

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

NAME: Christopher Whipps

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>
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SPRING 2010:

EFB103 General Biology II: Cell Biology and Genetics 3cr. 192

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>
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FALL 2009:

EFB496/796 Emerging Diseases of Fish and Wildlife 3cr. 8

EFB797 Population Genetics and Molecular Biology 1cr. 12

SPRING 2010:

EFB797 Topics in Applied Microbiology 1cr. 5

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

4. Guest Lecture Activities

<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
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EFB132 Orientation Seminar (McGee), Dec 8&9, 2009, *Biotechnology at ESF* (2 lectures)

EFB796 Graduate Orientation Seminar (Farrell) Feb 22, 2010, *Fish and Wildlife Diseases* (1 lecture)

EFB217 Peoples, Plagues, and Pests (Castello), Mar 23, 2010, *Impact of parasites on global health* (1 lecture)

EFB403 Microbial Diseases of Wildlife (Nakas), Apr 1, 2010, *Viral hemorrhagic septicemia virus* (1 lecture)

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 24 and unofficial advisor 4

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).

CO-MAJOR PROFESSOR

William Helenbrook, Ph.D. sought, Start Aug 2008 (co-advise with Dr. William Shields)

Megan Kirchgessner, Ph.D. sought, Start Aug 2009 (co-advise with Dr. William Porter)

MEMBER, STEERING COMMITTEE (other than those listed above)

Completed:

Lauren Goldmann, MS completed, Fall 2009 (MP Weir)

Ongoing MS:

Max Collignon, MS sought (MP Teale)

Andrew MacDuff, MS sought (MP Frair)

Brooke Reeve, MS sought (MP Brunner)

Joe Vineis, MS sought, (MP Horton)

Linnet Cynthia Watson, MS sought (MP Stewart)

Ongoing PhD:

Geoffrey Eckerlin, PhD sought (MP Farrell)

Lauren Goldmann, PhD sought (MP Weir)

Yazmin Rivera, PhD sought (MP Horton/Kretzer)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Chris Addona, MS sought Examiner (MP Nakas) - Examiner

Kathleen Baier, MS completed Fall 2009, Examiner (MP Powell) - Examiner

Pat Eager, MS completed Spring 2010, Examiner (MP Fierke) - Examiner

Joshua VanBrakle, MS completed Spring 2010 (MP Germain) - Thesis committee chair

Chengjun Zhu, PhD sought Examiner (MP Nakas) - Examiner

III. RESEARCH COMPLETED OR UNDERWAY

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

Parasitism in Lake Pontchartrain fishes in the post-Katrina era (boot-legged - 2%)

Genome sequencing of the emerging salmon parasite *Ichthyophonus hoferi* (boot-legged -2%)

Fish health monitoring at Carpenter's Brook Fish hatchery (boot-legged 5%)

Survey of wild fish parasites in the Great Lakes (boot-legged 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)

Alaska Department of Fish and Game. \$3,500 (07/01/10-06/30/11) *Ichthyophonus hoferi* in returning Alaskan Chinook salmon; molecular diagnostics.

NIH Subaward P0274A-A (3/1/10 - 2/28/12) \$60,000. Characterizing *Mycobacterium* species from zebrafish and diagnostic development.

SUNY-ESF Seed Grant Program (3/1/09 - 12/31/2010) - \$8,000. Systematics and Biodiversity of the Myxozoa.

USDA-CREES/McIntire-Stennis Program (8/15/09 – 9/30/12) - \$50,500 Monitoring populations of elusive forest wildlife: a modern approach using noninvasive genetic techniques (Co-investigator with Jacqueline Frair)

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

NSF MRI-R2. Acquisition of Instrumentation for Interdisciplinary Research on Natural Toxins and Diseases in Aquatic Food Webs. (PI Ringler)

NSF Systematics and Biodiversity (10/01/10 - 09/30/13) Systematics and Biodiversity of the Myxozoa.

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

NSF Systematics and Biodiversity (9/1/10-8/31/13) - \$192,856 Seeking Endangered Giants: Conservation and Systematic Status of Arapaima in Eastern Brazil (PI: D. Stewart)

Great Lakes Fishery Commission Project (1/1/2011-1/1/2013) - \$223,455 Assessing the role of Invasives in the transmission and maintenance of disease in the Great Lakes fish communities. (PI: Farrell).

