

ANNUAL REPORT
ENVIRONMENTAL AND FOREST BIOLOGY
SUNY College of Environmental Science and Forestry
(June 1, 201-- May 31, 2011; Summer 2010, AY 2010-2011)

NAME: Dr. John M. Farrell

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

	Course No.	Title	Credit Hrs.	No. Students	No. of Lab. Sections
SUMMER:	EFB 388	Adirondack Fish Ecology	3	11	
FALL:	ON SABBATICAL				
SPRING:	ON SABBATICAL				

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

	Course No.	Title	No. Students	Credit Hrs.
SUMMER:	EFB 999	Doctoral Research	3	3
FALL:	EFB 498	Research Problems	4	12
	EFB 899	Master's Research	3	5
	EFB 999	Doctoral Research	3	13
SPRING:	EFB 498	Research Problems	1	2
	EFB 899	Master's Research	5	18
	EFB 999	Doctoral Research	3	18

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

SUNY College of Environmental Science and Forestry ESF Outreach, Understanding and Controlling Invasive Aquatic Species, Co-taught with Dr. Kimberly Schulz, October 2010, 14 participants. This workshop on aquatic invasive species provided an interactive powerpoint presentation that highlighted major AIS species including fish, invertebrates, pathogens, and wetland plant species including life history, effects, modes of entry and management issues. A CD packed with information including available weblinks and other handouts was given to each participant. A laboratory identification session provided some hands-on experience with identification of representative species. The workshop received high rankings on evaluation forms.

4. Guest Lecture Activities

Course No.	Title	No. of Lectures
EFB 525	Limnology Practicum	1 weekend field trip

II. STUDENT ADVISING AND COUNSELING

- A. Number of undergraduates for whom you are the student's official advisor. 9
- 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. Geof Eckerlin, PhD (began Jan 2009), Viral haemorrhagic Septicaemia Virus Type: Evaluation of fish hosts as a viral reservoir, a community perspective.
2. Kevin Kapusinski, PhD (graduated 5/11), 8/06, Ecology of Great Lakes Muskellunge stock identification and contributions of individual spawners to young of year production as inferred from genetic analyses.
3. Scott Schlueter, MS (current, EBT), 1/07, Lake sturgeon restoration in the Oswegatchie River: movement and habitat use following reintroduction.
4. Derek Crane, PhD (current, August 2009) Walleye habitat restoration – role of substrate particle size and flow in egg redistribution: an indicator of habitat quality?
5. Brian Henning, MS (current, August 2009) Fish habitat enhancement – role of aquatic excavation in cattail-dominated wetlands on fish movement.
6. Katherine DeVilbiss, MS (began June 2010) Potential mechanisms of relative success of three sympatric esocids in the St. Lawrence River.
7. Christina Kilourney, MS (began August 2010) Effects of round goby predation on reproductive success of native species based on spawning strategy
8. Mark Leopold, MS (began August 2010) Possible causes of skewed sex ratios of northern pike (*Esox lucius* L.) on the St. Lawrence River

CO-MAJOR PROFESSOR

1. Alison Halpern, PhD (EBT, Co-advised with Dr. Donald Leopold) 5/00, Aquatic nuisance species: ecology and control of the invasive plant *Hydrocharis Morsus-ranae* in Eastern Lake Ontario and St. Lawrence River wetlands.

MEMBER, STEERING COMMITTEE (other than those listed above)

1. Kapil Mandraker, EFB, MS (Stewart)
2. Errol Sheid, EFB, MS (McGrath)
3. Matt Distler, EFB (Leopold)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

PhD Candidacy Examination Chair, advisor, Newman FNRM

III. RESEARCH COMPLETED OR UNDERWAY

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

Farrell, J. M. 6/2009-6/2012. Development of the Fish Habitat Conservation Strategy: An Evaluation of Toolkit Implementation, Fish Enhancement, Research and Mitigation Fund, National Fish and Wildlife Foundation, Two Years, \$563,836.

Derek Crane
Brian Henning

Farrell, J. M. and K. Kapuscinski. 5/2009-5/1/2011. Muskellunge *Esox masquinongy* Genetic Structure, Reproductive Ecology, and Interaction with the Fish Community: Acquiring Information Needed for Successful Management. Niagara Greenway Commission, Ecological Greenway Fund, \$148,000.

