

# Trent University & the Ontario Federation of Anglers and Hunters present

## For more information:

### Natural Resources DNA Profiling & Forensic Centre

<http://web.nrdpfc.ca>

705-748-1011 ext. 7080

[www.info@nrdpfc.ca](http://www.info@nrdpfc.ca)

### Trent University

[www.trentu.ca](http://www.trentu.ca)

### Ontario Federation of Anglers & Hunters

[www.ofah.org](http://www.ofah.org)

### Ministry of Natural Resources

[www.mnr.gov.on.ca/en](http://www.mnr.gov.on.ca/en)

### Fleming College

<http://flemingcollege.ca>



# DNA:

## The Future of Wildlife & Fish Conservation in the 21st Century

February 19, 2013

6:30 - 9:00 pm



NATURAL RESOURCES  
DNA Profiling & Forensic Centre





On behalf of the Government of Canada and the constituents of the Peterborough Riding, I am pleased to bring greetings to the participants of DNA: The Future of Wildlife & Fish Conservation in the 21st Century. I applaud both Trent University and the Ontario Federation of Anglers and Hunters for presenting this session so that we can all learn more about cutting-edge research and the extraordinary collaborative expertise that exists in our region with regard to fish and wildlife conservation.

I know that the session will be an informative one and I look forward to learning and sharing new information that will shape the face of fish and wildlife conservation including the innovation and development that will benefit our entire Region.

Regards,

Dean Del Mastro – Member of Parliament, Peterborough



City of  
**Peterborough**

500 George Street North, Peterborough, Ontario, K9H 3R9  
Office of the Mayor

A MESSAGE FROM THE MAYOR

On behalf of the Peterborough City Council, I am please to welcome you to DNA: The Future of Wildlife and Fish Conservation in the 21st Century.

Together, Trent University, Fleming College, the Ontario Federation of Anglers and Hunters and the Ministry of Natural Resources are producing cutting-edge research in conservation and protection. Their findings will help promote, preserve and protect our natural environment and wildlife for everyone's benefit and enjoyment.

I commend all of the participants in this event, and I wish you well in your ongoing work.

Sincerely,

Daryl Bennett



Peterborough City Council

# DNA: The Future of Wildlife & Fish Conservation in the 21st Century

DNA is the most valuable resource on the planet, as it holds the information for all present life forms and for all potential life that may evolve. It has survived the test of time as an information molecule.

Now we have new technology to sequence all the information on many species within an ecosystem, many individuals within a species, and all the genes in an individual. This Third Generation sequencing technology will provide early information on the impacts of climate change, invasive species and emerging diseases to help managers and policy makers to make informed decisions. The technology will bring about profound changes to medicine, agriculture, and forestry. As our capacity in this field grows, it will stimulate the creation of new business opportunities in the region.

How does DNA work? DNA is the molecule that holds all the genetic information needed to develop an individual. Half comes from the mother and half from the father. In humans and most other mammals, there are about 3 billion letters (nucleotide bases) from mom and 3 billion from dad. There are slight differences in the letters among individuals, which provides the variation that enables evolutionary change. With the rapid environmental shifts presently occurring, such as climate change or the spread of invasive species, genetic variation is essential in order for species to persist for generations to come.



## Useful Terms

**Genome:** The entirety of an organism's hereditary information.

**DNA:** A nucleic acid that contains the genetic instructions used in the development and functioning of all known living organisms.

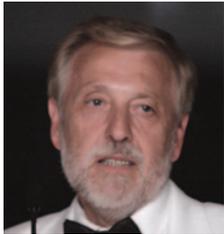
**DNA Sequencing:** The process of determining or decoding the precise order of nucleotides within a DNA molecule.

**Third Generation Sequencing:** Single-molecule technology which permits real-time sequencing in short time frames, resulting in low costs and high throughput.

**Single-Nucleotide Polymorphism (SNP):** A mutation at a position in the genome, which may be responsible for changes leading to altered protein function, and to changes in biochemical processes.

