



THINKING
extinction
2013

Welcome Message

Welcome to Thinking Extinction, a symposium that brings together philosophers and scientists to discuss endangered species conservation. Scholars, researchers, and scientists from around the world are meeting here, at Laurentian University, to address and discuss a range of theoretical, ethical, political, and conservationist approaches to the crisis of mass extinctions that we are currently witnessing. With finite resources and a seemingly infinite series of conservation problems, including the impending extinction of thousands of species, how do we plan for the conservation of biodiversity? What are the most effective ways to conserve endangered species? These and related issues are important to scientists, philosophers, and policy makers, and Thinking Extinction provides a unique opportunity to integrate the science and philosophy of endangered species conservation.

Thinking Extinction is the first event organized by the Centre for Evolutionary Ecology and Ethical Conservation (CEEEC), a new Laurentian University research centre whose mandate includes the philosophical examination, critical analysis, and ethical interpretation of research in conservation. CEEEC is anchored by two Canada Research Chairs and includes participation from faculty in the Departments of Biology and Philosophy.

A special thank you to our participants for making their way to Laurentian University, and to our many sponsors – especially the Social Sciences and Humanities Research Council of Canada.

We hope that you build collaborations with your like-minded international colleagues as we work together towards understanding and maintaining the biodiversity on this planet we share. We wish you a productive and informative meeting!

Sincerely,
TE Organizing Committee



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada



Canada Research
Chairs

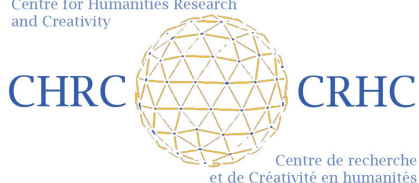
Chaires de recherche
du Canada

Canada



Centre for Evolutionary Ecology
& Ethical Conservation

Centre for Humanities Research
and Creativity



Interdisciplinary
Humanities MA in
Interpretation & Values



Canadian Society for
Ecology and Evolution



Additional funding provided by: the Office of the Dean, Social Sciences and Humanities; the Office of the Dean, Science and Engineering; the Research, Development, and Creativity Office; the Department of Philosophy; the Department of Biology; the Department of English; and the Department of Modern Languages.

**Thinking Extinction:
A Symposium on the Philosophy and Science of Endangered Species**

Thursday, November 14, 2013

Location: *Vale Living With Lakes Centre, Laurentian University*

9:00-9:30: Welcome and Introduction

Chair: Brett Buchanan

- a. Dominic Giroux, President and Vice-Chancellor of Laurentian University
- b. Elizabeth Dawes, Dean of Humanities and Social Sciences
- c. Osman Abou-Rabia, Dean of Sciences and Engineering

9:30-11:30: Endangerment of Multispecies Communities

Chair: Brett Buchanan

- a. Deborah Bird Rose (New South Wales), "At the Edge of Extinction: Blessings in a Time of Sadness"
- b. Mick Smith (Queen's), "From Haeckel to Nancy: Extinction in the Context of Ecological Community"

11:30-12:30: Lunch

12:30-2:45: Assessment of Endangered Species

Chair: Albrecht Schulte-Hostedde

- a. Justina Ray (Wildlife Conservation Society Canada), "Challenging Assumptions and Definitions of Extinction and Recovery in Endangered Species Conservation"
- b. Marty Leonard (Dalhousie, COSEWIC), "COSEWIC's Assessment of Extinction Risk: Practice and Challenges"
- c. Tom Nudds (Guelph), "On Evidence and Inference: How 'Science-based' is SARA's Assessment and Listing?"

2:45-3:00: Refreshment break

3:00-5:00: The 'Art' of Extinction

Chair: Ernst Gerhardt

- a. Joshua Schuster (Western), "Photographing the Last Animal"
- b. H. Peter Steeves (DePaul), "This Animal, Again"

Evening Session

MaddAddam: Evening with MARGARET ATWOOD

Science North, Sudbury, 8:00pm (doors open 7:30pm)

- *Awaiting Atwood* (dir: Beth Mairs, 43mins) at Vale Cavern, Science North
- Margaret Atwood: Reading from *MaddAddam* and book signing

A close-up portrait of Margaret Atwood, an older woman with short, curly, grey hair and blue eyes. She is smiling slightly and looking towards the camera. She is wearing a dark top.

LAURENTIAN UNIVERSITY PRESENTS THE 9th ANNUAL

MARGARET ATWOOD

BIRTHDAY PARTY

THURSDAY, NOVEMBER 14
at 8:00 p.m. (doors open 7:30)
Vale Cavern, Science North
Tickets \$20/Students \$10 (cash only)

Premiere of the film **AWAITING ATWOOD**,
directed by **BETH MAIRS**

Reading from **MADDADDAM**,
by **MARGARET ATWOOD**

Tickets available at: The Old Rock Roastery on Minto,
Chapters, Laurentian University Reception Desk in the
R.D. Parker Building and the Department of English.

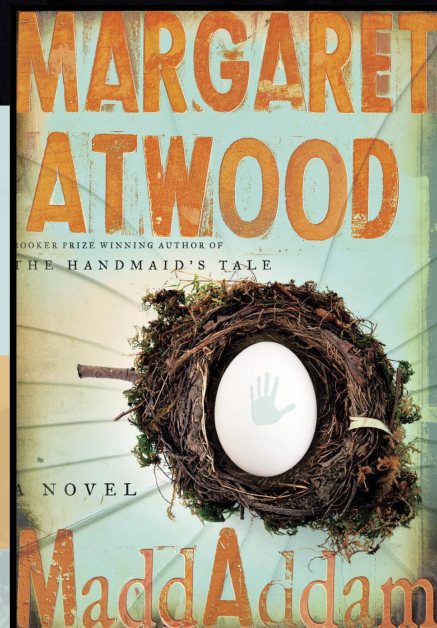


photo by Jean Malek, supplied by Margaret Atwood

Friday, November 15, 2013

Location: *West Residence 132, Laurentian University*

9:00-10:30: Roundtable: The Future of Endangered Species: Conservation, Biodiversity, (De-)Extinction

Chair: Brett Buchanan

Featuring: Margaret Atwood, Graeme Gibson, Stuart Pimm, Gaby Mastromonaco, James Maclaurin, Ronald Sandler, Bridget Stutchbury

10:30-10:45: Group photo

10:45-11:00: Refreshment break

11:00-12:00: Memories of Life

Chair: Alain Beaulieu

- a. Ted Toadvine (Oregon), "Biodiacritics and the Memory of Life"

12:00-1:00: Lunch

1:00-2:30: Evaluating the Worth of Endangered Species

Chair: Jacqueline Litzgus

- a. Bridget Stutchbury (York), "Triage, Intensive Care, and Emergency Rooms: How Useful are Medical Metaphors for Conservation Decisions?"
- b. Arne Mooers (Simon Fraser), "Are Some Animals More Equal Than Others?"