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

Whipps, C.M., Fournie, J.W., Morrison, D.A., Azevedo, C., Matos, E., Thebo, P., Kent, M.L. (In Review) Phylogeny of *Calyptospora* (Apicomplexa: Coccidia). Molecular Phylogenetics and Evolution.

Liu, Y., **Whipps, C.M.**, Gu, Z.M. (In Press) The first report of *Myxobolus turpisrotundus* (Myxosporea: Bivalvulida) spores with a caudal appendage and phylogeny of genera *Myxobolus* and *Henneguya*: morphology and molecular evidences to interrogate the validity of genus *Henneguya*. Parasitology Research.

Whipps, C.M., Boorum, K., Bermudez, L.E., Kent, M.L. (2010) Molecular characterization of *Blastocystis* species in Oregon identifies multiple subtypes. Parasitology Research. 106(4):827-832.

Gunter N.L., **Whipps, C.M.**, Adlard, R.D. 2009. *Ceratomyxa* (Myxozoa: Bivalvulida): robust taxon or genus of convenience? International Journal for Parasitology. 39(12), 1395-1405.

Gozlan, R.E., **Whipps, C.M.**, Andreou, D., Arkush, K.D. 2009. Identification of the cyprinid rosette-like agent as *Sphaerothecum destruens*, a multihost fish pathogen. International Journal for Parasitology. 39(10), 1055-1058.

B. Non-refereed Publications

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

May 24-28, 2010. 35th Annual Eastern Fish Health Workshop, Shepherdstown, WV. Tracking mycobacterial infections in laboratory zebrafish (*Danio rerio*).

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

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

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

2. Industrial and Commercial Groups, etc.

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

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)

2. Professional Society Membership

American Fisheries Society (2001-present)
American Society of Parasitologists (2002-present)
International Society of Protistologists (2008-present)
Wildlife Disease Association (2008-present)

3. Other Professional Activities

a. Editorial activity

Journal (s)

Responsibility

Other (books, symposia, etc.)

b. Reviewer

Journal(s)

No. of manuscripts

Biological Invasions

1

Diseases of Aquatic Organisms

4

Folia Parasitologica

1

Infection, Genetics and Evolution

1

International Journal for Parasitology

5

Journal of Parasitology

1

Parasitology

1

Veterinary Parasitology

3

Wetlands

1

/18

Agency

No. of proposals

Other

c. Participation (workshops, symposia, etc.)

Name of workshop, etc.

Date

Place

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

D. Foreign Travel (Where, When, Purpose)

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

EFB Space Committee (Feb 2008 - present). Chair: John Farrell.

EFB Curriculum Committee (Jan-Feb 2008, Aug2008-present). Chair: Dylan Parry.

EFB Graduate Program Advisory Committee (Aug 2008-present). Chair: Karin Limburg

EFB Cell and Molecular Biology Search (Nov 2009 - Apr 2010). Chair: Bill Powell

B. College-level

ESF Environmental Health Program Feasibility Program (Sept 2009-Jan 2010). Chair: John Castello

ESF Committee on Promotion and Tenure Policies and Procedures (Feb 2008 - present). Chair: Don Leopold

C. University-wide, including Research Foundation

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. One paragraph on each of the following would be most helpful:

this past year, what have you done for our students, department/college, and self professionally? NOTE: The information in this section (along with the supporting specific information elsewhere in this report) should be your strongest case for being considered for a discretionary raise, which I'll continue to award based on your contributions to the department and college this reporting period.