Kevin Kapuscinski

Farrell, J. M. 4/1/2010-3/31/2011. Development and Management of St. Lawrence River Fisheries. Federal Aid in Sportfish Restoration, NYS Department of Environmental Conservation. \$209,506.

Kevin Kapuscinski
Geof Eckerlin
Katherine DeVilbiss
Mark Leopold

Farrell, J. M. 4/1/2011-6/30/2013. Development and Management of St. Lawrence River Fisheries. Federal Aid in Sportfish Restoration, NYS Department of Environmental Conservation. \$640,963

Geof Eckerlin
Katherine DeVilbiss
Mark Leopold

Ringler, N. H., K. A. Schulz, J. M. Farrell, M. A. Teece, and J. Brunner. 1/1/10-12/31/12. Renovation of Wet Labs and Cyber-Infrastructure to Enhance Integrated Research and Teaching. National Science Foundation \$1,757,801

Farrell, J. M. and K. Kapuscinski. 3/1/11 – 2/28/12. Evaluation of Nearshore Fish Assemblages, Habitat, and the Effects of Herbivorous Rudd (*Scardinius erythrophthalmus*): Determining the Efficacy of Fish Habitat Restoration Efforts in the Buffalo Harbor and Niagara River. Niagara River Greenway Fund, Greenway Ecological Fund Standing

Committee \$199,361

Derek Crane
Post-Doctoral Associate, Kevin Kapuscinski

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

Farrell, J. M (with D. J. Leopold, M. Mitchell, J. Gibbs, K. Schulz). 9/2011-8/2013, Recovery Act – Coastal Fisheries Habitat Restoration in the St. Lawrence River. NOAA Coastal and Marine Habitat Restoration Project Grants under the American Recovery and Reinvestment Act (\$202,317 subcontract to ESF from Ducks Unlimited (funding will begin in September 2011).

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 --- **do not list manuscripts in preparation**).

A. Refereed Publications

Eckerlin G. E., **Farrell J. M.**, Casey R, Hope K, Bowser P, Casey J, and Groocock G. 2011. Temporal variation in incidence of viral haemorrhagic septicaemia virus type IVb among smallmouth bass *Micropterus dolomieu* (Lacepède) in the St. Lawrence River. Transactions of the American Fisheries Society 140(3):529-536.

Rippke, M. B., M. T. Distler, and **J. M. Farrell**. 2010. Post-glacial vegetation dynamics of an upper St. Lawrence River coastal wetland: Paleocological evidence for a recent historic increase in cattail (Typha). Wetlands 30:805-816.

Kapuscinski, K. L, **Farrell, J. M.**, and B. A. Murry. *In Review*. Selection of native and non-native prey by young-of-the-year muskellunge (*Esox masquinongy*) within large river ecosystems. Transactions of the American Fisheries Society.

Kapuscinski, K. L, **Farrell, J. M.**, and M. Wilkinson. *In Review*. First report of abundant rudd populations following 100 years of invasion history. North American Journal of Fisheries Management.

B. Non-refereed Publications

Farrell, J. M and M. T. Distler (in press) Coastal Wetland Integrity in the Upper St. Lawrence River: Status and Considerations for Restoration and Enhancement. Great Lakes Research Review.

Wilson, C. and **J. M. Farrell**. 2011. Genetic analysis of walleye population structure in Lake Ontario and the St. Lawrence River and adjoining waters of New York. NYS Department of Environmental Conservation 2010 Lake Ontario Annual Report.

Farrell, J. M, C. C. Barry, and K. L. Kapuscinski 2011. Muskellunge Monitoring and Management in the Thousand Islands section of the St. Lawrence River. NYS Department of Environmental Conservation 2010 Lake Ontario Annual Report.

Farrell, J. M, C. C. Barry. 2011. Northern Pike Monitoring in the Thousand Islands Section of the St. Lawrence River. NYS Department of Environmental Conservation 2010 Lake Ontario Annual Report.