2:30-2:45: Refreshment Break

2:45-4:45: Extinction Ethics and Policy

Chair: Gillian Crozier

- a. Ronald Sandler (Northeastern), "The Ethics of Reviving Long Extinct Species"
- b. Benjamin Hale (Colorado), "Adaptation, Reparation, and the Substitution Problem"

Evening Session

Public Plenary Speaker: STUART PIMM, "Extinctions"

- Stuart Pimm (Duke), Doris Duke Professor of Conservation Ecology
- "Extinctions: When, Where, How Fast, and What We Can Do To Stop Them"
- St. Andrew's Place, 111 Larch Street, 8:00pm (doors open 7:30pm)



EXTINCTIONS:

When, Where, How Fast, and
What We Can Do to Stop Them

Species are now going extinct one thousand times faster than the geological background rate.

Deforestation, particularly tropical deforestation, is the principal cause, though global climate disruption may soon be a major factor. Strategically, we need to know what are the most vulnerable species and where they live. About two-thirds of all plant species are found within a sixth of the land area and most vulnerable amphibians, birds, and mammals live in the same places. Tactically, we need to know where within these regions we should act — and how to act. These conservation priorities are nearly always in landscapes where human actions have fragmented remaining habitats. At SavingSpecies, savingspecies.org, we identify key fragments and raise money for local NGOs to buy land between them to protect and restore habitat connections.



STUART PIMM

*Doris Duke Chair in Conservation Ecology
at the Nicholas School of the Environment, Duke University,
and founding director of The Pimm Group*

**FRIDAY, NOVEMBER 15, 2013
8:00 P.M.**

**St. Andrew's Place, 111 Larch Street, Sudbury, ON
Doors open at 7:30 p.m. • Free admission**

For information on this lecture, or other events in the Thinking Extinction symposium,
November 14 - 16, email or visit: thinkingextinction@gmail.com

thinkingextinction.com



Saturday, November 16, 2013

Location: *Vale Living with Lakes Centre, Laurentian University*

9:00-12:00: Extinctions of Animal Behavior

Chair: Michael Yeo

- a. Matthew Chrulew (New South Wales), "Ethopolitics Against Extinction"
- b. Eileen Crist (Virginia Tech), "Freedom and the Appropriation of Nature"
- c. Jeffrey Bussolini (CUNY), "Felidae and Extinction: 'Victim' and 'Cause'"

12:00-1:00: Lunch

1:00-2:30: Protection and Propagation of Endangered Species

Chair: David Lesbarreres

- a. Gabriela Mastromonaco (Toronto Zoo), "The role of emerging technologies for the propagation of endangered species"
- b. Jacqueline Litzgus (Laurentian), "Impacts of endangered species protection on local communities: The Pelee Island story"

2:30-2:45: Refreshment break

2:45-4:45: Costs of Saving Species

Chair: Norman Cheadle

- a. Ursula K. Heise (UCLA), "Legally Gone: Endangered Species Laws and Culture"
- b. James Maclaurin (Otago), "When in Doubt: Biodiversity Measurement and the Cost of Extinction"

Evening Session

Post-Symposium Lowdown

Respect Is Burning, Downtown Sudbury

Dinner & Drinks: 5:30pm on

Thanks for coming!

Abstracts and Biographies

MARGARET ATWOOD

Bio:

Margaret Atwood was born in 1939 in Ottawa, and grew up in northern Ontario and Quebec, and in Toronto. She received her undergraduate degree from Victoria College at the University of Toronto and her master's degree from Radcliffe College.

Margaret Atwood is the author of more than forty volumes of poetry, children's literature, fiction, and non-fiction, but is best known for her novels, which include *The Edible Woman* (1969), *The Handmaid's Tale* (1985), *The Robber Bride* (1994), *Alias Grace* (1996), and *The Blind Assassin*, which won the prestigious Booker Prize in 2000. Her newest novel, *MaddAddam* (2013), is the final volume in a three-book series that began with the Man-Booker prize-nominated *Oryx and Crake* (2003) and continued with *The Year of the Flood* (2009). *The Tent* (mini-fictions) and *Moral Disorder* (short fiction) both appeared in 2006. Her most recent volume of poetry, *The Door*, was published in 2007. In *Other Worlds: SF and the Human Imagination*, a collection of non-fiction essays appeared in 2011. Her non-fiction book, *Payback: Debt and the Shadow Side of Wealth* was adapted for the screen in 2012. Ms. Atwood's work has been published in more than forty languages, including Farsi, Japanese, Turkish, Finnish, Korean, Icelandic and Estonian.

JEFFREY BUSSOLINI, City University of New York, USA

"Felidae and Extinction: 'Victim' and 'Cause'"

The focus of these considerations is the multi-valent role of felines in extinction. Large cats in many areas of the world are under high extinction pressure due to the encroachment of habitat and eradication by humans. Lions, tigers, panthers (such as the Florida panther), and the Iberian Lynx, among others, face population pressure. In the complex entanglement between feline and human societies some hundreds of millions of 'domestic' and 'feral' cats are killed globally each year in a 'zoecide' that accompanies current human society, alongside the massive zoecide in meat production. On the other hand, so-called domestic felines are pointed to as exerting a strong environmental factor in killing marsupials, birds, or rodents. Recent news headlines about studies attributing billions of bird and small animal deaths to cats in the United States bear this out, as do accounts in Australia faulting cats for marsupial, songbird, and penguin killing.

