The Entomological Society of British Columbia, the Royal Saskatchewan Museum and the British Columbia Ministry of Environment jointly invite you to a symposium on

Pollination: 🐝 Science and Stewardship

Monday, March 20th, 2017

University of British Columbia, Okanagan Campus
3333 University Way, Kelowna, BC
UNC Ballroom, University Centre 2nd Floor

A symposium for everyone interested in pollinators!

<table>
<thead>
<tr>
<th>Time</th>
<th>8:30am registration &amp; coffee; Symposium 9:00am – 3:30pm Lunch and poster mixer 12noon – 12:45pm</th>
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<tbody>
<tr>
<td>Cost</td>
<td>$20 pre-registration by March 17th; $30 at the door Register and pay online at <a href="http://entsocbc.ca/pollination-symposium">http://entsocbc.ca/pollination-symposium</a> Morning/Afternoon Coffee Breaks and Lunch Included (vegetarian, vegan and other dietary options available)</td>
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<tr>
<td>Getting to Kelowna</td>
<td>Kelowna is approximately a 4-hour drive from Vancouver, and 1-hr from Vernon and Penticton. The Kelowna International Airport is a 6 minute drive from venue - shuttle, taxi and public transit options available.</td>
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<tr>
<td>Accommodation</td>
<td>Group rate of $110/night plus taxes available at Ramada Inn &amp; Suites, 2170 Harvey Ave., Kelowna Phone: 250-860-9711. Refer to group code CG3456 “Pollination Symposium”</td>
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<tr>
<td>Dinner March 19th</td>
<td>Informal dinner (at your own expense) the evening of March 19th, 6:30pm at the Gulfstream Restaurant on the same site as the Four Points Sheraton Hotel – send an email to <a href="mailto:Jennifer.Heron@gov.bc.ca">Jennifer.Heron@gov.bc.ca</a> or <a href="mailto:caradwsn@gmail.com">caradwsn@gmail.com</a> and we will ensure a space is reserved for you.</td>
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<tr>
<td>Questions?</td>
<td>Contact Cara <a href="mailto:caradwsn@gmail.com">caradwsn@gmail.com</a> or Jenny <a href="mailto:Jennifer.Heron@gov.bc.ca">Jennifer.Heron@gov.bc.ca</a></td>
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Support provided by

# Schedule

## Pollination: Science and Stewardship

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation / subject</th>
<th>Speaker</th>
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<tr>
<td>8:30 – 9am</td>
<td>Registration and coffee</td>
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| 9am – 9:10am | Welcome and introduction to the symposium                              | Cory Sheffield  
Royal Saskatchewan Museum, Regina, SK                           |
| 9:10 – 9:45am | COSEWIC and the General Status of Wildlife In Canada                                | David Fraser  
Species Conservation Science Unit  
BC Ministry of Environment, Victoria, BC                            |
| 9:45 - 10:15am | Butterfly conservation in Canada: threats and challenges                     | Jennifer Heron  
BC Ministry of Environment, Vancouver, BC                        |
| 10:15-10:45am | Coffee break                                                                        |                                                                         |
| 10:45 – 11:30am | Pesticides and pollinators: evidence, controversy and policy                     | Nigel Raine  
University of Guelph, Guelph, ON                                      |
| 11:30 – 12 | Integrated Wild Pollinator Management: Putting wild bees to work for crop and wild flower pollination | Cory Sheffield  
Royal Saskatchewan Museum, Regina, SK                           |
| 12 - 1pm | Lunch provided                                                                      |                                                                         |
| 1 – 1:15pm | Border Free Bees: Artists Linking Science and Communities for Pollinator Conservation | Nancy Holmes  
University of British Columbia – Okanagan, Kelowna, BC               |
| 1:15 – 2 pm | Honeybees and honeybee health                                                        | Rob Currie  
Department of Entomology  
University of Manitoba, Winnipeg, MB                                  |
| 2 – 2:30 pm | From Personal to Planetary: Making an Impact on Pollination at Different Scales    | Hien Ngo  
Head of the Technical Support Unit for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment, Bonn, Germany |
| 2:30 – 2:45pm | Bumble Bee biology, conservation and stewardship                                   | Cory Sheffield  
Royal Saskatchewan Museum, Regina, SK                           |
| 2:45 – 3 pm | The Buzz on Bees in the Yukon                                                       | Syd Cannings  
Canadian Wildlife Service, Whitehorse, YT                               |
| 3 – 3:15pm | Status of Western Bumble Bee with Implications for its Conservation            | Jennifer Heron  
BC Ministry of Environment                                              |
| 3:15pm Coffee Break and question period for those who would like to chat more |                                                                         |
**Syd Cannings**  
Canadian Wildlife Service, Environment and Climate Change Canada, Whitehorse, YT

**Title:** The Buzz on Yukon Bees

**Abstract:** Amid the growing concern for the fate of bees, I have begun several studies on bees in northern British Columbia and the Yukon, collaborating with Paul Williams at the Natural History Museum (UK) and Cory Sheffield at the Royal Saskatchewan Museum. Over the past six years, these studies have revolved around focused collecting with nets and traps in the various ecosystems of the north.

