

Sophie St-Hilaire
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Education

<u>Institution</u>	<u>Major Area</u>	<u>Degree & Years</u>
University of Prince Edward Island	Doctor of Veterinary Medicine	DVM. 1994
University of Saskatchewan	Epidemiology	M.Sc. 1996
University of Guelph	Epidemiology	PhD 2001

Appointments

2010-present	Associate Research Professor, Idaho State University, ID, USA
2005-2010	Assistant Research Professor, Idaho State University, ID, USA
2004-present	Instructor for the Veterinary Public Health Management Program – University of Sydney, Australia (on-line course)
2002-2004	Veterinary Epidemiologist, CEFAS (Defra) Weymouth, UK
2000-2002	Assistant Professor of Epidemiology, University of Guelph, Canada
1998-2000	Veterinarian for Department of Fisheries and Oceans, BC, Canada
1996-1997	Epidemiologist – Center for Coastal Health, Nanaimo, BC, Canada
1994-1996	Part-time aquatic animal veterinarian (locums) in British Columbia, Canada

Memberships

- State of Idaho Board of Veterinary Medicine (2005 - current)
- World Aquaculture Association
- Idaho Academy of Science

Teaching

- Epidemiology (graduate level course) University of Guelph (2002)
- Aquatic animal disease epidemiology for the University of Sydney Australia (on line course alternating years) (2004- current)
- Epidemiology for graduate students in the Department of Biological Sciences at Idaho State University (2005-current)
- Epidemiology for the Public Health program at Idaho State University (2007- current)
- Excel course (2008- current)
- Seminar course on evaluating diagnostic techniques (2006-2008)
- Introductory Parasitology (2009- current)

Mentoring/supervising: Post Doctoral Researchers and Graduate students

- **University of Guelph** : Susanna Arellano (MSc 2002) Investigation of cellulitis in turkeys (advisor)
- **CEFAS (UK)**: Nick Beavers (MSc 2004) Development of a screening program for Koi herpesvirus (advisor)
- **Idaho State University**:
 - **Yan Zheng** Post Doctoral researcher 2008-2010
 - **Sarah Bruer** (MSc 2007) Investigating risk factors for the manifestation of chytridiomycosis in boreal toads (co-advisor)
 - **Rakesh Mandel** (MPH 2008) Spatial and temporal distribution of breast and prostate cancer in the U.S. (advisor)
 - **Trevor Thomas** (MPH 2009) Cancer risk for manicurists in Idaho (advisor)
 - **Hilary Billman** (MSc Current) Toxicity of Rotenone in larval amphibians under laboratory and field conditions (co-advisor)
 - **Marie Adamako** (MSc Current) Development of an oral delivery system for DNA vaccines in fish (co-advisor)
 - **Sumit Lala** (MPH Current) Evaluating a life skills program for elementary school children in Idaho (advisor)
 - **Shauna Park** (MSc Current) Determining the microflora of boreal toad skin and their inhibitory properties (co-Advisor)
 - **Prabha Malamakel** (MPH current) Determining correlations between Asbestos emissions and systemic autoimmune diseases

Committee member for: **Kelsey Meltzner** (Doctor of Arts 2008), **Wayne Hatch** (MSc 2008) and **Ahmad Aburizaiza** (MSc geology2009)

Mentoring/supervising: Undergraduate students (Idaho State University)

- **Aman Prasad** 2005-2007 Study on mood and physical activity of Southeast Idaho High school students
 - Recipient of \$50,000 at the Young Epidemiologist Scholars Competition (first place)
- **Denise Kidman** 2006 Research on Chytridiomycosis
- **Debra Kumasaka** 2006 Research on Chytridiomycosis
- **Melanie Popien** 2006-2007 Black soldier fly research
- **Michelle Murphy** 2007 physiological parameters of coho salmon
- **Ryan Marcum** 2007-2009 research on oral delivery systems for DNA vaccines
- **Alex Wilson** 2008 black soldier fly research and research on chytridiomycosis
- **Devin Baumer** 2008 -2009 Research on Chytridiomycosis
- **Philip Firth** 2009 research on oral delivery systems for vaccines
- **Jennifer Hildenbrand** 2009 research on oral delivery systems for vaccines

