

ANNUAL REPORT
ENVIRONMENTAL AND FOREST BIOLOGY
SUNY College of Environmental Science and Forestry
(June 1, 2009 - May 31, 2010; Summer 2009, AY 2009-2010)

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 (with Dr. Ringler) | 3 | 14 | |

This course contained a two-day service-learning component where students worked alongside and collected data for the NYS Brook Trout Study for NYSDEC Region 6. Remote ponds were sampled and fish processed by students under the supervision of Region Biologist Chris VanMarren.

FALL: EFB 681 Aquatic Restoration & Management 2 12

EFB 797 EFB Core Seminar (with Dr. Schulz) 1 35

SPRING: EFB 797 EFB Core Seminar (with Dr. Schulz) 1 15

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

| | Course No. | Title | No. Students | Credit Hrs. |
|---------|---------------|-------------------|-----------------|----------------|
| SUMMER: | EFB 899 | Masters Research | 1 | 1 |
| FALL: | EFB 498 | Research Problems | 1 | 3 |
| | EFB 798 | Research Problems | 1 | 8 |
| | EFB 899 | Master's Research | 3 | 7 |
| | EFB 999 | Doctoral Research | 1 | 9 |
| SPRING: | EFB 798 | Research Problems | 1 | 1 |
| | EFB 899 | Master's Research | 2 | 10 |
| | EFB 999 | Doctoral Research | 3 | 19 |

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

4. Guest Lecture Activities

| Course No. | Title | No. of Lectures |
|------------|-------|-----------------|
|------------|-------|-----------------|

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 (current), 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. Jarrod Hughes, MPS (graduated), 5/09.
4. Scott Schlueter, MS (current, EBT), 1/07, Lake sturgeon restoration in the Oswegatchie River: movement and habitat use following reintroduction.
5. Derek Crane, PhD (current, August 2009) Walleye habitat restoration – role of substrate particle size and flow in egg redistribution: an indicator of habitat quality?
6. Brian Henning, MS (current, August 2009) Fish habitat enhancement – role of aquatic excavation in cattail-dominated wetlands on fish movement.
7. Katherine DeVilbiss (starts MS June 2010) Topic TBD
8. Christina Kilourney (starts MS August 2010) Topic TBD

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. James Costello, EFB, MS, Kimmerer
2. Jessica Schneider, GPES, MS Boyer (graduated May 2010)
3. Jonathan Zysik EFB, MS (Porter)
4. Kapil Mandraker, EFB, MS (Stewart)
5. Errol Sheid, EFB, MS (McGrath)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

PhD Examination Chair, advisor, Zhang 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 (funded– began April 2010).

Derek Crane; Brian Henning

Farrell, J. M. and K. Kapuscinski. 5/2009-4/2011. 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 (funded – began 5/1/09).

Kevin Kapuscinski

Farrell, J. M. (and 7 co-investigators) Great Lakes Aquatic Community Pathogens Task Group. Great Lakes Research Consortium Small Grants Program \$1,000 (funded)

Farrell, J. M. 4/1/2005-3/31/2010. Development and Management of St. Lawrence River Fisheries. Federal Aid in Sportfish Restoration, NYS Department of Environmental Conservation. \$958,184 (completed spring).

Kevin Kapuscinski
Geof Eckerlin

Farrell, J. M. 4/1/2010-6/30/2013. Development and Management of St. Lawrence River Fisheries. Federal Aid in Sportfish Restoration, NYS Department of Environmental Conservation. \$640,963 (current year \$209,506).

Kevin Kapuscinski
Geof Eckerlin

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 (awaiting award notification following project execution plan acceptance)

Schulz, K.L., G.L. Boyer, J.L. Brunner, J.M. Farrell and C. Whipps. 1/01/2010-12/31/2011MRI-R2: Acquisition of Instrumentation for Interdisciplinary Research on Natural Toxins and Diseases in Aquatic Food Webs \$1,410,704 (not funded – will resubmit in next cycle)

Dates requested:

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

Farrell, J. M (with D. J. Leopold, M. Mitchell, J. Gibbs, K. Schulz). 9/2010-8/2012, 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 (\$249,707 subcontract to ESF of \$2,147,583 Ducks Unlimited (pending).

Farrell, J. M., K. A. Schulz, and M. A. Teece 2010-2012. NSF DBI - Biological Field Stations & Marine Labs A Multipurpose Building to Promote Research and Training Activity at the Thousand Islands Biological Station. \$225,093 (pending).