Bio:

Dr. Jeffrey Bussolini is a sociologist, philosopher, and historian of technology by training. He studied at Georgetown University (SFS), CUNY Graduate Center, Université de Paris I La Sorbonne, and the École des Hautes Études en Sciences Sociales (MSH). He works primarily on ethnography of national security nuclear institutions, which present an extinction danger to human and other species, on Ailourography, the etho-ethnography of feline-human social interactions, and on the translation of French and Italian sources in animal interaction. He is the Co-Director of the ABMSC Centre for Feline Studies (abmsc.org/FelineStudies.html), and is affiliated with the SIUA (School for Human-Animal Interactions) in Bologna, Italy.

MATTHEW CHRULEW, University of New South Wales, Australia

“Ethopolitics Against Extinction”

What remains of life in the Anthropocene? What becomes of it? In the tension between these two verbs we can track a battle over nature and the human whose trauma we still inherit. Endangered species reintroduction provides an exemplary case study of counter-extinction practices in our postnatural, biopolitical condition. In the problems such efforts face, all the familiar reductions of the animal (machinic, instinctive, genetic, programmable) are confronted with their crippling flaws. Can we adequately understand and enact multispecies survival and flourishing without theoretically or indeed actually consigning managed animals to be human artifacts? It will require attending not only to the political investment in life as such, but also to “behaviour” as a domain of power, knowledge and intervention. Disclosing this domain will be the task of a philosophical ethology that seeks to interpret and cultivate new hybrid communities in which life’s remnants will yet become.

Bio:

Dr. Matthew Chrulew is adjunct lecturer in the School of Humanities and Languages at the University of New South Wales. His essays have appeared in *New Formations*, *Foucault Studies*, *Australian Humanities Review*, *Humanimalia* and elsewhere, and he is currently completing his first book, *Mammoth*. He is associate editor of the journal *Environmental Humanities*, and is co-editing three forthcoming issues of *Angelaki* on “Philosophical Ethology” and an issue of *SubStance* on Derrida’s *The Beast and the Sovereign* lectures.

EILEEN CRIST, Virginia Polytechnic Institute and State University, USA

"Freedom and the Appropriation of Nature"

The more mobile humans (and their commodities) become and seek to become, the more the mobility of animals suffers. Whether it is the migrations of sea turtles, butterflies, and chiru, or the home ranges of wolves, elephants, and tigers, animal movement is stifled: by plastics, fences, guns, climate change, roads and railways, park boundaries, dams, agro-industrial landscapes, and the list goes on. As globalization makes national boundaries porous and the world's car fleet grows and the free market regime hauls more and more stuff around (including wildlife as commodities), the experience—or the illusion of the experience—of *human* freedom is augmented. Meanwhile, the merely living, those ostensibly devoid of experience—in other words, animals thus deemed—suffer the loss of the ability to move freely (be their desire for movement instinctive or learned). Animal peregrinations, and the geographical patterns these peregrinations circumscribe and help design, are becoming endangered phenomena; at the same time, the constriction of migratory paths and home ranges signal impending species extinctions.

Bio:

Dr. Eileen Crist received her doctoral degree from Boston University in 1994 in sociology, with a specialization in life sciences and society. She has been teaching at Virginia Tech in the Department of Science and Technology in Society since 1997, where she is the advisor for the undergraduate program "Humanities, Science, and Environment." She also teaches part time in the Department of Animal Studies at The Humane Society University. She is author of *Images of Animals: Anthropomorphism and Animal Mind*. She is also co-editor of *Gaia in Turmoil: Climate Change, Biodepletion, and Earth Ethics in an Age of Crisis* (2010) and *Life on the Brink: Environmentalists Confront Overpopulation* (2012). Eileen is author of numerous papers and contributor to the late journal *Wild Earth*.

GRAEME GIBSON

Bio:

Graeme Gibson is the acclaimed author of *Five Legs* (1969), *Perpetual Motion* (1982), *Gentleman Death* (1993), *The Bedside Book of Birds* (2005), and *The Bedside Book of Beasts* (2009). He is a past president of PEN Canada, founding member of Writer's Trust of Canada, the recipient of both the Harbourfront Festival Prize and the Toronto Arts Award, and is a Member of the Order of Canada (1992). He has been a council member of World Wildlife Fund Canada, and is chairman of the Pelee Island Bird Observatory.

BENJAMIN HALE, University of Colorado Boulder (CU-Boulder), USA

“Adaptation, Reparation, and the New Substitution Problem”

In recent, the author has argued that our adaptation obligations extend beyond simple human communities to include non-human species and wild ecosystems. This paper argues that climate adaptation for non-human species and wild ecosystems cannot be supported by functionalist appeals to assist ecosystem adaptation by colonizing new areas. Discussion is limited to the Argument from Reparation, which suggests that our obligations to assist in species and ecosystem adaptation stem from a moral duty to right prior wrongs. In earlier work, the author has discussed the “Substitution Problem,” which raises a counter-argument to functionalism by proposing that a missing or damaged component of an ecosystem cannot, morally speaking, be swapped out for a component that serves a similar function. This presentation introduces the “New Substitution Problem,” which is essentially the converse of the old substitution problem. In other words, it asks not whether an ecological component can be swapped out to assist an ecosystem, but whether an ecosystem can be swapped out to assist an ecological component. The claim here is that substitution alone cannot suffice to discharge an obligation to repair an environmental wrong. The proposal is, instead, that obligations to aid and assist species and ecosystems in adaptation, in particular, follow from a failure to adequately justify—either by absence, neglect, omission, or malice—actions that caused, or coalesced to cause, climatic change. Because this position suggests a different reason for reparation—namely, it does not rely on the notion that an obligation to repair is contingent upon a lost good—it permits moving forward with assisted colonization and migration, but does so without falling subject to the complications of the New Substitution Problem.