Service

Professional

- NRC Canada review of grant applications for research in aquatic sciences (2004)
- Reviewer for the Oregon Sea Grant program (2005)
- Reviewer for manuscripts in journals of aquatic animal diseases including: Journal of World Aquaculture, Diseases of Aquatic Organisms, Aquaculture research, and Journal of Fish Biology (ongoing),
- VHSV risk assessment panel review for USDA APHIS (2007)
- Reviewer for The United States and Israel Bi-National Agricultural Research and Development Fund (2008)
- National Science Foundation Panel Reviewer for the Evolution and Population Ecology programs (April 2009)
- Reviewer for the Danish Council for Strategic Research, Anna Thoren (anth@fi.dk) (October 2009)

- Expert advisor for risk assessment project on antibiotic use in aquaculture industries and the potential for antibiotic resistance (Project lead by the Canadian Public Health Agency)
- Aquaculture America 2009 conference moderator
- Risk assessment for the transfer of the New Zealand Mudsnail via the transport of live tilapia through the state of Oregon (Idaho Aquaculture Association, June 2009)
- Reviewer for Diseases of Aquatic Organisms, Journal of Fish Biology, Aquaculture, North American Journal of Aquaculture, Biological Invasions, Parasitology, Journal of Fish Diseases, Freshwater Biology, and Journal of the World Aquaculture Society.

Idaho State University

- Enterprise Resource Planning committee
- Department of Biological Sciences Research Committee
- Graduate Faculty Representative for the Business and Physician Assistant program (2007) and Physical Therapy program (2008) at Idaho State University
- Faculty Research Committee (Oct. 2009)

Extension and public education

Invited guest Speaker

- *Kudoa thyrsites* workshop, Nanaimo, BC Canada (1996)
- Workshop on interactions between wild and farmed fish, Department of Fisheries and Oceans, Moncton, New Brunswick, Canada (1998)
- Risk Assessment seminar for the Ontario poultry producers, Kitchener, Ontario Canada (2001)
- Infectious hematopoietic necrosis workshop, Campbell River, BC Canada (2002)
- Workshop on Sustainable aquaculture World Wildlife Fund, Washington DC (February 2004)
- Strawberry disease workshop in Bristol, England (September 2006)
- Seminar on Koi Herpes Virus OSU, Corvallis OR (November 2006)
- Chytridiomycosis in Boreal Toads Grand Teton National Park, WY (2006)
- Chytridiomycosis in Boreal Toads Idaho Academy of Science (April 2007)
- Black soldier fly prepupae as an ingredient for fish food, Huazhong Agricultural University, Wuhan, China (June 2009)
- Presentation to the Aquaculture industry on black soldier fly research in Idaho and oral DNA delivery systems (Twin Falls ID June 2009)
- Disease outbreak investigation and diagnostic test sensitivity and specificity at the Salmon Disease Workshop at Oregon State University (July 2009)

Newspaper and lay journal articles since arriving at Idaho State University

- Idaho State Journal April 27, 2006 - CHS student wins \$50,000 in scholars competition
- The report 2008 vol 44. No. 2; 10-11- ISU research on toads
- Idaho State Journal and Associated press October 26, 2007- Improving fish vaccine
- Aquaculture Health issue 11, December 2007 – US researchers awarded grant to work on vaccine oral delivery systems
- Associated press September 14, 2007 – An offal meal for Idaho trout (this article was picked up by over 200 newspapers)
- Associated Press June 30, 2008- Researchers track toads with tiny transceivers
- Global Aquaculture Alliance March 10, 2010 – Oral method vaccinates rainbow trout

