonds)

Nautilus club advisor

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

1. Andrew Brainard, Ph.D., January 2010-current
2. Stephanie Figary, Dual degree candidate M.S./MPA Maxwell, August 2009-current.
3. Jacob Gillette, Ph.D., January 2006-current.
4. Cheryl Whritenour, Ph.D., June 2010-current
5. K. Chad Walz, M.S., January 2012-current

CO-MAJOR PROFESSOR

1. Daniele Baker, M.S., August 2008-present (co-major professor, M. Mitchell)
2. Ceili Bachman, M.S. August 2011-present (co-major professor, M. Mitchell)

MEMBER, STEERING COMMITTEE (other than those listed above)

1. Michael Amadori (Doug Daley, major professor), defended M.S. successfully April 2012
2. James Arrigoni (James Gibbs, major professor)
3. Caresse Fernandez (Mark Teece, major professor)
4. Alison Halpern (John Farrell and Don Leopold, co-major professors); on leave/inactive
5. Chris Holmes (Carla Cáceres, University of Illinois, major professor); M.S. student at U. Illinois
6. Matthew Isles (Sharon Moran, Environmental Studies, major professor)
7. Phil-Goo Kang (Myron Mitchell, major professor)
8. Stefanie Kring (Michael Twiss, Clarkson University, major professor); Ph.D. student at Clarkson University
9. Suman Maity (M. Sepulveda, Purdue University, major professor); Ph.D. student at Purdue University – serving as external committee member; passed candidacy exam fall 2010.
10. Arlen Marmalejo-Hernandez (Don Stewart, major professor), defended M.S. successfully August 2011
11. Joie Matillano (Don Stewart, major professor); defended M.S. successfully August 2011; now serve on his Ph.D. committee
12. Rita Oliveira Monteiro (Karin Limburg, major professor), defended Ph.D. successfully December 2011
13. Justine Schmidt (Greg Boyer, major professor)
14. Sara Turner (Karin Limburg, major professor)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

1. Margaret Pavlac (Greg Boyer, major professor)

III. RESEARCH COMPLETED OR UNDERWAY

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

- Steph Figary (M.S. student) is studying the effects of invasive zooplankton in the Finger Lakes. Percent of my time ~2%
- Daniele Baker (M.S. student working with Mitchell and me) is working on nitrogen cycling in Onondaga Lake and long-term phytoplankton change. Percent of my time ~3%.

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)

- *Funding Agency:* SUNY ESF seed grant
PI: Stewart Diemont, with K. Schulz and Nate Barlett
will support M.S. research of Nate Barlett
Dates: May 2012-2013
- *Funding Agency:* National Science Foundation (NSF)
Title:, “Collaborative Research: EAGER – Eco-evolutionary feedback on community assembly,”
PI: K.L. Schulz, *co-PI:* C.E. Cáceres (U. Illinois);
Amount: \$300,000 (\$143,667 to SUNY ESF)
Dates: Sept 2009-Aug 2012
This grant supported Stephanie Figary, M.S. student EFB for two years
- *Funding Agency:* NSF
Title: REU Collaborative research: Eco-evolutionary feedback on community assembly
PI: K.L. Schulz
Amount: \$8,000
Dates: 1 May 2012-31 August 2012
Supports undergraduate fellow for summer 2012, no graduate students
- *Funding Agency:* Sustainable Enterprise Partnership
Title: Effectiveness of post-consumer food waste as a means for nutrient recovery and waste reduction when used as fish feed in an aquaponic system"
co-PIs: D. Daley, K.L. Schulz
Amount: \$6,220
Dates: May 2011-June 2012
Supports M. Amadori (M.S. student with Doug Daley)
- *Funding Agency:* NSF
Title: Renovation of wet labs and cyber-infra-structure to enhance integrated research and teaching in aquatic science at SUNY-ESF
PI: Neil Ringler; *co-PIs:* J.M. Farrell, D.J. Leopold, K.L. Schulz (point of contact), C.M. Whipps
Amount: \$1,470,000
Dates: October 2010-September 2013

Additional funded projects as collaborator

- *Source:* NOAA Coastal and Marine Habitat Restoration Project Grants under the American Recovery and Reinvestment Act.
Title: “Recovery Act – Coastal Fisheries Habitat Restoration in the St. Lawrence River.