Bio:

Dr. Benjamin Hale is an associate professor in environmental studies and philosophy at the University of Colorado, Boulder. He works primarily in the area of environmental ethics and environmental policy, though his theoretical interests span much larger concerns in applied ethics, normative ethics, and even metaethics. Much of his applied ethics research centres on ethical and environmental concerns presented by emerging technologies. Before joining the environmental studies program, Benjamin was the Director of the Center for Values and Social Policy in the Philosophy Department at the University of Colorado, Boulder, and earlier was the Interim Director of the Environmental Conservation Education Program at New York University. Benjamin has a Ph.D. in Philosophy from the State University of New York at Stony Brook and an M.P.A. in Natural Resource Policy from the University of Arizona.

URSULA K. HEISE, University of California, Los Angeles (UCLA), USA

“Legally Gone: Endangered Species Laws and Culture”

This paper approaches current laws for the protection of animals and plants from a comparative cultural perspective. Many nations around the globe as well as subnational states and supranational organizations such as the European Union have promulgated such laws over the last half-century. While these laws superficially resemble each other in their formulations, they derive in some cases from quite divergent national histories of engagement with nature at risk. In Germany, for example, the first laws for the protection of endangered species were passed under the National Socialist regime in 1935, a legacy that had to be considered in depth by the environmentalist who advocated for the passing of the contemporary *Bundesnaturschutzgesetz* (Federal Law for the Protection of Nature) in 1977. Focusing on the examples of Germany, India, Brazil, Costa Rica, Kenya, and the United States, "Legally Gone" explores these histories so as to highlight how current concerns with endangered species are shaped by the cultural histories they form part of. This paper's purpose, therefore, is to read endangered species laws as texts that express a culturally specific concern that differs between regions and countries.

Bio:

Dr. Ursula K. Heise is a professor of English and at the Institute of the Environment and Sustainability at UCLA, and a 2011 Guggenheim Fellow. She served as President of ASLE (Association for the Study of Literature and the Environment) in 2011. Her research and teaching focuses on contemporary literature, environmental culture in the Americas, Western Europe and Japan, literature and science, globalization theory, and media theory. Her books include *Chronoschisms: Time, Narrative, and Postmodernism* (Cambridge University Press, 1997), *Sense of Place and Sense of Planet: The Environmental Imagination of the Global* (Oxford University Press, 2008), and *Nach der Natur: Das Artensterben und die moderne Kultur* (After Nature: Species Extinction and Modern Culture, Suhrkamp, 2010). She is editor of the bookseries, *Literatures, Cultures, and the Environment* with Palgrave-Macmillan and co-editor of the series *Literature and Contemporary Thought* with Routledge. She is currently finishing a book called *Where the Wild Things Used to Be: Narrative, Database, and Endangered Species*.

MARTY L. LEONARD, Dalhousie University, Canada

“COSEWIC’s Assessment of Extinction Risk: Practice and challenges”

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent national advisory body. The Committee was established in 1977, although not enacted in law until the passage of Canada’s *Species at Risk Act* in 2002. COSEWIC’s mandate is to identify species that may be at risk of extinction or extirpation from Canada, assess the conservation status and identify threats to those species, and then provide status recommendations to the federal Minister of the Environment. COSEWIC assessments are based on the best available biological information, drawn from western science, Aboriginal Traditional Knowledge and community knowledge. This presentation will be discussing the risk factors that COSEWIC considers when prioritizing species for assessment and the process that it uses to assign status. In both cases, the challenges faced by the Committee when assessing species at risk in Canada, will be highlighted.

Bio:

Dr. Marty Leonard has a PhD from the University of Ottawa and has worked as a Research Fellow at the University of Cambridge and the Australian National University. She is currently a professor of biology at Dalhousie University in Halifax. Dr. Leonard and her students address basic and applied questions on the conservation and behaviour of birds in Canada and abroad. Current projects are focused on identifying factors responsible for declines in aerial insectivores, describing the distribution and population dynamics of threatened albatrosses in the Hawaiian Islands and examining the impacts of human-generated noise on parent-offspring communication.

Dr. Leonard is the Chair of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), an independent advisory committee tasked with identifying and assessing species at risk in Canada. She is also the Co-chair of COSEWIC’s Birds Specialist Subcommittee and the Co-chair of the Roseate Tern Recovery Team. She has served on the executive of various academic societies, has been associate editor of several peer-reviewed journals and has participated on panels and working groups on species at risk.

JACQUELINE D. LITZGUS, Laurentian University, Canada

“Impacts of endangered species legislation on local communities: The Pelee Island story”

Imagine a picturesque island in Lake Erie with rare habitats that are home to a great diversity of some of the most at-risk plants and animals in Canada. You would think that with the current federal (Canada) and provincial (Ontario) legislations to protect species at risk (SAR), those elements of nature would be safe'n'sound, especially given that the Nature Conservancy of Canada has purchased many of the sensitive lands. Now imagine a small community of people, isolated in the middle of Lake Erie, with few economic prospects besides an existing quarry and a hopeful condo development. Add to that a complex Endangered Species Act that has power on private lands, and an administering government agency whose approach to information transfer is hobbled by lack of funding, time and staff, and perhaps a cowardly desire to “stay out of it”. The end result is a community with long-term resentment about SAR and government, and that is unsupportive of SAR research by outsiders. This translates into a lack of information to follow-through on government-mandated recovery. The solution? Not an easy question to answer. Clearly, effective SAR recovery requires support, and even stewardship, by local stakeholders, and that can only be achieved by open communication among all parties from the beginning. This Pelee Island situation is likely not unique, but is instead indicative of a larger problem whose solution requires integration of local communities in species protection.