Research

Acquired External Funding

- 1997-2000 as a graduate student
 - British Columbia aquaculture industry grant for infectious hematopoietic necrosis virus research (\$20,000)
 - Fisheries and Oceans grant for investigating *Parvicapsula minibicornis* in wild fish populations (\$15,000)
- 2001-2002 at the University of Guelph, Ontario
 - Poultry Industry Council grant for disease outbreak investigation program (\$25,000)
 - Poultry Industry Council grant for investigating cellulitis in chickens and turkeys (\$25,000)
 - Ontario Ministry of Food and Agriculture (OMAF) grant for GIS project (\$16,000)
 - Poultry Industry Council grant for investigating cellulitis in turkeys (\$13,000)
 - OMAF grant for *Salmonella* spp. and *Campylobacter jejuni* surveillance in the Ontario chicken industry (\$350,000 transferred to Co-PI)
- 2003 and 2004 at CEFAS in the UK
 - Seedcorn funds for Koi Herpesvirus research (60,000 GB pounds)
 - English Heritage Carp Organisation (5,000 GB pounds)
 - Defra funding for disease surveillance of wild freshwater fish in England and Wales (150,000 GB pounds/ year)
 - Defra grant (collaborator) to look at fin erosion in rainbow trout (100,000 GB pounds)
- 2005 at Idaho State University in Idaho, USA
 - ISU Faculty Research Grant to evaluating the use of black soldier flies for remediation of cow manure and as a feed ingredient in fish food (\$5000)
 - University of Wyoming National Parks Service investigation of *Batrachochytrium dendrobatidis* in boreal toads (\$4,400)
- 2006
 - United State Department of Agriculture (USDA) SARE grant to investigate the Black soldier fly larvae as a tool for managing animal waste and providing a food source for aquaculture industries (\$117,200)
 - United State Geological Survey grant to investigation of chytridiomycosis in Boreal toads(\$53,000)
 - USDA Western Regional Aquaculture Committee grant to determine the shelf-life of Omega-3 fatty acid enhanced black soldier fly pre-pupae (\$10,000).
- 2007
 - Oregon Fish and Game grant with Ken Rodnick to determine the effects of infections with multiple parasite species in coho salmon (\$40,000)
 - Environmental protection Agency (EPA) grant with Ken Rodnick to investigate the role of parasites on swim performance of coho salmon (\$12,000)
 - Murdock Foundation grant to train high school teachers in science (\$12,000)
 - University Research Grant Idaho State University grant to produce an oral delivery system for DNA vaccines in Fish (\$20,000)
 - WeLead National Science Foundation (Idaho State University sub-award) to study the environmental factors associated with chytridiomycosis in boreal toads (\$12,237)
 - Idaho State Board of Education Higher Education Research Committee grant to develop an oral delivery system for DNA vaccines in rainbow trout (\$550,000)
- 2008

- Turner Enterprise grant to investigate the toxicity of Rotenone on larval amphibians (\$15,000)
- WeLead National Science Foundation (Idaho State University sub-award) to determine the bacterial microflora of boreal toads and the inhibitory characteristics of these bacteria on *Batrachochytrium dendrobatidis* (\$9,056)
- 2009
 - Yellowstone National Park Foundation grant for developing an amphibian disease surveillance program (\$20,000)
 - National Institute of Health grant (Co-PI on Oregon State University grant) Investigating disease outbreaks in zebrafish facilities across the U.S (my component ~\$50,000).

Proposals pending review:

- Co-PI on National Institute of Health proposal on climate change and the effects on respiratory disease (submitted April 2009 for \$500,000)
- PI on National Institute of Health proposal submitted to investigate the environmental parameters explaining the spatial distribution of breast and prostate cancers in the U.S. (to be submitted June 2009 for \$160,000)
- PI on Environmental Protection Agency CARE proposal submitted to investigate the effects of a coal gasification plant in American Falls ID on the respiratory and cardiovascular health of the local human population. (Submitted March 2009 for \$90,000)
- Co-PI on USDA SARE proposal to investigate the potential for manure reduction using black soldier flies in Idaho (\$150,000 total proposal)
- Co-PI on USDA SARE proposal to investigate the nutritional value of biofloc for rainbow trout diets (\$150,000 total proposal)
- PI on National Institute of Health proposal on meteorological parameters and correlation with chronic neurological diseases (submitted 2009 for \$150,000)
- PI on National Institute of Health proposal on meteorological parameters and correlation with breast cancer (submitted 2010 for \$50,000)
- PI on WRAC USDA to assess the risk of introducing non-native species on tilapia farms (submitted 2010 \$30,000)
- PI on USDA WSU/UI aquaculture initiative proposal to improve the efficiency of Oral DNA delivery systems for rainbow trout (submitted 2009 for \$95,000)

Since my appointment at Idaho State University (December 2004) I have managed or been a Co-investigator on grants totaling a sum of \$929,600. These funds have been competitively acquired from federal and state agencies, as well as private foundations.