PI: Farrell, J.M. (with D.J. Leopold, M. Mitchell, J. Gibbs, K.L. Schulz).

Amount: \$202,317 subcontract to ESF of \$1,086,010 Ducks Unlimited

Dates: 9/2011-8/2013

This grant supports Ceili Bachman, M.S. student working with Myron Mitchell and me beginning fall 2011.

- SUNY-ESF McIntire-Stennis Research Program, “Restoring small, ephemeral wetlands in forested landscapes of New York State: Initiating a large-scale, long-term collaborative research program based at Heiberg Forest”
PI: James Gibbs; *coPIs:* John Stella, D.J. Leopold, K. Schulz *Amount:* \$80,000; *Dates:* May 2009-December 2012; no graduate students under my supervision are supported on this grant (J. Arrigoni, MP James Gibbs is supported on this grant).

Graduate Student Led Grants:

- *Funding Agency:* NOAA
National Estuarine Research Reserve Fellowship (Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, NOAA)
PIs: Andrew Brainard and K.L. Schulz;
Amount: \$60,000;
Dates: May 2012-May 2015
This grant supports the Ph.D. research of Andrew Brainard
- *Funding Agency:* NSF
Title: Dissertation Research: Quantifying the role of mixotrophic feeding in aquatic food webs
PI: K.L. Schulz; *co-PIs:* Jacob Gillette
Amount: \$15,000
Dates: June 2011-May 2013
This grant gives additional funds for dissertation work (not salary or tuition) to Jacob Gillette
- *Funding Agency:* NOAA
National Estuarine Research Reserve Fellowship (Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, NOAA)
Title: “Salt Marsh Restoration: The Importance of a Better Biofilm,”
PIs: Cheryl Whritenour and K.L. Schulz;
Amount: \$60,000;
Dates: June 2010-May 2013
This grant supports the Ph.D. research of Cheryl Whritenour.
- Edna Bailey Sussman Fellowship to Andrew Brainard, summer 2011
- Sigma Xi Award to Andrew Brainard 2012
- Edna Bailey Sussman Fellowship to K. Chad Walz, summer 2012

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

NSF pre-proposal (DEB) accepted for full proposal submission in August 2012

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

Funding Agency: Great Lakes Fishery Commission Pre-proposal

Title: Prospects for rehabilitation of threatened lake chubsuckers (*Erimyzon sucetta*), an indicator fish for healthy Great Lake embayments

PI: K.L. Schulz *coPIs:* Christopher Whipps, Donald Stewart, James McKenna (USGS)

Proposed amount: \$102,176

Funding Agency: EPA (EPAR5-GL2011-1; Toxic substances and areas of concern)

Title: Assessment of Plankton Populations in the St. Lawrence River

PI: Michael Twiss, Clarkson University; Collaborating coPIs: Greg Boyer and Kimberly Schulz
Proposed amount: \$581,339 (\$260,591 to SUNY ESF)

Funding Agency: NSF

Title: Collaborative Research: Acquisition and Incorporation of Nitrogen into the Skeletal Organic Matrix of Reef-Building Corals

PI: Mark Teece; co-PI at ESF: Kim Schulz

Proposed amount: \$470,633

Funding Agency: Department of the Interior

Title: Northeast Climate Science Center Consortium Institutions and Field Stations

PIs: Donald Scavia and Knute Nadelhoffer, University of Michigan

SUNY ESF leads: M. Mitchell, K. Schulz, H. Mao

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

Turnquist, M.A., C.T. Driscoll, K.L. Schulz, and M.A. Schlaepfer. 2011. Mercury concentrations in snapping turtles (*Chelydra serpentina*) correlated with environmental and landscape characteristics. *Ecotoxicology* 20: 1599-1608

Brown, B.L., K.L. Schulz and N.H. Ringler. Testing Survival of a potential mayfly colonist (*Stenonema femoratum*) to an urban lake undergoing remediation (Onondaga Lake, NY); in revision.