# Program

## 6:30 - 9:00 pm



### MASTER OF CEREMONIES

Bradley White is Professor of Biology at Trent University and Emeritus Professor of Biology at McMaster University. He founded and supervises the Wildlife DNA Forensic Laboratory, which provides DNA evidence to the Ontario Ministry of Natural Resources and other provincial and federal agencies. He was Director of the DNA Diagnostic laboratory at Kingston General Hospital. He has been involved in research on endangered species from North Atlantic right whales to wood poppies.

Angelo Lombardo	Welcome to the Heritage Centre
Steven Franklin	Greetings and Event Overview
Bradley White	Introduction of the Panel
Terry Quinney	The Importance of Science to Fish and Wildlife Conservation Management
Chris Kyle	Next Generation Sequencing and Rabies Genomics
Chris Wilson	Fish Mitogenomics, E-DNA and Invasive Species
Thomas Pigeon	Q&A
BREAK TIME	7:30 pm – 7:45 pm
Paul Wilson	Caribou Genomics and Landscape Change
Jeff Bowman	Climate Change and Flying Squirrel Genomics
John Knight	Fish and Wildlife Training
Thomas Pigeon	Q&A
Vy Srithayakumar	The Importance of Research and Graduate Training Thank You and Acknowledgments
Tony Tilly	Closing Remarks

# Speakers



## ANGELO LOMBARDO

Angelo Lombardo is a passionate outdoors enthusiast, hunter, angler and conservationist. Angelo is Executive Director of the Ontario Federation of Anglers and Hunters. Angelo rejoined the OFAH in 2010 as Executive Manager, and was appointed as Executive Director in March 2012. From 1994 to 1999, Angelo served as OFAH Special Events Representative. Based

out of the OFAH Ontario Conservation Centre in Peterborough, Angelo is proud to lead a team of over 50 dedicated full-time employees. He also serves as Publisher of *Ontario OUT OF DOORS* magazine and oversees the production of Angler & Hunter Television and Angler & Hunter Radio.

In a true reflection of Angelo's passion for hunting and fishing, he is a certified hunter education and firearms training instructor, a past president of his fish and game club, and a former member of the provincial Hunter Education Strategic Team. In 2004, he was appointed to the Ontario Fish and Wildlife Heritage Commission, a position he held until 2010. Currently, Angelo is also a member of the Board of Directors of the Invasive Species Centre.



## STEVEN FRANKLIN

Steven E. Franklin is President and Vice-Chancellor of Trent University in Peterborough, where he holds a joint appointment in the Department of Geography and the Environmental Science program. Dr. Franklin specializes in the application of satellite and aerial remote sensing in forestry and wildlife management. He first studied in the School of Forestry at Lakehead

University and then the Faculty of Environment at University of Waterloo, where he received his B.E.S. (Honours Geography), M.A. and Ph.D. degrees. He spent one year as a Visiting Student at the Geophysical Institute in Bergen, Norway, and also worked at the Ministry of Natural Resources Ontario Centre for Remote Sensing in Toronto. He has taught at the University of Waterloo, Memorial University of Newfoundland, University of Calgary, and University of Saskatchewan, where he also served as Vice-President Research. Among his recent awards is the 2007 Canadian Remote Sensing Society Gold Medal.



## TERRY QUINNEY

Terry is the Provincial Manager of Fish and Wildlife Services for the Ontario Federation of Anglers and Hunters. Prior to joining the OFAH head office staff, Terry was an Assistant Professor in the Zoology Department of the University of Guelph. He received his PhD from the University of Western Ontario, and held a two-year post-doctoral fellowship at Carleton University. Terry

is a Canadian Advisor to the Great Lakes Fishery Commission, and Co-Chair of the Steering Committee responsible for the Lake Ontario Atlantic Salmon Restoration Program.