Publications (** indicates undergraduate and graduate student co-authors)

Public health manuscripts

St-Hilaire, S., S. Mannel, A. Commendador, R. Mandal, and D. Derryberry. (In Press). Associations between meteorological parameters and prostate cancer. *International Journal of Health Geographics*

Thompson, W. and **St-Hilaire, S.** (In Press). Prevalence of chronic obstructive pulmonary disease and associated risk factors in veterans from the Boise Veterans Affairs Medical Center. *Journal of COPD*.

Prasad, A.**, **St-Hilaire, S.**, Maria M. Wong, Peterson, T., and Loftin, J. 2009. Physical Activity and Depressive Symptoms in Rural Adolescents. *North American Journal of Psychology* 11; 173-188.

Mandal, R**, **St-Hilaire, S.**, and Kie, JG. 2009. Spatial and temporal correlation between breast and prostate cancers. *International Journal of Health Geographics*, volume 8 Article Number: 53

Manuscripts in Veterinary epidemiology

- Marcum, R**. St-Hilaire, S., Rodnick, R., and Murphy, P. (accepted). Physiological Effects of *Batrachochytrium dendrobatidis* on Boreal Toad, *Bufo boreas*. *Diseases of Aquatic Organisms*.
- Gustafson, L. et al. (In Press). Viral hemorrhagic septicemia virus (VHSV IVb) risk factors and association measures derived by expert panel. *Preventative Veterinary Medicine*.
- Sealey W., Gaylord, T.G., Barrows, F.T., Tomberlin, J.K., McGuire, M., Ross, C., and St-Hilaire, S. (In Press). Sensory Analysis of Rainbow Trout (*Oncorhynchus mykiss*) Fed Enriched Black Soldier Fly Prepupae. *Journal of World Aquaculture*.
- St-Hilaire, S., Thrush, M., Tatarian, T., Prasad, A**. and Peeler, E. 2009. A tool for estimating the risk of anthropogenic spread of *Batrachochytrium dendrobatidis* between water bodies. *EcoHealth* 6; 6-10.
- Murphy, P., **St-Hilaire, S.**, Bruer, S**, Peterson, C., and Corn, P.S. 2009. *Batrachochytrium dendrobatidis* is widespread in, and experimentally pathogenic to, Grand Teton boreal toads. *EcoHealth* 6(1); 109-120.
- St-Hilaire, S., Beevers, N**, Way, K., Le Deuff, R-M., Martin, P., and Joiner, C. 2009. Antibody response of two populations of common carp (*Cyprinus carpio* L.) exposed to koi herpesvirus. *Journal of Fish Diseases*; 32; 311-320.
- Peeler, E.J., Feist, S.W., Longshaw, M.L, Thrush, M.A. and **St-Hilaire, S.** 2008. An assessment of the variation in the prevalence of renal myxosporidiosis and hepatitis in wild brown trout (*Salmo trutta*) within and between rivers in south-west England. *Journal of Fish Diseases*. 31; 719-728.
- Rodnick KJ, Battiprolu PK, Seiler SM, **St-Hilaire S**, Kent M, Powell MS, Ebersole JL. 2008. Evidence of Differences in sex ratio, swimming performance, morphometrics, and prevalence of disease in coho salmon from West Fork Smith River, Oregon. *Trans Am Fish Soc.* 137(6):1571-1590.
- Lloyd SJ**, LaPatra SE, Snekvik KR, **St-Hilaire S**, Cain KD, Call DR. 2008. Strawberry Disease lesions in rainbow trout (*Oncorhynchus mykiss*) from southern Idaho are associated with DNA from a Rickettsia-like organism. *Diseases of Aquatic Organisms* 82; 111-118.
- Ostland, V.E., V. Watral, C. M. Whipps, F. W. Austin, **S. St-Hilaire**, M. E. Westerman, and M. L. Kent. 2008. Biochemical, Molecular, and Virulence Characteristics of Select *Mycobacterium marinum* Isolates In Hybrid Striped Bass (*Morone chrysops* x *Morone saxatilis*) and Zebrafish (*Danio rerio*). *Diseases of Aquatic Organisms* 79, 107-118.
- Baker, R.H.A., R. Black, G. H. Copp, K.A. Haysom, P.E. Hulme, M.B. Thomas, A. Brown, M. Brown, R.J.C. Cannon, J. Ellis, M. Ellis, R. Ferris, R. Garthwaite, P. Glaves, R.E. Gozlan, J. Holt, L. Howe, J.D. Knight, A. MacLeod, N.P. Moore, J.D. Mumford, S.T. Murphy, D. Parrott, C.E. Sansford, G.C. Smith, **S. St-Hilaire**, N. L. Ward. 2008. Developing a risk assessment scheme for all UK non-native species. *Neobiota* 7; 46-57.
- St-Hilaire S., Mark A. McGuire, Jeffery K. Tomberlin, Katie Cranfill, Erin E. Mosley, Larry Newton, Wendy Sealey, Stephen Irving and Craig Sheppard. 2007. Fish offal recycling by the black soldier fly produces a foodstuff high in omega-3 fatty acids. *Journal of World Aquaculture* 38(2), 309-313.
- St-Hilaire S., Sheppard, C., Tomberlin, JK., Irving, S., Newton, L., McGuire MA., Mosley, E., Hardy, R., and Sealy, W. 2007. Fly prepupae as a feedstuff for Rainbow Trout *Oncorhynchus mykiss*. *Journal of World Aquaculture* 38, Issue 1, 59-67.