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. (in revision) 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
- B. A. Murry, M. J. Cooper, K. Kapuscinski, D. Coulter, D. F. Clapp, T. Paoli, C. R. Ruetz III, J. M. Farrell and D. G. Uzarski. (in review) Increasing prevalence of the invasive round goby in coastal wetlands of the Laurentian Great Lakes: implications to native fish refugia. Biological Invasions.
- M. B. Rippke, M. T. Distler, and J. M. Farrell. (in press) Post-glacial vegetation dynamics of an upper St. Lawrence River coastal wetland: Paleoecological evidence for a recent historic increase in cattail (*Typha*). Wetlands.
- Marty, J.E., M. R. Twiss, J. J. Ridal, Y. de Lafontaine, and J. M. Farrell. 2010. From the Great Lakes flows a Great River: Overview of the St. Lawrence River Ecology supplement. Hydrobiologia 647:1-5.
- Farrell, J. M., K. T. Holeck, E. L. Mills, C. E. Hoffman, and V. J. Patil. 2010. Recent Ecological Trends in Lower Trophic Levels of the International Section of the St. Lawrence River: A Comparison of the 1970s to the 2000s. Hydrobiologia 647:21–33.
- Farrell, J. M., B. A. Murry, D. J. Leopold, A. Halpern, M. Rippke, K. S. Godwin, and S. D. Hafner. Water-level regulation and coastal wetland vegetation in the upper St. Lawrence River: inferences from historical aerial imagery, seed banks, and *Typha* dynamics. Hydrobiologia 647:127–144.
- Toner, J., J. M. Farrell, and J. V. Mead. 2010. Muskrat abundance responses to water-level regulation within freshwater coastal wetlands. Wetlands 30:211-219.
- Kelder, B. F., and J. M. Farrell. 2009. A spatially explicit model to predict walleye spawning in an eastern Lake Ontario tributary. North American Journal of Fisheries Management 29:1686–1697.
- M. Power, J. Marty, M. R. Twiss, J. Ridal, Y. de Lafontaine, J. M. Farrell 2010. Guest editors: St. Lawrence River–Great Lakes Ecosystems: An Ecological Overview. Hydrobiologia Special Issue volume 647, 198 pages.

B. Non-refereed Publications

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

- Kapuscinski, K. L. and J. M. Farrell. Description and Comparison of Fish Assemblages at Muskellunge Nursery Sites in the Buffalo Harbor (Lake Erie), Upper Niagara River, and St. Lawrence River. 53rd Annual Conference on Great Lakes Research, May 2010.
- Kapuscinski, K. L. and J. M. Farrell. A Comparison of diets of young-of-year muskellunge from the St. Lawrence and upper Niagara Rivers. New York Chapter of the American Fisheries Society Annual Meeting, February 2010.
- Eckerlin, G. E., J. M. Farrell, , R.N. Casey, K. M. Hope, P. R. Bowser, J. Casey and G. H. Groocock. Viral Haemorrhagic Septicaemia Virus (VHS) Type IVb in the Great Lakes: Ecological and Monitoring Implications and Recommendations. NY American Fisheries Society Annual Meeting, Lake George, NY (won best poster presentation)
- Eckerlin, G. E., J. M. Farrell, , R.N. Casey, K. M. Hope, P. R. Bowser, J. Casey and G. H. Groocock. Viral Haemorrhagic Septicaemia Virus (VHS) Type IVb in the Great Lakes: Ecological and Monitoring Implications and Recommendations. Great Lakes Research Consortium Student Faculty Conference Syracuse, NY (won best poster presentation).
- Eckerlin, G. E., J. M. Farrell, R. M. Klindt and R. D. McCullough. Smallmouth bass growth and mortality trends in the St. Lawrence River following invasion by round goby: an ecological trade-off between increased growth and exposure to VHSV. NY American Fisheries Society Annual Meeting, Lake George, NY (oral presentation).
- Avruskin, G., Distler, M., Hall, M., and J. Farrell. Predicting Wetland Community Response to Water Level Changes. Association of American Geographers. Washington D.C. April 2010 (poster presentation).
- D. Public Service Presentations (lectures, seminars, etc. to and for the public; give group or occasion, date(s), and Attendance)
- Kapuscinski, K. L. and J. M. Farrell. A comparison of diets of young-of-year muskellunge from the St. Lawrence and upper Niagara Rivers. Niagara Musky Association, March 2010.
- Kapuscinski, K. L. and J. M. Farrell. Rudd in the upper Niagara River: new threats from an old invader? State University of New York, College of Environmental Science and Forestry, Aquabreak Seminar Series, April 2009.
- Farrell, J.M. Recent Trends in the Upper St. Lawrence River Muskellunge Population and Update on the Walleye Research Program - Lake Ontario Fishery Coalition Meeting Watertown NY June 2009 (30 attendees)
- Farrell, J. M. The Thousand Islands Biological Station: A Great Lakes Research Link in the Upper St. Lawrence River - HSBC Volunteer Day Clayton NY September 2009 (10 attendees).
- Farrell, J. M. Fishes of the Upper St. Lawrence River: Unraveling Mysteries - Antique Boat Museum Homer Dodge River Lecture Series August 2009 (60 attendees).
- Farrell, J.M. Water Level Regulation and Effects on Habitat in the Upper St. Lawrence River – US Power Squadron Annual Meeting Syracuse NY October 2009 (50 attendees).
- Farrell, J. M. Fishes of the Upper St. Lawrence River: Unraveling Mysteries Finger Lakes Community College Invited Seminar – Mueller Field Station Honeoye NY (20 attendees)