## CHRIS KYLE

Christopher Kyle is an associate professor in the forensic science department at Trent University. His research interests include using molecular tools to enhance and inform wildlife conservation, wildlife management and wildlife forensic applications. Recent research includes: conservation genetic studies of badgers, wolverines and American white pelicans;

understanding gene flow patterns of black bears and Canada geese for wildlife management; and elucidating mechanisms of wildlife disease spread using rabies in raccoons and Arctic fox as model systems.



## CHRIS WILSON

Chris Wilson is a research scientist with the Ontario Ministry of Natural Resources. He runs the province's Aquatic Biodiversity and Conservation research unit, including the Fisheries Genetics lab at Trent University. His research primarily focuses on the spatial genetic structure and biodiversity of exploited and endangered aquatic species, and using this information to help inform their

sustainable management, including species rehabilitation and restoration efforts.

# Speakers



## THOMAS PIGEON

Thomas Pigeon, is the founder of the branding and marketing agency Pigeon\* Branding + Design. He is also the founder and host of *Canada In The Rough*, as well as a leading advocate dedicated to the preservation of our rich hunting and trapping heritage.



## PAUL WILSON

Founding chair of the Professional Forensic Science Program at Trent University, Dr. Paul Wilson is the Canada Research Chair in DNA Profiling, Forensics and Functional Genomics. His work in applied molecular genetics and genomics in both forensic science and conservation genetics focusses on the impacts of human modifications to the landscape and of climate change on the biodiversity of

sensitive species. During his term as Canada Research Chair, Prof. Wilson has developed essential toolkits for environmental assessments in collaboration with industry in hydro, forestry and mining sectors, government agencies and First Nations communities. As a leading Canadian forensic scientist and wildlife geneticist, Prof. Wilson has participated in hundreds of legal cases and testified in dozens of trials as an expert witness in DNA profiling and within his conservation mandate has served two terms on the Terrestrial Mammal Subcommittee of the Committee for the Status of Endangered Wildlife in Canada (COSEWIC).



## JEFF BOWMAN

Jeff is a Research Scientist with the Wildlife Research and Development Section of the Ontario Ministry of Natural Resources, and an Adjunct Professor in the Environmental and Life sciences Graduate Program at Trent University. He completed his Ph.D. at the University of New Brunswick, and has expertise in population and landscape ecology. Jeff has been

with the Ontario Ministry of Natural Resources since 2001 and has been involved in research projects on many species, including recent work on fishers, martens, lynx, wolverines, mink, wild turkeys, and flying squirrels.



## JOHN KNIGHT

John Knight is a faculty member at the Frost Campus of Sir Sandford Fleming College in Lindsay. He primarily teaches courses in wildlife management and environmental assessment to second and third year students.



## VY SRITHAYAKUMAR

Vythegi Srithayakumar is a Ph.D. candidate in the Environmental and Life Sciences program at Trent University. Her graduate work focuses on understanding host-pathogen interactions in wildlife. Using the raccoon rabies virus and its primary vector (raccoons) as a model system, her thesis seeks to address the knowledge gap

that exists in host-pathogen interaction in natural populations.



## TONY TILLY

Dr. Tony Tilly is an educator with extensive background in Ontario's colleges. In 2004, he was appointed as President of Fleming College, Peterborough, Ontario.

President Tilly began his career in the classroom. He subsequently held a number of leadership positions at Seneca College. At Fleming, President

Tilly is leading the implementation of a strategic plan that focuses on excellence in student learning, superior services, environmental issues and sustainability, enrolment growth, community success and human resources. Currently Fleming is preparing to build the Kawartha Trades and Technology Centre – hub for education and training offered in partnership with school boards and employers.

In 2012 Dr. Tilly completed a two-year term as chair of Ontario colleges' Committee of Presidents. He was recently elected to the board of the Association of Canadian Community Colleges and also serves on the boards focusing on philanthropy and economic and community development. He holds a Ph.D. from York University, having completed his doctorate in English.