B. Non-refereed Publications

none

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

"Direct and indirect linkages between anthropogenic stressors, biogeochemistry and aquatic food webs"
Biogeochemistry and Environmental Complexity (BEB) Seminar, Cornell University, 21 October 2011.

Figary, S.E., K.L. Schulz, M.A. Teece and L.G. Rudstam. 2012. Investigating the impact of an invasive zooplankton, *Cercopagis pengoi*, on the length of food chains in New York's Finger Lakes. International Association of Great Lakes Research Annual Meeting, Cornwall, Canada, May 2012.

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

Limnology Poster Session for the Cortland-Onondaga Federation of Kettle Lake Associations, Inc. (COFOKLA). 60 attendees; April 18, 2012

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

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

- Member of National Science Foundation Evaluation Team for review of Long Term Ecological Research Station at the University of Wisconsin, September 2011.

2. Industrial and Commercial Groups, etc.

none

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

- Upstate Freshwater Institute Board Member October 2011-current
- Participated in EFB bioblitz, June 2011

VI. PROFESSIONAL DEVELOPMENT

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

Exemplary Researcher Award, ESF

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

2. Professional Society Membership

American Association for the Advancement of Science
American Institute of Biological Sciences
American Society of Limnology and Oceanography
American Society of Naturalists
Ecological Society of America
International Association for Great Lakes Research
International Association of Theoretical and Applied Limnology
North American Benthological Society
North American Lake Management Society
Phycological Society of America
Sigma Xi
Xerces Society

3. Other Professional Activities

a. Editorial activity

Journal (s)

Responsibility

Other (books, symposia, etc.)

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Oecologia	1

<u>Agency</u>	<u>No. of proposals</u>
NSF	1

Other
NSF site review member

c. Participation (workshops, symposia, etc.)

<u>Name of workshop, etc.</u>	<u>Date</u>	<u>Place</u>
Faculty Mentoring Symposium	12 January	ESF

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

Wilderness First Aid Certification (April 2012)
DAN Certification (May 2012)

D. Foreign Travel (Where, When, Purpose)

none

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

- EFB Course and Curriculum Assessment Committee Chair
- Associate Professor member of EFB Promotion and Tenure Committee (fall term)
- Faculty mentor for Jacqui Frair, Greg McGee, Beth Folta
- Member of Phyllis Roskin Award Committee
- P&T Teaching reviewer for Whipps, Frair
- Invertebrate conservation biologist search member

B. College-level

- Member of the Middles States steering committee
- Coordinating effort to develop CIRTAS – Center for Integrated Research and Teaching in Aquatic Science, to find funding to develop a collaborative aquatic science experimental facility for teaching and research at ESF, and efforts to organize aquatics group in EFB
- Co-ordinate college-wide AquaBreak seminar (formerly AquaLunch) and run seminar with graduate students Jacob Gillette and Cheryl Whritenour
- EFB representative to the Water Resources Minor
- Faculty advisor to the Nautilus Club (student marine science club)
- Environmental Science advisor and Curriculum Group Participant in Division of Environmental Science area of Watershed Science