Bio:

Dr. Jackie Litzgus obtained her BSc in Wildlife Biology (1993) and her MSc in Ecology (1996) from the University of Guelph, Ontario. She then worked as a research lab coordinator (1996-99) in the Ecophysiological Cryobiology lab at Miami University, Ohio. Litzgus obtained her PhD (2003) in Ecology, Evolution and Organismal Biology from the University of South Carolina, and then began her tenured faculty position at Laurentian University, Ontario in 2004. She has been working on the ecology and conservation of reptiles since 1991. Her research program has been funded by NSERC, CFI, Environment Canada, Parks Canada, National Geographic, WWF, Canadian Wildlife Federation, Ontario Power Generation, and the Ontario Ministry of Natural Resources, among others. This research has resulted in 49 peer-reviewed publications and over 175 presentations at scientific conferences. Dr. Litzgus has trained 25 undergraduate researchers, 16 MSc students, 1 PhD student, and 1 post doc. The basic and applied research outcomes from the Litzgus Lab have been used in policy changes and management plans related to species at risk.

JAMES MACLAURIN, University of Otago, New Zealand

“When in doubt: Biodiversity Measurement and the Cost of Extinction”

Conservation is often driven by a widespread desire to preserve iconic species and ecosystems. At other times it is driven by our understanding of the relationship between biodiversity loss and ecosystem function. This talk discusses a third type of case. Threats such as large scale habitat destruction or climate change will inevitably lead to extinctions but the magnitude and complexity of such threats means that we cannot accurately predict which species will go extinct or exactly what effects those extinctions will have on ecosystem function. This talk asks how should policymakers should assess the cost of such extinctions and how should biologists should prioritize conservation goals in the face of such uncertainty?

Bio:

Dr. James Maclaurin is primarily a philosopher of biology. He has written on innateness, fitness, theoretical morphology, biological diversity, Universal Darwinism and in the application of evolutionary principles in other domains such as philosophy of time and economics. He has also written on philosophical method. He is the co-author (with Kim Sterelny) of *What is Biodiversity?* (2008, University of Chicago Press) and the editor (with Greg Dawes) of *A New Science of Religion* (2012, Routledge). Dr. Maclaurin completed his PhD at Australian National University. He has been Head of the Department of Philosophy at the University of Otago since 2009

GABRIELA MASTROMONACO, Toronto Zoo, Canada

“The role of emerging technologies for the propagation of endangered species”

Biologists have repeatedly warned of the alarming rate of species extinctions. In an effort to mitigate any extreme loss of genetic diversity, preservation of genetic material in the form of somatic cells, gametes and embryos has been identified as a priority endeavor by the International Union for Conservation of Nature. Use of banked biomaterials from threatened or endangered species as resources for reproductive biotechnologies can facilitate efforts to maintain genetic diversity and support species management programs. However, limited knowledge and species-specific nature of the reproductive biology of wildlife species present numerous challenges for the development of successful reproductive techniques. The benefits of traditional and novel methods for species propagation will be discussed along with the difficulties that must be surmounted in order to provide viable strategies for species conservation programs.

Bio:

Dr. Gabriela Mastromonaco obtained her PhD in reproductive biotechnology from the University of Guelph and has spent more than fifteen years working on all aspects of assisted reproduction in both domestic and wildlife species. Currently, she manages the Toronto Zoo's reproductive sciences programs whose primary role is to conduct research on wildlife species for the purposes of increasing fundamental knowledge on the reproductive biology of these species and integrating the information into conservation and animal management programs. She maintains adjunct professor appointments at Laurentian University, Trent University and University of Guelph.

ARNE MOOERS, Simon Fraser University, Canada**“Are some species more equal than others?”**

Species extinction sounds straightforward, and dire. However, if we are entering an age of triage in conservation, then we will need a more nuanced view of extinction. It is a commonplace that humans value some sorts of plants and animals in some places over others (for instance, people often value populations that live near them over species in general). Such views might not be a bad thing, but it should be possible to help guide value judgements using science. This presentation argues that a species' isolation on the Tree of Life might be one attribute that we consider when we value species. This idea is slowly gaining traction in academic circles, but it has not really been tested in the real world.

Bio:

Dr. Arne Mooers is the Professor of Biodiversity at Simon Fraser University and the Chair of the Biodiversity Committee of the Canadian Society for Ecology and Evolution. As a graduate student originally interested in the evolution of sex, he became drawn into the study of how species are related one to another. Of particular interest is the unexpected number of species who have no relatives to speak of and so who perch at the end on lonely branches in the Tree of Life.

TOM NUDDS, University of Guelph, Canada

“On Evidence and Inference: How “Science-based” are Assessments of Extinction Risk?”

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is mandated under the Species at Risk Act (SARA) to assess extinction risk, and its causes, for candidate species of conservation concern based on the best available science. Among several ‘ways of knowing’, science and law share that they are evidence- as opposed to faith-based. Both aspire to rigorously weigh evidence, rather than simply adopt beliefs, in order to infer robust conclusions with respect to, on the one hand, hypotheses about states of nature and their causes and, on the other, say, determinations of guilt. Nevertheless, science implies the use of hypothetico-deductive logic, whereas the workhorse of law is retroductive logic. Although, from a scientific perspective, inference derived from retroductive logic is less reliable than inference derived from hypothetico-deductive logic, societal tolerance for risk restricts inference based on prediction and experimentation in determinations of guilt, whereas inference based on prediction and experimentation is a hallmark of science. Key challenges for assessment and listing can be traced to the use of retroductive logic to infer risk status, rather than hypothetico-deductive logic. In particular, status designations that emanate from COSEWIC with the potential to trigger recovery plans which might conflict with other values can result in costly delays and precautionary paralysis. There is clear need for robust decisions to be made in the face of uncertainty, and to manage in ways that reduce uncertainty. One means to alleviate gridlock caused by scientific uncertainty about the causes and consequences of factors affecting species at risk is stakeholder-engaged, collaborative and structured decision-analysis and adaptive management. This presentation will review the concepts of decision analysis and adaptive management as foundations for science-based conservation, and introduce a modest proposal for stakeholder-engaged, structured decision-making to improve the effectiveness and efficiency of assessment, listing and recovery of at-risk species.