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

- K. L. Kapuscinski, **J. M. Farrell**, and M. Wilkinson. 2010. Feeding ecology and population dynamics of a non-native cyprinid, the rudd, in the Buffalo Harbor (Lake Erie) and upper Niagara River. New York Chapter of the American Fisheries Society Annual Meeting, Canandaigua NY.
- B.F. Henning and **J.M. Farrell**, 2011. Fish community response to restored habitat connectivity in robust cattail marshes within the St. Lawrence River. Invited Speaker, 21st Annual Great Lakes Research Consortium Conference.
- J. M. Farrell**, M. Mitchell, K. Schulz, J. P. Gibbs, and D J. Leopold 2011 (invited). GLRI - Coastal Fisheries Habitat Restoration in the St. Lawrence River. 21st Annual Great Lakes Research Consortium Conference.
- B.F. Henning and **J.M. Farrell**, 2011. Fish community response to restored habitat connectivity in robust cattail marshes within the St. Lawrence River. Invited Speaker, New York Chapter of the American Fisheries Society Annual Meeting.
- K. L. Kapuscinski, **J. M. Farrell**, and Michael A. Wilkinson. 2011 (poster presentation) Feeding ecology and population structure of a non-native cyprinid, the rudd, in the Buffalo Harbor (Lake Erie) and upper Niagara River. International Association of Great Lakes Research 54th Annual Conference on Great Lakes Research, Duluth, MN.
- J. M. Farrell** and S. R. Lapan* 2011. St. Lawrence River muskellunge population trends following VHSv (invited) *presenter, Great Lakes Fisheries Commission Common Session, Ypsilanti, MI.
- M. Rippke, **J. M. Farrell**^{*}, H. T. Mullins², M. A. Teece, M. Distler, and D J. Leopold. 2011 (*presenter, poster presentation. Evidence of a dry Hypsithermal climate and the Nipissing Flood from an Upper St. Lawrence River (New York) coastal wetland. International Association of Great Lakes Research 54th Annual Conference on Great Lakes Research, Duluth, MN.
- J. M. Farrell** 2011 (invited seminar) Cascading effects of water level regulation on habitat and faunal linkages in the upper St. Lawrence River. Institut national de la recherche agronomique, Ecologie et Santé des Ecosystèmes Renne, France.
- J. M. Farrell** 2011 (invited seminar) Cascading effects of interruption of natural flow regimes: a case study from the International St. Lawrence River National Center for Scientific Research (CNRS) Site ENS de Lyon, Lyon, France.
- K. DeVilbiss and **J. M. Farrell** 2011. Potential mechanisms of relative success for two sympatric esocids in the St. Lawrence River. New York American Fisheries Society Student Colloquium. Shackelton Biological Station, Cornell University.
- Crane, D.P. & **J.M. Farrell**. 2011. Walleye spawning habitat restoration in streams: The influence of substrate size, shape, and condition on egg retention. New York Chapter American Fisheries Society annual meeting. Canandaigua, NY.

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

Attendance)

J. M. Farrell 2010 (invited seminar) Research and Education at the Thousand Islands Biological Station: Long Term Studies of The St. Lawrence River. Rotary Club of Watertown NY (~100 attendees).

J. M. Farrell 2010 (invited seminar) Research and Education at the Thousand Islands Biological Station: Long Term Studies of The St. Lawrence River: *or* What are they doing out there on Governors Island? Clayton Yacht Club (~30 attendees)

K. L. Kapuscinski and **J. M. Farrell**. Habitat factors influencing nearshore fish assemblages. Invited speaker, Niagara Musky Association (Nov 2010)

B.F. Henning, B.L. Brown, and **J. M. Farrell** 2011. Utilizing Wetland Restoration Techniques to Enhance Native Fish Populations in the St. Lawrence River. Invited Speaker, Save the River: 22nd Annual Winter Environmental Conference. 100 attendees

B.F. Henning, B.L. Brown, and **J. M. Farrell** 2011. Blind Bay Marsh Restoration Project. Invited Speaker, Chippewa Point Road Alliance and Blind Bay Association. 50 attendees

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local):
2. Industrial and Commercial Groups, etc.

Review of Honeywell Onondaga Lake Shoreline Restoration Projects – development of restoration plan with group to restore habitat function for northern pike spawning (with Don Leopold and Neil Ringler).

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

Central Michigan University – CMU Biological Station Great Lakes Research Advisory Board members – travelled to Beaver Island for 2-day meeting, developed advisory report with board.

Cornell University – member of the Cornell Biological Station Advisory Board – attended CBFS Advisory Committee Meeting and provided recommendations on CBFS development.