- Gozlan, R.E., Peeler, E.J., Longshaw, M., **St-Hilaire, S.**, Feist, S.W. 2006. Effect of microbial pathogens on the diversity of aquatic populations notably in Europe. *Microbes and Infection* 8; 1358-1364.
- Whipps, C.M., Burton, T., Watral, V., **St-Hilaire, S.**, and Kent, M.L. (2006). Assessing the accuracy of a polymerase chain reaction test for *Ichthyophonus hoferi* in Yukon River Chinook salmon (*Oncorhynchus tshawytscha*). *Diseases of Aquatic Organisms* 68; 141-147.
- St-Hilaire, S., Beevers, N.**, Way, K., Le Deuff, R-M., Martin, P., and Joiner, C. 2006. Reactivation of latent infections of KHV in Common carp *Cyprinus carpio*. *Diseases of Aquatic Organisms* 67;15-23.
- Gozlan, R.E., **St-Hilaire, S.**, Feist, S.W., Martin, P., and Kent, M.L. June 23 2005. An emergent infectious disease threatens European fish biodiversity. *Nature* 435 (7045); p.1046.
- St-Hilaire, S., Ellis, T., Cooke, A., North, B.P., Turnbull, J.F., Knowles, T. and Kestin, S. September 30, 2006. Fin erosion on commercial rainbow trout farms in the UK. *The Veterinary Record* 447-451.
- Wilson, J., Tice, G., Brash, M., and **St. Hilaire, S.** 2005. Manifestations of *Clostridium perfringens* and Related Bacterial Enteritides in Broiler Chickens. *World Poultry Science Journal* 61(3);435-449
- St-Hilaire, S. and Mander, B. 2004. Ulcer disease in common carp fisheries in the UK. *Fish Veterinary Journal* 8; 90-95.
- St-Hilaire, S., Gubbins, M., and Bayley, A. 2004. Investigation of a wild fish kill on the River Tyne. *Fish Veterinary Journal* 8; 96-100.
- St-Hilaire, S. and Sears, W. 2003. Trends in cellulitis condemnations in the Ontario chicken industry. *Avian Diseases* 47; 537-548.
- St-Hilaire, S., Arellano, S**., and Ribble, C.S. 2003. Association between cellulitis (enlarged sternal bursa) and focal ulcerative dermatitis in turkeys raised in Ontario, Canada. *Avian Diseases* 47; 531-536.
- St-Hilaire, S., Ribble, Stephen, C., Anderson, E., Kurath, G., and Kent, M.L. 2002 Epidemiological investigation of infectious hematopoietic necrosis viral disease in the Atlantic salmon aquaculture industry in British Columbia, Canada. *Aquaculture* 212, 49–67.
- St-Hilaire, S., Burrows, M., Higgins, M., Barnes, D., and Kieser, D. 2002. An epidemiological study of *Parvicapsula minibicornis* in wild sockeye salmon in British Columbia, Canada. *J. of Fish Diseases* 25, 107-120.
- St-Hilaire, S., Stephen, C., Kent, M., Ribble, C. 2001. Sentinels in the bay: Using sentinel fish to monitor for pathogens in the environment. *ICES journal of Marine Sciences* 58, 369-373.
- St-Hilaire, S., Ribble, LaPatra, S., Chartrand, S., Davies, T., and Kent, M.L. 2001. Infectious hematopoietic necrosis virus specific antibody profiles in Atlantic salmon (*Salmo salar*). *Diseases of Aquatic Organisms* 46, 1-6.
- St-Hilaire, S., Ribble, C., Traxler, G., Davies, T., and Kent, M.L. 2001. Evidence for a carrier state of infectious hematopoietic necrosis virus in chinook salmon (*Oncorhynchus tshawytscha*). *Disease of Aquatic Organisms* 46, 173-179.
- Raverty, S. Kieser, D., Bagshaw, J., and **St-Hilaire, S.** 2000. Renal infestation with *Parvicapsula minibicornis* in wild sockeye salmon from the Harrison and Adams rivers in British Columbia. *Canadian Veterinary Journal* 41, 1-2.
- St-Hilaire, S., Ribble, C., Whitaker, D., and Kent, M.L. 1998. Prevalence of *Kudoa thyrsites* in sexually mature and immature pen-reared Atlantic salmon (*Salmo salar*) in British Columbia. *Aquaculture* 162, 69-77.
- St-Hilaire S., Kent, M.L., and Iwama, G. K. 1998. Factors affecting the health of farmed and wild fish populations: A perspective from British Columbia. *Canadian Stock Assessment Secretariat Research Document*, 98/168.