Bio:

Dr. Tom Nudds is a professor emeritus in the Department of Integrative Biology, University of Guelph, where he taught and researched wildlife ecology and management since 1981, following a postdoctoral fellowship with the Canadian Wildlife Service. He completed BSc and MSc degrees at the University of Windsor and a PhD at the University of Western Ontario. He remains actively engaged in graduate research on fisheries and species-at-risk ecology and management. He (co)authored over 175 papers, book chapters and technical reports, and advised over 50 graduate students and postdoctoral fellows. He was Associate Editor at the *Journal of Wildlife Management* and the *Canadian Journal of Forest Research*, and Co-Editor-in-Chief of *Avian Conservation and Ecology*; Visiting Professor at the

Swedish University of Agricultural Sciences and University of California; and remains an associate faculty member at Montana State University and University of Saskatchewan. Particular experience relevant to the Thinking Extinction Symposium includes advisory roles to a number of federal and provincial agencies and organizations, such as the Boreal Caribou Critical Habitat Science Advisory Group, Ontario's Endangered Species Legislative Review Advisory Panel, Provincial Forest Technical Committee and Wolverine Recovery Team Advisory Committee.

STUART PIMM, Duke University, USA

“Extinctions: When, where, how fast, and what can we do to stop them?”

Species are now going extinct one thousand times faster than the geological background rate. Deforestation, particularly tropical deforestation, is the principal cause, though global climate disruption may soon be a major factor. Strategically, we need to know what are the most vulnerable species and where they live. About two-thirds of all plant species are found within a sixth of the land area and most vulnerable amphibians, birds, and mammals live in the same places. Tactically, we need to know where within these regions we should act—and how to act. These conservation priorities are nearly always in landscapes where human actions have fragmented remaining habitats. At SavingSpecies, savingspecies.org, we identify key fragments and raise money for local NGOs to buy land between them to protect and restore habitat connections.

Bio:

Dr. Stuart Pimm is a world leader in the study of present day extinctions and what can be done to prevent them. His research covers the reasons why species become extinct, how fast they do so, the global patterns of habitat loss and species extinction and, importantly, the management consequences of this research. Pimm received his BSc degree from Oxford University in 1971 and his Ph.D. from New Mexico State University in 1974. Pimm is the author of over 250 scientific papers and four books. The Institute of Scientific Information has ranked him as one of the most highly cited environmental scientists for over a decade. Pimm wrote the highly acclaimed assessment of the human impact to the planet: *The World According to Pimm: a Scientist Audits the Earth* (2001). His commitment to the interface between science and policy has led to his testimony to both House and Senate Committees on the re-authorization of the Endangered Species Act. He has worked and taught in Africa for nearly 20 years on elephants, most recently lions—through National Geographic's Big Cats Initiative—but always on topics that relate to the conservation of wildlife and the ecosystems on which they depend. Other research areas include the Everglades of Florida and tropical forests in South

America, especially the Atlantic Coast forest of Brazil and the northern Andes—two of the world's "hotspots" for threatened species.

His international honours include the Tyler Prize for Environmental Achievement (2010), the Dr. A.H. Heineken Prize for Environmental Sciences from the Royal Netherlands Academy of Arts and Sciences (2006), the Society for Conservation Biology's Edward T. LaRoe III Memorial Award (2006), and the Marsh Award for Conservation Biology, from the Marsh Christian Trust (awarded by the Zoological Society of London in 2004). Sigma Xi, The Scientific Research Society, awarded him the William Proctor Prize for Scientific Achievement in 2007.

JUSTINA C. RAY, Wildlife Conservation Society Canada

“Challenging assumptions and definitions of extinction and recovery in endangered species conservation”

Extinction risk and recovery represent the on- and off-ramps, respectively, for species to be recognized and receive attention under species-at-risk legislation. Both concepts, however, pose important challenges with respect to how they are interpreted and the role they each play in implementation of species-directed conservation policies and interventions. Preventing extinction was the chief goal of the first endangered species law, which was forged around the time conservation biology emerged as a ‘crisis discipline’. This remains the primary focus of most similar legislation and is central to assessment and listing criteria. Extinction risk has in turn influenced how success is measured, such that recovery—undefined in most acts—is often framed in terms of avoidance of the ultimate loss of a species. Yet, this narrow perspective tends to ignore alternative population states that are key to understanding biodiversity loss, including species with populations that remain at low levels for long periods of time, those that decline at precipitous rates from high abundance levels yet remain numerous, or those that are only ecologically functional at relatively high densities. This presentation explores challenges and limitations of common assumptions that underlie extinction and recovery as concepts central to combating biodiversity decline.

Bio:

Dr. Justina Ray is a wildlife biologist and Executive Director of Wildlife Conservation Society Canada. She has been appointed to numerous species-at-risk related government advisory panels, including Ontario Wolverine Recovery Team, Ontario Provincial Caribou Technical Committee, the federal Boreal Caribou Science Advisory Group for the Critical Habitat Science Review, Committee on the Status of Species at Risk in Ontario, the Endangered Species Act Review Advisory Panel for

Ontario, and is the co-chair of the Terrestrial Mammal Subcommittee of The Committee on the Status of Endangered Wildlife in Canada (COSEWIC). She has been editor or author of three books and is Adjunct Professor at the University of Toronto (Faculty of Forestry) and Trent University (Biology Department).

DEBORAH BIRD ROSE, University of New South Wales, Australia

“At the Edge of Extinction: Blessings in a Time of Sadness”

Questions emerge from the desire to understand communities that respond to peril affecting endangered species in this era of extinction. Drawing on ethnographic research into multispecies communities, and discussing two case studies currently in process in Hawaii, the focus in this paper is on volunteers and the relationships of care and other forms of gratitude that they are offering in response to the imperilled life-worlds of Laysan Albatrosses (NT) and Hawaiian monk seals (CR). Beaches, headlands, reserves and private property episodically become places of care, ritual, and outpourings of gratitude.

Drawing on the work of Wyschogrod, Levinas, and Lingis, among others, communities are examined that are, in Wyschogrod’s words, ‘spaces in the social web where, in the death age, desire for the Other’s continued existence can be expressed in discourse and action.’ At the heart of it all is the question of witness—as a mode of presence and a form of action, as a response to blessings, as gratitude and prayer. How may we understand and honour the multiple dimensions of present action into the unknown, unknowable, and unimaginable?