Students: For the second time I taught EFB 103 to approximately 200 students in the Spring semester. As with the first time this course was offered, I attempted to make this large lecture class an interactive, assessment based course using multiple modes of instruction. Specifically, this involved in-class assignments, demonstrations using students as players in cell processes, and reflective dialog with students on in-class questions. I also increased the number of out-of-class assignments to improve course engagement. In addition to the more straightforward assignments, I incorporated a weekly writing exercise with the goal of getting student hands on the primary literature, allow an opportunity to 'show us what you know', and help improve writing skills as they are required to clearly articulate or argue a position or idea. Topics connected with class subjects, or something completely different to get them thinking laterally. The first 6 writings also required a self-assessment of their own work. This is intended to get them thinking in an introspective manner and look for ways they can improve. This cycle of writing and self-assessment was generally well received by students and their writing improved dramatically as the semester progressed. Greg McGee and I made a concerted effort to integrate the lecture and lab implementing several modifications. This Fall I co-taught EFB496/796 Emerging Diseases of Fish and Wildlife with Jesse Brunner for the first time. The first half of this course, for which I was responsible, focused on disease causing agents, pathology, and immunity. Laboratory activities included parasite surveys from fish in NY, necropsy demonstrations by DEC state pathologist Kevin Hynes, and bird and mammal pathology. Ron Giegerich was pivotal in providing specimens and clinical background on pathology specimens and we plan to develop and expand this portion of the course in future years. I also facilitated 2 graduate-coordinated seminar courses this year on population genetics and applied microbiology.

Department/College: The teaching activities described above, particularly for the large required course EFB103, fall well within contributions to the college. As I continue to enhance this course with measures that improve retention and writing skill, this will better prepare students for their sophomore courses in Cell Biology and Genetics related topics. I serve on a number of departmental and college committees, the most time this year dedicated to the Cell and Molecular Biologist search (Chair: Powell), and the ESF Environmental Health Program Feasibility Program (Chair: Castello). Serving on the EFB Curriculum Committee, I initiated the move of EFB325 to the Spring semester to more effectively balance student course loads and integrate into related curriculum. This involved the course description for EFB325 to

be updated and title modified to Cell Biology to reflect a more contemporary offering consistent with curricula at other top-notch institutions. I am currently serving on graduate committees for 8 ESF students and have served as examiner or chair on 5 others this past year.

Professional: Most notably, I recently received an NIH subcontract to continue my research on mycobacteriosis in laboratory zebrafish. This is a growing problem with huge potential for future research directions and by being able to hire a research support specialist, the work will advance more rapidly. My other primary area of research interest in baseline levels of disease in NY state fishes expanded to include Lake Ontario through a collaboration with the DEC. From a parasitological perspective, I have identified 3 new species of fish parasite including a new genus. This work was advanced significantly by an ESF seed grant to conduct electron microscopy work to investigate the developmental biology of a group of enigmatic parasites. This preliminary work has also sparked collaboration with a lab in China doing complementary research, and we have already published a paper together. This coming Fall, I look forward to welcoming my first Master's student to the lab.

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)

I am pursuing 2 lines of primary research. Parasite biodiversity as ecological indicators in wild fishes, and health management of mycobacteriosis in zebrafish facilities. Both areas employ the tools of molecular systematics as a foundation. The parasite work also connects environment with disease, parasite ecology, and parasite development and evolution. My work on mycobacteria is more applied and provides a diverse set of molecular tools to investigate fish health, and this year I will be evaluating the transmission of fluorescently labeled mycobacteria to fish from environmental sources - which my previous work suggests is the most important source of infection. I will continue to modify and improve my course offerings, particularly this coming Fall when I will teach Emerging Diseases of Fish and Wildlife solo. This last spring I initiated a bootlegged collaboration with the Carpenter's Brook Fish Hatchery to conduct regular fish health monitoring. This summer, I have a student volunteer collecting and examining weekly, and if this is able to continue with the availability of some funding, this may be an excellent way to integrate both teaching and research.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2009

- a. Course(s) to be offered
- b. Proposed research activity
 - Zebrafish mycobacteriosis
 - Myxozoan development and taxonomy
 - Baseline data on fish diseases in NY state
 - Diagnostics of *I. hoferi* in Alaskan salmon
 - Genome sequencing of *I. hoferi*
- c. University, professional society, and public service
 - EFB committees as above

2. Fall Semester 2009

a. Course(s) to be offered
EFB496/796 – Emerging diseases in Fish and Wildlife
EFB797 - Concepts of Infectious Disease Seminar

b. Proposed research activity
Zebrafish mycobacteriosis
Myxozoan development and taxonomy
Baseline data on fish diseases in NY state

c. University, Professional society, and public service
EFB committees as above

3. Spring Semester 2010

a. Course(s) to be offered
EFB103 - General Biology II
EFB797 - Parasite Ecology Seminar

b. Proposed research activity
Zebrafish mycobacteriosis
Myxozoan development and taxonomy

c. University, professional society, and public service
EFB committees as above