In general, bumblebee species that have declined dramatically in the south (e.g. the Western Bumblebee and Yellow-banded Bumblebee) are still common in the southern Yukon. However, the Gypsy Cuckoo Bumblebee (Endangered in Canada) seems to be much sparser than it was in the 1980s. We have found this species in two localities, in 2014 and in 2016; these are the only detections of this species in North America in the past five years!

Mitochondrial DNA analysis of some of the bumblebees we’ve collected has revealed a new species of subarctic bumblebee in the subgenus *Alpinobombus*, now named *Bombus kluanensis*. Even though we now have a better idea of the status of most northern bees, we do not have good data on ongoing trends. To tackle that issue, we are planning to institute a repeatable monitoring plan for bumblebees in the Yukon and northern BC, modeled after the North American Breeding Bird Survey.

**Bio:** Syd Cannings is a Species at Risk Biologist for the Canadian Wildlife Service in Whitehorse, Yukon, where he works on a variety of issues dealing with assessment, listing, and recovery of species at risk… everything from bumble bees to bears. Since 2012, he has been a representative for the Canadian Wildlife Service on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). He completed an MSc in zoology at the University of British Columbia in 1978. Although his graduate research focused on the ecology, physiology, and biogeography of aquatic insects, he has a broad biology background that spans much of the natural world. He is the co-author of a number of books, including *British Columbia: A Natural History: The Birds of the Okanagan Valley*, *British Columbia: Geology of British Columbia*, and *The New BC Roadside Naturalist*. In the distant past, he was the curator of the insect collection at the University of British Columbia, but then moved to the B.C. Conservation Data Centre from 1991-2002. There he became immersed in the science of assessing the status of species at risk, and he has worked in that field ever since.

**Rob Currie**  
University of Manitoba, Winnipeg, MB

**Title:** Honeybees and honeybee health

**Abstract:** Honey bees have been experiencing high levels of colony loss on a regular basis over the past decade. While speculation originally centered around the idea that there was a single mysterious cause, we now know that multiple stressors are interacting, sometimes in unpredictable ways to cause problems for this critically important crop pollinator. Exciting progress is being made on high and low tech solutions to help mitigate these losses and some of these research innovations will be highlighted.

**Bio:** Dr. Currie obtained a B.Sc. in Zoology (1979), and an M.Sc.(1982) and Ph.D.(1986) in Entomology from the University of Manitoba. Following his Ph.D. he worked on establishing pollination management systems for the production of hybrid canola. In 1989, he moved to Simon Fraser University as a Post-Doctoral Fellow,
where he worked on basic and applied research on honey bee pheromones in Mark Winston’s lab. In 1991, he returned to the Dept. of Entomology at the University of Manitoba, where he has taught courses in entomology, beekeeping, pollination biology, insect pest management and general agriculture and has received numerous awards for his teaching. He is currently Professor and Head of the Department of Entomology, in the Faculty of Agricultural and Food Sciences at the University of Manitoba, Canada. He has served in a number of leadership roles as President of the Entomological Society of Manitoba (two terms), President of the Canadian Association of Professional Apiculturists and Chair of the Canadian Bee Research Fund and served on numerous committees within these organizations. He has been a member of the Entomological Society of Canada since about 1980. He has served on many national committees to develop standards for industry, including the Pest Management Regulatory Agency’s for development of pesticide endpoints for pollinators and the Canadian Food Inspection Agency for bee biosecurity. He was the leader of the Managed Pollinator working group for the NSERC-Canpolin network and a participant in two multidisciplinary Genome Canada Bee-IPM projects to develop proteomic and nuclear markers for disease resistance. His research group focuses primarily on understanding the biology, physiology and behaviour of managed and native pollinators and the parasites, pathogens and other stressors that affect their survival and in developing ways to effectively manage these problems.

David Fraser
British Columbia Ministry of Environment, Victoria, BC

Title: COSEWIC and the General Status of Wildlife In Canada

Abstract: The status of species at risk in Canada is assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and to date, there have been 976 wildlife species assessed by COSEWIC. The Program on the General Status of Species in Canada provides overview of the status of biodiversity in Canada every five years. This talk will provide an overview of both processes, and the importance of both to the conservation and stewardship of Canada’s species at risk.