Bio:

Dr. Deborah Bird Rose, FASSA, is a professor in the Environmental Humanities Program at UNSW, and is the author of numerous acclaimed books including *Wild Dog Dreaming: Love and Extinction* (UVA Press). She has worked with Aboriginal people in their claims to land and in other decolonising contexts, and in both scholarly and practical arenas her work is focused on the entanglements of human and nonhuman lives and cultures. Her current research focuses on multi-sited, multispecies ethnographies in zones of extinction (see extinctionstudies.org). With Thom van Dooren she co-edits the journal *Environmental Humanities*.

RONALD SANDLER, Northeastern University, USA

“The Ethics of Reviving Long Extinct Species”

There now appears to be a plausible pathway for reviving species that have been extinct for several decades, centuries, or even millennia. In this essay I conduct an ethical analysis of de-extinction. I begin by assessing several possible ethical considerations in favour of pursuing de-extinction: that it is a matter of restorative justice; that it would re-establish lost value; that it would create new value; and that we need it as a conservation last resort. I then assess several possible ethical considerations against pursuing de-extinction: that it is unnatural; that it could cause animal suffering; that it could be ecologically problematic or detrimental to human health; and that it is hubristic or “playing God.” Based on these analyses I conclude that reviving extinct species can be ethically acceptable and that there are reasons in favour of pursuing it. However, there is not a responsibility or obligation to do so. Moreover, it would be ethically problematic to promote de-extinction as a significant conservation strategy.

Bio:

Dr. Ronald Sandler is a professor of philosophy and director of the Ethics Institute at Northeastern University. His research is in the areas of environmental ethics, ethics and emerging technologies, and ethical theory. He is the author *Character and Environment* (Columbia University Press, 2007), *The Ethics of Species* (Cambridge University Press, 2012) and *Nanotechnology: The Social and Ethical Issues* (Woodrow Wilson Center, 2009).

JOSHUA SCHUSTER, Western University, Canada

“The Photography of Last Animals”

Several animal studies scholars including Cary Wolfe and Nicole Shukin have argued that mass animal slaughter represents a new stage in the biopolitical control of life. Much of this scholarship has focused on the factory farm system and indoor industrial meat processing. But industrial killing also took place outdoors, and thus had specific spatial and social coordinates that were not so much located in the assembly line. This essay discusses the mass slaughter of buffalo on the North American plains. In particular, this presentation offers a critical analysis of a particular photograph of a huge stack of buffalo head skulls for an industrial animal rendering plant in Michigan. It argues that this image combines the biopolitics of mass killing with increasing scientific and public

knowledge about animal extinction. This is one of the first photos in history of mass death of any living being at such a scale. The photograph combines the visual trope of the trophy shot (as Matthew Brower describes it) with the spectacle of mass killing and what can be called “the extinction shot.” The image is poised between a capitalism of plenty and total disappearance of the animal, making extinction itself consistent with the industrial process of animal rendering into capital. The killing of the plains buffalo is the first highly documented event of extinction in an age that had started to become self-reflexive about what extinction meant.

Bio:

Dr. Joshua Schuster is an assistant professor of English at Western University. He has a book forthcoming *The Ecology of Modernism: American Environments and the Avant-Garde*, which discusses how writers from Gertrude Stein to Rachel Carson to early punk music addressed environmental change. He is currently working on a new book *What Is Extinction? A Cultural and Natural History of Last Animals*.

MICK SMITH, Queen’s University, Canada

“From Haeckel to Nancy: Extinction in the Context of Ecological Community”

Extinction might seem an inevitable consequence of the struggle for existence. But if we take Darwin and Haeckel (who first coined the term ‘Oecologie’) seriously, then nature is not actually reducible to a Hobbesian *bellum omnium contra omnes*. Rather ecology is something far richer and far stranger, something constituted by “all the ‘conditions of existence’”, organic and inorganic, whether friendly or inimical, taken together. Ecology is a matter of myriad existence relationships across and between astoundingly different beings and species in incredibly varied environments. Indeed, ecology concerns the “*entire*” relations of “the organism to *all other* organisms with which it comes into *contact*”. And if we resist the temptation to think this ‘definition’ reductively, as something that just applies to the ‘competitive’ and ‘economic’ biological relations of other, non-human, beings and species, then its philosophical implications are truly astonishing.

Richards’ translation of Haeckel’s definition of ecology as the “entire science of the relationships of the organism to its surrounding external world, (*umgebenden Aussenwelt*) wherein we understand all ‘existence-relationships’ (*Existenz-Bedingungen*) in the wider sense”, helps conserve something of this fundamental philosophical richness and strangeness. Ecology is not (just) about the struggle for survival, it is all about *existence relations* in this much “wider sense”, that is, in terms of the ways in which living beings together co-constitute ecological

communities through their *being-with* (*Mitsein*) all others that ‘touch’ them in various ways. Ecology is, we might more properly say, a matter of our *existential inter-dependencies* and as such cannot be separated from questions concerning our worldly being and becoming and passing. This chapter will develop an understanding of ecological community constituted through such existential relations through a critical reading of Jean-Luc Nancy’s notions of a community (e.g. Nancy, 1991) and the role of ‘touch’ in his philosophy (see Derrida, 2005). The key questions to be addressed are how such an understanding might relate to Haeckel’s claims and to the loss of an entire species of beings that leaves no progeny and how the absence of these specific existential relations can touch us all.

Bio:

Dr. Mick Smith is an associate professor in the Department of Philosophy and the Department of Environmental Studies at Queen’s University. Dr. Smith was originally trained as an ecologist, inspired by the upsurge in environmental consciousness from the 1970’s onwards. He has a long-standing interest in the experiential, social, and political reasons why people do (or don’t) value differing aspects of ecological communities, with a particular interest in environmental ethics. He is the author of, among many other works, *Against Ecological Sovereignty: Ethics, Politics, and Saving the Natural World*. Minneapolis: University of Minnesota Press (2011), *The Ethics of Tourism Development* (with R. Duffy) London and New York: Routledge (2003), and *An Ethics of Place: Radical Ecology, Postmodernity and Social Theory*. New York: State University of New York Press (2001).