Sophie St-Hilaire

- St-Hilaire, S., Hill, M., Ribble, C., Whitaker, D., and Kent, M.L. 1997. A comparative study of the muscle texture and the intensity of *Kudoa thyrsites* infection in pen-reared Atlantic salmon (*Salmo salar*). *Diseases of Aquatic Organisms* 31, 221-225.
- St-Hilaire, S., Ribble, C., Whitaker, D., and Kent, M.L. 1997. Evaluation of a nondestructive diagnostic test for *Kudoa thyrsites* in farmed Atlantic salmon (*Salmo salar*). *Aquaculture* 156, 139-144.
- Kent, M.L., Dawe, S.C., **St-Hilaire, S.**, and Anderson, R.J. 1996. Effect of feeding rate, time of entry to sea water, and exposure to natural biota on the occurrence and severity of net pen liver disease, a toxicopathic liver disease of pen-reared Atlantic salmon *Salmo salar*. *Progressive Fish-Culturist* 58, 43-46.

Submitted papers 2009:

- Billman, H.G**, St-Hilaire, S., Kruse C.G., Peterson T.S., Peterson C.R. (submitted) Toxicity of the piscicide Rotenone to Columbia spotted frog (*Rana luteiventris*) tadpoles. *Trans Am Fish Soc.*
- Yan Zheng, Y., St-Hilaire, S., Marcum, RD**, Sealey, W., Donahower, B., Adomako, M**, Sheridan, PP., Veerubotla, R., and Eley J. (submitted). Developing an oral delivery system for DNA vaccine in rainbow trout (*Oncorhynchus mykiss*) *Aquaculture*.
- Murphy, P., St-Hilaire, S. and Corn, S.P. (submitted). Moisture, temperature, and prior pathogen exposure alter the experimental severity of chytridiomycosis in boreal toads. *Diseases of Aquatic Organisms*.
- Saksida, S., Marty, GD, St-Hilaire, S, Jones, SRM, Manchester, H, Diamond, CL, and Bidulka J. (submitted). Fitness variables, lesions, and parasites among juvenile pink salmon in the Broughton Archipelago of western Canada. *Trans Am Fish Soc*