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

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

A Fish Habitat Conservation Strategy – Presented to the Fisheries Advisory Committee of the Fish Enhancement, Mitigation and Research Fund, USFWS Cortland Field Office April 2010 (20 attendees)

Future Implementation Projects to Restore Fish Habitat – Multiagency Implementation Team Meeting USFWS Cortland NY February 2010 (15 attendees).

2. Industrial and Commercial Groups, etc.

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

NYSDEC – water levels research and policy – service to inform managers of research outcomes regarding water levels management influences on habitat and fauna – Cape Vincent NY (February 2010)

IJC St. Lawrence River Board of Control – invited expert to two-day workshop regarding development of criteria for water levels regulation for environmental interest – Montreal Canada (30 attendees)

Thousand Islands Land Trust Zenda Farms Picnic, Provided live fish and poster displays as part of community event (June 2009; ~250 attendees)

Save The River, Clayton, NY, 2010 Winter Environmental Weekend Invited Speaker, Board of Directors, advisory roles on environmental issues (130 attendees)

Marcellus High School Career Day - Careers in Marine Biology (Aquatic Sciences) December 2009 (10 attendees)

Coastal Studies for Girls, A Science and Leadership School, Freeport ME, School group visited TIBS and experienced interpretive information and collected field data associated with fisheries research (April 2010, 9 participants)

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.

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

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)

Hydrobiologia

Responsibility

Guest Editor, Special Issue

Other (books, symposia, etc.)

b. Reviewer

Journal(s)

North American Journal of Fisheries Management

Hydrobiologia

Wetlands

Journal of Freshwater Ecology

No. of manuscripts

2

1

1

1

Agency

No. of proposals

Other

McIntyre-Stennis Proposal, ESF

c. Participation (workshops, symposia, etc.)

Name of workshop, etc.

IJC Water Levels Deviations Workshop

Date

2/8-9/10

Place

Montreal Canada

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

D. Foreign Travel (Where, When, Purpose)

Montreal Canada, February 2010 – attend and present at workshop and serve as panelist

VII. **ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)**

A. Department-level

- Chair of EFB Building Advisory Committee; held two meetings that led to providing recommendations to EFB Chair for facility enhancements

- Served as lead with EFB AFS Major in production of a program brochure
- Service as Wildlife Ecologist Search Committee Chair
- Mentored an Assistant Professor in EFB
- Supervised two EFB funded Federal Work-study assistants at TIBS
- Served as co-author (behind lead Schulz) in development of NSF proposal to enhance EFB's CIRTAS and its connection to TIBS
- Developed and taught new EFB Core course seminar to incoming graduate students (with Schulz)

College-level

- Serve as Director of the Thousand Islands Biological Station (TIBS). Oversee and supervise activities at TIBS including research, community outreach, facilities and development.
- Wrote NSF grant for facility improvements implementation at TIBS.
- Continued work on development initiative for new TIBS multipurpose building with Bob Quinn.
- Helped secure \$5,000 in private gifts to TIBS with Bob Quinn of development office.

C. University-wide, including Research Foundation

- Submitted multiple grants and maintained existing contracts through the RF.
- Supported graduate student poster development and materials for Great lakes Day at the State Capital (Geof Eckerlin)

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:

The students and my research program in aquatic ecology continue to mutually benefit from work and research conducted at TIBS and ESF. Integrating my PhD and MS students along with motivated undergraduates and High School juniors and seniors continues to serve well in getting the work done and providing a variety of exciting educational experiences.

Highlights for the year include having six undergraduates (2 ES 3 EFB and 1 from RIT) work with my research program at TIBS. We also had 3 high school Junior/Senior level volunteers that worked 8 weeks (40+ hours per week) who were the some of the most reliable volunteers we've had – their parents commented on how their children have changed in a positive sense (getting up early, having a sense of direction and motivation) following their research experiences. For one of the these students I applied as an American Fisheries Mentor and she has since received a AFS Hutton Scholarship and will work with our research group during summer 2010. I also advised EFB Senior Eric Patch in an undergraduate research experience in aquatic restoration. Eric did independent research on the fish community response to wetland channel restorations in invasive cattail mats in the French Creek Wildlife Management Area in cooperation with DEC and the USFWS. He presented his research results for EFB's Aquabreak last fall.