Bio: Dave Fraser is the Species At Risk Conservation Science Unit Head with the BC Ministry of Environment. He is the BC representative on the General Status working group and the Committee for the Status of Endangered Wildlife in Canada (COSEWIC).

Jennifer Heron
British Columbia Ministry of Environment, Victoria, BC

Title: Butterfly conservation in Canada: threats and challenges

Abstract: Butterflies are a well-known and well-studied group of pollinators. Approximately 275 butterfly species are known to occur in Canada, although only 21 have been assessed nationally by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). There are numerous challenges to assessing the lesser known and poorly documented butterfly species; particularly when the host plant(s) are unknown, the threats are unclear and the species’ habitat and associated plant communities are undescribed. Museum collections are important sources for historical information and at one time, butterfly specimens were more widely collected and deposited at museums. However, historical collection data are often biased, not databased or incorrectly identified. In the past few decades, butterfly surveys have moved away from specimen collection and museum deposition, and instead focus on visual surveys or photographic evidence; a method that is good for conserving populations but has other drawbacks. Using examples from the south Okanagan, this talk will provide an overview of the challenges to assessing butterflies, how candidate species
are recommended for assessment, challenges to assessing the lesser known species, and ways conservation practitioners can include butterflies in land management decisions and planning.

**Bio:** Jennifer Heron has been working on invertebrate conservation topics beginning with her MSc in 1998. She is the provincial Invertebrate Conservation Specialist with the B.C. Ministry of Environment. She works with other invertebrate specialists, conservation and stewardship groups to develop recovery-planning approaches and conservation status ranks to invertebrate groups; and achieve common public outreach goals. Jennifer is also co-chair of the Arthropods Specialist Subcommittee for the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

**Nancy Holmes**

**Title:** Border Free Bees: Artists Linking Science and Communities for Pollinator Conservation

**Abstract:** Border Free Bees (BFB) is a SSHRC-funded provincial initiative where artists lead community engagement projects to enhance awareness and inspire action around pollinator conservation. Along with several projects on the lower mainland, BFB has two major projects underway in Kelowna: The Public Art Pollinator Pasture and the Kelowna Nectar Trail.

**Bio:** Nancy Holmes writes both short fiction and poetry. She has published five collections of poetry, Valancy and the New World (Kalamalka Press, 1988), Down to the Golden Chersonese: Victorian Lady Travellers (Sono Nis, 1991), The Adultery Poems (Ronsdale, 2002) Mandorla (Ronsdale, 2005) and The Flicker Tree: Okanagan Poems (Ronsdale, 2012). Her poetry and fiction have been published in Arc, Room of One’s Own, Lichen, The Malahat Review, Matrix, Prairie Fire, Grain, The Harpweaver, and The Antigonish Review. She is the editor of Open Wide a Wilderness: Canadian Nature Poems (Wilfrid Laurier University Press, 2009). She teaches Creative Writing at the University of British Columbia Okanagan and has been both the Head of the Department of Creative Studies (2008-2011) and Associate Dean of Research and Graduate Studies in the Faculty of Creative and Critical Studies (2012-2015). She won the 2015 Robert Kroetsch National Teaching Award for her innovative project, Dig Your Neighbourhood. She has worked as an editor, writing instructor, and mother. Beside writing and teaching, she organizes eco art projects in the Okanagan valley, especially with her collaborator Denise Kenney through The Eco Art Incubator. Her most recent SSHRC-funded research concerns public art and the plight of native pollinators.

**Hien Ngo**

Technical Support Unit for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment, Bonn, Germany

**Title:** From Personal to Planetary: Making an Impact on Pollination at Different Scale

**Abstract:** Research and initiatives that focus on pollination have impacts on different scales. With the International Pollinator Initiative (UN-FAO), local researchers worked with small-scale farmers using a common method to examine pollination deficits. This was repeated in multiple countries in multiple regions all over the world which resulted in a scaled-up key finding regarding the role of wild pollinators in agroecosystems. Recently, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) completed their Summary for Policymakers and assessment report on Pollinators, Pollination and Food Production. These key findings, which included policy options, were adopted (Decision XIII/15) at the Convention on Biological Diversity Thirteenth Conference of the Parties (COP-13). Furthermore, these key
findings have already had impact on many national pollinator strategies and was the basis of a new multinational initiative, the *Coalition of the Willing on Pollinators*.