NYSDEC – water levels research and policy – service to inform managers of research outcomes regarding water levels management influences on habitat and fauna –

International Joint Commission– invited expert to one-day workshop to IJC Technical Group regarding development of water levels regulation plans – Burlington Ontario (March 2011) (25 attendees)

Thousand Islands Land Trust Zenda Farms Picnic, Provided live fish and poster displays as part of community event (June 2010; ~250 attendees)

Save The River, Clayton, NY, 2011 Board of Directors, advisory roles on environmental issues, development of teacher training initiative for North Country districts.

LimnoTech Inc. Assisted Todd Redder with update of the upper St. Lawrence River muskrat model and presented outcome in presentation to IJC Technical Group.

Ontario Ministry of Natural Resources – assisted with development of northern pike monitoring program.

Environment Canada, Montreal – performed aging and interpretation of muskellunge cleithra bones

VI. PROFESSIONAL DEVELOPMENT

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

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

American Fisheries Society, Hutton Scholar Mentor for 2010 - applied to serve as mentor, sought applicants and an individual (Emily Churchill) was awarded an 8 week scholarship to assist with research at TIBS a 2011 mentor application was also awarded for Erica Mincerella (co-mentor with Chris Barry).

Board of Directors, Save The River Inc. – 1200 member Environmental Advocacy organization on the St. Lawrence River.

Thousand Islands Land Trust – service as conservation partner for TIBS.

2. Professional Society Membership

American Fisheries Society (AFS), NY Chapter AFS, International Association of Great Lakes Researchers, Great Lakes Research Consortium, Society of Wetland Scientists

3. Other Professional Activities

a. Editorial activity

Journal(s)

Responsibility

Other (books, symposia, etc.)

b. Reviewer

Journal(s)

No. of manuscripts

Canadian Field Naturalist

1

Ecology of Freshwater Fish

2

North American Journal of Fisheries Management

1

Fisheries Management and Ecology
Agency

No. of proposals

1

Other

c. Participation (workshops, symposia, etc.)

<u>Name of workshop, etc.</u>	<u>Date</u>	<u>Place</u>
Aquatic Invasive Species Workshop	October, 2010	Syracuse NY
NY Lake Sturgeon Workshop	February, 2011	Syracuse NY

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

D. Foreign Travel (Where, When, Purpose)

Lyon, France – worked at the University of Lyon1 with Herve Piegay – provided seminar

Lyon, France – worked at Cemagref Institute with Herve Capra

Renne, France – gave seminar and met with Martin Schlaepfer, students and colleagues at the Institut national de la recherche agronomique, Ecologie et Santé des Ecosystèmes Renne, France.

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

- Served as Chair of the Wildlife Ecologist Search Committee (with Baldassarre, Frair, Limburg, Stella) within EFB that led to hire of Jonathan Cohen and Sadie Ryan.
- Mentored an Assistant Professor in EFB
- Supervised two EFB funded Federal Work-study assistants at TIBS
- Served with team lead by Kim Schulz, Neil Ringler and Brian Boothroyd in execution of \$1.4M NSF award to enhance EFB's aquatics program via improvements at CIRTAS and TIBS laboratory facilities and cyberinfrastructure. Participated in numerous meetings, Led tour to TIBS with NSF program chair.

College-level

- Served as Director of the Thousand Islands Biological Station (TIBS). Including oversight and supervision and participation in activities at TIBS including research, community outreach, facilities and development.

- Continued work on development initiative for new TIBS multipurpose building with Bob Quinn.
- Work on NSF ARRA contract.
- Assisted with college Master Plan including meetings and site visit at TIBS.

C. University-wide, including Research Foundation

- Worked closely with RF on multiple grant contracts during this period and supervision of numerous staff including three Senior Research Support Specialists (Barry, Brown and Avruskin).

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. A paragraph on each of the following would be very helpful: this past year, what have you done for our students, department/college, and self professionally? *NOTE: PLEASE CONSIDER THE INFORMATION IN THIS SECTION* [along with the supporting specific information elsewhere in this report] *AS ESSENTIAL TO HELPING ME DETERMINE DISCRETIONARY RAISES*

For the students:

Students continue to receive intensive and diverse field research experiences through their involvement with the program at TIBS. Following a bottom up approach, my staff and I were swarmed by 4-10 year olds during several outreach events with their incredible curiosity during 'hands on' displays including native and invasive fishes. I mentored a high school senior, Emily Churchill in an American Fisheries Hutton Scholarship – the previous summer she worked 12+ weeks as a TIBS volunteer and shows impressive dedication and ability. We have Emily back this summer as technicians following her first year at Boston University. A team of undergraduates, two of which are funded through EFB as Federal Workstudy students, received strong field experiences in our long-term monitoring surveys and by working alongside myself, TIBS staff and our graduate students. Three undergraduates enrolled in EFB 498 and worked in my lab in Illick Hall preparing and processing samples from the summer and they developed papers on aquatic restoration and restoration indicators during the fall and spring term. They developed skills in field taxonomy, in the laboratory and with writing. For the graduate students, Kevin Kapuscinski successfully defended his dissertation and graduated this May, he has begun a Post-doctoral fellowship under my direction at ESF with research on invasive Rudd on the Niagara River. Geof Eckerlin completed his candidacy exam and continues research on the viral hemorrhagic septicemia virus in the St. Lawrence River. I took on three new MS students during this period and all are engaged in research at TIBS. Three of my students brought in significant grants to ESF including a 199K grant to Kapuscinski, Crane and myself and a 16K grant to support research of Brian Henning, a MS candidate. I encouraged graduate students to present at conferences and meetings and they responded with presentations given at the Great Lakes Research Consortium Student-Faculty Conference, the New York American Fisheries Society Conference, among others and several are going to present at Seattle this summer to a National AFS conference.

Department/college:

A significant milestone was my service as Chair of the Wildlife Ecologist search committee. Working with the committee (Baldassarre, Frair, Limburg, Stella and grad rep. Williams), the faculty and its Chair was a rewarding experience that led to two hires for EFB. Another significant responsibility has been my work as a Co-PI associated with the successful \$1.4M NSF ARRA CIRTAS-TIBS contract to renovate and improve our aquatics facilities. Kim Schulz has played a central role in this process and I have led the TIBS portion of the work. Activities included service

on a committee to interview and select an A&E firm (with Physical Plant project manager Boothroyd) and I led a visit to TIBS with the NSF program director and PI Ringler. This has been a lot of work for many people with direct involvement to this project and we are nearly realization of some impressive improvements that will greatly enhance EFB's capabilities in aquatic and disease research. The TIBS facility is expected to begin laboratory rehabilitation phase this fall. In addition to this process I have been working with the development office and the administration on improvements to TIBS to increase residential and faculty use capability.

Professional/self

My six month sabbatical was a tremendous highlight this period. In the fall semester I worked in Syracuse on grants, an aquatic invasives workshop (with Kim Schulz), and some significant work with NYS DEC, a northern pike spawning habitat rehabilitation project on Onondaga Lake (with Ringler and Leopold) for Honeywell, and in support of my graduate students. After Christmas I went to Lyon, France and worked at the University of Lyon at the lab of Herve Piegay and worked with the Cemagref Institute with Herve Capra with a focus on large river restoration. I also traveled extensively visiting important ecological sites and giving seminars including travel to Renne, France where I met twice with Martin Schlaepfer and his colleagues at the Institut national de la recherche agronomique, Ecologie et Santé des Ecosystèmes. I sampled fishes on the Rhone River and met with numerous graduate students and colleagues. These experiences accomplished what I had intended for my sabbatical and the exchanges I had with other scientists and students were exceptionally invigorating. I was invited to return to France in June 2012 to serve as a co-organizer of a major international conference on large rivers and publish its proceedings.

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 2011

a. Course(s) to be offered

EFB 388 Adirondack Fish Ecology

b. Proposed research activity

Multiple studies on fish ecology, wetland enhancement projects and getting a new NOAA GLRI grant off the ground.

c. University, professional society, and public service

Sending two students to a National AFS conference and directing the activities at the TIBS field station.

2. Fall Semester 2011

a. Course(s) to be offered

EFB 681 Aquatic Restoration and Enhancement

b. Proposed research activity

Multiple funded projects including beginning a NOAA GLRI subcontract with Ducks Unlimited as a interdisciplinary project (with Gibbs, Mitchell, Schulz, Leopold) also working with Driscoll of Syracuse University on mercury analyses.

c. University, Professional society, and public service

We will begin construction activities on the wet lab upgrades at TIBS

3. Spring Semester 2012

a. Course(s) to be offered

I am developing a new course and will offer an EFB 797 seminar.

b. Proposed research activity

Multiple research obligations through funded contracts.

c. University, Professional society, and public service

Directorship at TIBS.