My graduate program continues to be strong with three active PhD candidates and one MS. I had an MPS student complete his degree program last May. I actively searched nationally for new MS level students and have 3 new MS students starting out this summer and fall (2 RA and 1 TA). My advanced students have been presenting research at conferences including the International Association of Great Lakes Researchers Annual Meeting and at the NY American Fisheries Society Meeting as well as local and regional venues. Geof Eckerlin (PhD candidate) won the best poster award at both the NYAFS and GLRC meetings and was a co-author on Best Paper at NYAFS. Working with past graduate students we submitted several manuscripts and completed publication of two significant papers with students. I continue to encourage my students to reach out and work with others and we have developed some important collaborations as a result (i.e. Cornell, Montreal, DEC, USFWS as examples) that will benefit our program.

Department/college:

My Directorship at TIBS continues to be the most important service I provide to ESF and EFB. This field station is really starting to take off and have greater visibility in academia, regionally in the Great Lakes, and with agencies and managers as well as the local river community. Development and infrastructural improvements need to continue to keep pace with interest and growth in the program. I have reached out to faculty that we are open for business and the NSF CIRTAS-TIBS linkage will undoubtedly take EFB Aquatics and TIBS to a new level. I have submitted an NSF Facilities and Marine Lab Improvements proposal in support of the planned new Multipurpose Student-Researcher Building of which ~177K have been already raised in conjunction with the ESF Development Office (Bob Quinn). During summer 2010 we plan to go public with the initiative and move forward with construction in 2011 for our wet lab renovations and construction of the new building. We will continue our partnership with the world-class Antique Boat Museum in our River Lecture Series. Last summer ESF faculty (J. Gibbs and M. Teece) and myself provided seminars to the community that were very well received with strong attendance and we were invited to continue this community program.

Highlights for my work within EFB and ESF on the main campus included significant work with the building and advisory committee that hopefully will lead to improvements with our conference rooms and I also completed development of a brochure highlighting the Aquatics program at the request of the faculty who provided significant input. I have had the opportunity to serve as chair of the Wildlife Ecologist search committee (with Drs. Baldassarre, Frair, Limburg, Stella and graduate representative David Williams).

Professional/self

My change in appointment from Senior Research Associate to Associate Professor has been challenging this year but also has been very rewarding. Teaching the EFB Core course (with Kim Schulz) was also a challenging yet rewarding experience. We inherited a curriculum last fall and built one in the spring semester. I believe the goal of helping create a cohort of students who know each other and the faculty better was accomplished. We required students to develop professional skills and I think they have benefitted from the variety of approaches we used. Some students in the grant development portion actually submitted grants that were funded as a result of the course. Another highlight was an

interview that was videotaped and a panel of professionals brought in to discuss the real world hiring process. Students were also exposed to the insights of the EFB faculty and thanks go to the many who were involved.

In research I worked as a co-editor of a special issue in the Journal *Hydrobiologia* that was published this year following a symposium “Ecosystem Studies of the St. Lawrence River” at the St. Lawrence Institute in Cornwall, Ontario. This year also marked a group of publications that indicate a significant diversification in my research with topics on lower trophic levels of the St. Lawrence, muskrat populations and water levels, cattail population dynamics and wetland change, walleye spawning habitat and aspects of river ecology. Obviously I had much help from students, staff and faculty in realizing this goal.

Success with research, grants, and teaching will help continue to fuel this business of providing opportunity and guidance to these talented young people we serve.

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 2010

a. Course(s) to be offered

EFB 388 Adirondack Fish Ecology

b. Proposed research activity

Activity on multiple studies on St. Lawrence and Niagara Rivers including fisheries and habitat restoration.

c. University, professional society, and public service

Director, TIBS and other professional obligations.

2. Fall Semester 2010

a. Course(s) to be offered

None – sabbatical leave approved for fall and spring semesters.

b. Proposed research activity

Managing grants, students, data interpretation and collection, multiple RF projects.

c. University, Professional society, and public service

Activities associated with Directorship of TIBS. Sabbatical leave focused on course development and development of field station program, research.

3. Spring Semester 2010

a. Course(s) to be offered

b. Proposed research activity

Managing grants, students, data interpretation and collection, multiple RF projects.

c. University, Professional society, and public service

Activities associated with Directorship of TIBS. Sabbatical leave focused on course development and development of field station program and research.