H. PETER STEEVES, DePaul University, USA

“This Animal, Again”

This multi-media presentation will include live dance, music, projected images, and a lecture. The presentation will turn to several examples of animals, extinction, and repetition—animals acting in such a way that they seem not to be thinking—and, by juxtaposing this with human behaviour and phenomenology, argue that being-toward-extinction is the human animal’s main way of being in the world. Turning to the animal-hybrid as monster, the animal as test subject, and the animal as aesthetic subject, the presentation will follow the trace of animal echoes and repetition in our interactions with animals, using this as a means to unpack the idea of what it means to face one’s death—with Heidegger, Bataille, and Freud as the main touchstones throughout. Finally, the question of animal extinction in art—especially the death of the animal in the medium of dance (focusing on

Indonesian and classical Indian dance)—will bring us back, again, to face what we have become and what we have done to each other. Ultimately, the presentation will conclude that the question of salvation is, at best, sketchy.

Bio:

Dr. Peter Steeves was educated at Manchester University and Indiana University. He has also taught at Universidad del Zulia, Venezuela. His main areas of teaching and research include phenomenology (especially the work of Edmund Husserl), ethics, social-political philosophy, and philosophy of science. His books include *The Things Themselves: Phenomenology and the Return to the Everyday*, (SUNY Press, 2006), *Founding Community: A Phenomenological-Ethical Inquiry* (Kluwer, 1998) and *Animal Others: On Ethics, Ontology, and Animal Life* (SUNY, 1999).

BRIDGET J. M. STUTCHBURY, York University, Canada

“Triage, Intensive Care, and Emergency Rooms: How Useful are Medical Metaphors for Conservation Decisions?”

There is no doubt that the world faces a biodiversity crisis. The number of species threatened with extinction is increasing rapidly and most of these threatened species are conservation-reliant. Long-term and intensive management actions, such as habitat enhancement, controlling predators and invasive species, or captive breeding & translocations are necessary for these species to persist. The imminent ‘death’ of many species combined with the limited resources available for conservation actions has led the field toward medical metaphors, such as ‘conservation triage’, as a framework for making decisions. Triage is the process used to determine the priority of a patients’ treatment based on the severity of their condition. In a mass casualty situation, medical care may be withheld from patients who have little chance of survival. In other words, some conservation groups and agencies are prepared to allow the most conservation-reliant species to go extinct so that scarce resources can be diverted to other species. Modern conservation is not a sudden, chaotic and unexpected disaster scene and conservation practitioners should not be so quick to take a species off its life support.

Bio:

Dr. Bridget Stutchbury is a professor in the Department of Biology at York University, Toronto. She completed her MSc at Queen’s University and her Ph.D. at Yale, and was a postdoctoral fellow at the Smithsonian Institution. Since the 1980s,

she has studied migratory songbirds to understand their behaviour, ecology and conservation. Her latest research uses ‘geolocators’ to track the amazing migratory journeys of wood thrushes and purple martins to better understand why these species are declining. She serves on the board of Wildlife Preservation Canada and is the author of *Silence of the Songbirds* (2007) and *The Bird Detective* (2010).

TED TOADVINE, University of Oregon, USA

“Biodiacritics and the Memory of Life”

Since its introduction twenty-five years ago, the concept of biodiversity has been adopted as a central value of conservation biology and a plank of international environmental policy—despite the well-known contestations of the concept’s meaning, the de jure problems with its operationalization, and the lack of any scientific evidence correlating it with ecosystem function or other valued features of nature. For these reasons, Bryan Norton’s efforts to redefine the concept as simply equivalent to what is valued in nature, as well as Sahotra Sarkar’s elaborate techniques for developing functional proxies in the economic and policy context, must be rejected. Yet the root of the problem with biodiversity as it has been thus elaborated lies in its myopic focus on maximizing present difference to the detriment of historical configurations and evolutionary memory. As an alternative to biodiversity, this presentation proposes a biodiacritics modelled initially on the parallel between the present state of life’s diversity and the synchronic differences constituting a language. This allows an understanding of synchronic configurations as the figured memory of a diachronic evolution. The phenomenological basis for the value of biodiacritics, it is argued, emerges not from difference as such but rather from the immemorial past that it harbours.

Bio:

Dr. Ted Toadvine is the head of the Department of Philosophy and an associate professor of philosophy and environmental studies at the University of Oregon. He is author of *Merleau-Ponty’s Philosophy of Nature* (Northwestern, 2009) and editor or translator of eight books, including *The Merleau-Ponty Reader* (Northwestern, 2007), *Nature’s Edge: Boundary Explorations in Ecological Theory and Practice* (SUNY, 2007), and *Eco-Phenomenology: Back to the Earth Itself* (SUNY, 2003). Dr. Toadvine directs Ohio University Press’s Series in Continental Thought, is Editor-in-Chief of the journal *Environmental Philosophy*, and is co-editor of *Chiasmi International: Trilingual Studies Concerning Merleau-Ponty’s Thought*. He is completing a manuscript titled *Nature After Naturalism: A Phenomenology of the Immemorial*.

Notes



A SYMPOSIUM ON THE
Philosophy and Science of
ENDANGERED SPECIES

NOVEMBER 14 - 16, 2013

Event begins at 9:00 a.m., Vale Living with Lakes Centre

*Presentations by leading scholars, researchers, and scientists
from Canada, the US, Australia, and New Zealand.*

FEATURING

Evening with Margaret Atwood

NOVEMBER 14

8:00 p.m.

(doors open 7:30 p.m.)

Vale Cavern, Science North

*Evening with Stuart Pimm,
Doris Duke Chair of Conservation
Ecology, Duke University*

NOVEMBER 15

8:00 p.m.

(doors open 7:30 p.m.)

St. Andrew's Place

*Roundtable on extinction
(with Margaret Atwood,
Graeme Gibson, and others)*

NOVEMBER 15

9:00 a.m.

**West Residence
Laurentian University
W-132**

For information, email: thinkingextinction@gmail.com

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