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

This year I invested a lot of time in undergraduate teaching and training, and I am pleased with the results, although I hope to incorporate even more video and other digital resources into Limnology this fall. I continue to teach Limnology (424/624) and the two credit Limnology Practicum (525) in the fall, and had record enrollment this year (the lab was filled with a wait list and the lecture had to be moved to a larger room). I have been revising the materials and content of Limnology, and including more hands on materials. These changes have been well-received and I have been working on some additional modifications for this year. Last year I began a service learning component with Limnology Practicum, where students working on their independent projects have an opportunity to work with a local lake association and then present their findings to the homeowners, in addition to their classmates and the ESF community. Once again this was a big success with over 20 members of the community and over 30 faculty and students attending a final poster session in Illick; 8 students attending a regional lake association meeting to present their work. We are building a database of water quality data that can be used by the homeowners when deciding on lake management issues. Several students expanded their independent projects into senior projects for Environmental Science. In addition, I revised the Marine Ecology class to include expanded hands on activities and more digital resources. The course was filled and well-received by students. The weekend field trip to Cape Cod was almost entirely revised to include more interaction with aquaculturists and fishermen, as well as a special behind the scene tour of deep water oceanography labs and vessels courtesy of one of my former PhD students, Juliette Smith, who now has a position at WHOI. Teaching such a large spring class along with a graduate marine ecology seminar was made more challenging by the large number of lectures (8) and laboratories (4) that I developed for the Diversity of Life class.

In addition to formal teaching, I mentored 12 undergraduates in independent research, including an honors student who won best honor's thesis. Three manuscripts with student co-authors are in final stages of preparation and one is in review. In addition, I currently have 7 graduate students in my laboratory group, two of whom will defend during the next academic year, and three of whom have successfully won large fellowships from national granting agencies (NOAA, NSF - a new NERR fellowship was awarded to Andrew Brainard this year). The lab group is productive and several graduate student manuscripts are either in review or nearing completion. Finally, I serve on numerous graduate committees in several ESF departments and at other universities, as well as graduate and undergraduate training panels, and as advisor to the Nautilus Club.

Department/college

I rotated off as an Associate Professor Representative to the Promotion and Tenure Committee in EFB after the fall semester, but continue to serve as chair of the Course and Curriculum Assessment Committee for the second year. We accomplished a number of tasks including numerous (>20) course and curricular proposals passing through the department and college, including some clarifying the internship and undergraduate research options for students, and the adoption of two new EFB minors. Assessment is an ongoing and vast project that will also require much effort over the summer to prepare for the EFB assessment in fall. I also served on the Invertebrate Conservation Biologist search committee. In terms of service to the college, I continue to spend a huge amount of time writing quarterly reports, project execution plans and generally organizing the NSF renovation grant for CIRTAS (Center for Integrated Research and Teaching in Aquatic Science) and TIBS to apply for funds to renovate the laboratory spaces in Illick Hall

(CIRTAS) and TIBS. This is a great opportunity for us to bring aquatic science at ESF to a new level, and I am looking forward to helping lead these efforts over the next few years. In addition I serve on the college-wide Middle States Steering Committee and am the EFB representative to the Water Resources Minor. I also continued to co-facilitate the college-wide AquaBreak seminar and mentor three early-career faculty members.

Self

This year I focused on improving my Limnology Practicum and Marine Ecology classes, mentoring undergraduates and graduate students, grant writing and research. I continue to run a very active research laboratory that successfully pursues a number of ongoing funded research efforts. My NSF research grant for work at the Heiberg Forest has brought an exciting new direction to my research program and a pre-proposal to NSF with a large EFB (Gibbs, Stella) and Illinois team to advance the research there was well-received and accepted for a full proposal submission for the August deadline. I was surprised to receive the EFB Exemplary Researcher Award this year. My lab group made progress moving undergraduate, graduate and my own publications to submission, and next year I hope to be able to sequester even more time for my research efforts without the heavy load of much of a new course (Diversity of Life) and the alternate year Marine Ecology course in the spring semester. I also benefitted from serving on a NSF site visit panel for the review of the North Temperate Lakes LTER. I found the process very informative and will be able to apply some of the positive aspects of their organizational and management structure to our CIRTAS program.

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 2009

a. Course(s) to be offered
none

b. Proposed research activity

ongoing research and grant writing

c. University, professional society, and public service

2. Fall Semester 2009

a. Course(s) to be offered

Limnology and Limnology Practicum

b. Proposed research activity

c. University, Professional society, and public service

3. Spring Semester 2010

a. Course(s) to be offered

graduate seminar

b. Proposed research activity

c. University, professional society, and public service