**Bio:** Hien T. Ngo is the Head of the Technical Support Unit for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment; and was previously the technical support person for the IPBES assessment on *Pollinators, Pollination and Food Production*. Her experience in entomology started with honey bee research (Simon Fraser University, Burnaby, BC) and continued on with graduate school investigating tropical bee diversity in agroecosystems (York University, Toronto, ON). She has worked on pollination-related research in North America, Latin America, Asia, and Europe.

**Nigel Raine**
Rebanks Family Chair in Pollinator Conservation
University of Guelph, Guelph, Ontario
Email: nraine@uoguelph.ca
Web: www.1in3mouthfuls.com
Twitter: @NigelERaine

**Title:** Pesticides and pollinators: evidence, controversy and policy

**Abstract:** Recent concern over global pollinator declines has led to considerable research on pesticide impacts. Here we report on a series of recent studies examining to what extent field-realistic insecticide exposure can lead to significant sublethal impacts on individual bumblebee behaviour (e.g. reduced queen colony founding success and impaired worker learning and foraging), colony function (e.g. effects on growth rates and forager recruitment), and the critical ecosystem services they provide to crops and wild plants. Taken together these effects could have widespread implications for the stability of wild pollinator populations, sustainable production of pollinator limited crops, and maintaining wild plant biodiversity. Considering these studies reporting insecticide impacts on non-Apis bees into the wider context, particularly alongside divergent results from honey bee field trials, has important potential ramifications for pesticide use policies.

**Bio:** Nigel is a global leader in the fields of animal behaviour, pollination ecology and pollinator conservation. He holds the Rebanks Family Chair in Pollinator Conservation at the University of Guelph, a position endowed by The W. Garfield Weston Foundation. Nigel’s work combines internationally excellent research, significant engagement with policy-makers and other conservation-relevant stakeholder groups, and teaching the world’s first pollinator conservation course.

Nigel has been lucky enough to spend two decades investigating bees and their intimate relationships with flowers on three continents. Before moving to Canada in 2014, he studied at the University of Oxford, worked as a postdoctoral researcher at the University of Sheffield and Queen Mary University of London, and held his first faculty position at Royal Holloway University of London – where he is also a visiting Professor.

Nigel has published more than 60 peer-reviewed articles, attracting almost 3500 citations and achieved an H-index of 31. He is an elected fellow of both the Royal Entomological Society (FRES) and the Linnean Society of London (FLS). In 2014, Nigel was recognized as a World Economic Forum Young Scientist.
Title: Integrated Wild Pollinator Management: Putting wild bees to work for crop and wild flower pollination

Abstract: Bees, unlike many other groups of pollinating insects, are Central Place Foragers, foraging for floral resources in areas surrounding their nest, the radius being approximately equal to the maximum flight distance of the individual species (larger bees typically flying further). For a nesting bee, being restricted to this area has implications for both pollination and conservation, as this landscape must provide ample nectar and pollen, and for some species, nesting materials; areas lacking all the requirements will be abandoned and over the long term will lose bee populations. Canada has over 850 wild bee species, and a large proportion of these are generalist pollen users and visit (thus pollinate) many of our crops. Many of these same species also visit non-crop plants, so provide valuable ecological services to the natural and semi-natural communities surrounding crop lands. Central Place Foraging, body size and flight range, and floral resource availability all have to be considered when considering the use of wild bees for crop pollination, and in maintaining populations for pollination in non-crop habitats; these factors, along with life history characteristics of bees will be discussed in the context of pollination and management of wild bees.

Bio: Cory S. Sheffield has been studying bees and pollination since 1993, starting with his undergraduate thesis project at Acadia University in Nova Scotia. His Master’s research studied insect-plant interactions at Acadia followed by a PhD at the University of Guelph, Ontario. These studies focused on the bee fauna of Nova Scotia, including their diversity and contributions to crop pollination. Cory then worked on post-doctoral studies of bee taxonomy and DNA barcoding, followed by a research associate position in bee taxonomy with the Canadian Pollination Initiative (CANPOLIN) at York University, Ontario. Since 2012, Cory has been a research scientist and curator of invertebrate zoology at the Royal Saskatchewan Museum. His research continues to focus on bees: he has published on the taxonomy of Canadian/North American bees, the utility of DNA barcoding for bees, bee physiology, pollination contributions and diversity of the Canadian bee fauna.
Parking fee is enforced on campus. Please pay at the dispenser. Lot F is the closest to the UNC building, but it’s available only after 1 pm except for the meter stalls. Other parking lots include H, G, or M from the morning to the end of the event that day. $8 per day, credit cards accepted. See campus map below or please click here.