For Immediate Release

Special Issue of *Botany* Showcases CANPOLIN Research

Summary: The journal Botany has released a special issue highlighting the breadth of pollination research in Canada which features the work of several NSERC-CANPOLIN scientists.

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A special issue of the journal *Botany* is set to showcase to the world the multipronged-approach that Canadian researchers are bringing to the study of pollination biology. The journal's July issue features seven articles from NSERC-CANPOLIN researchers, examining topics that range from the effect of flower structure on pollinator activity to the impacts of recent climate change on pollinator ranges. The issue also includes two review papers, one exploring pollen limitation and pollinator diversity, and the other assessing the value of network biology studies in pollinator conservation.

Studies in pollination biology take place at multiple scales, from the species level to the community and landscape (stock photo)

"Pollination biology is a somewhat unique field of study, because there are so many different ways to approach the interactions between plants and pollinators," says Jana Vamosi of the University of Calgary and guest editor of the special issue. "It can be studied at the level of a single plant or pollinator species, or at a community level, where the entire complex web of plant and pollinator interactions are considered. At the landscape level, pollination takes place against a backdrop of wide-ranging and sometimes extreme environments, which adds further to the complexity of interactions."

The special issue presents findings from studies conducted in a variety of ecosystems, including agricultural, forest and alpine. Many of these studies have revealed important information about the pollination biology and/or evolution of several Canadian plant species, while a study that took place in Quebec is one of the first to examine the impact of agricultural monocultures on pollinator nutrition and reproduction. At the macro-scale, a country-wide study of 81 butterfly species looks at how the ranges of these relatively mobile pollinators are keeping pace with latitudinal shifts in climatic gradients.

Nine CANPOLIN ecologists collaborated on a review examining pollinator biodiversity and its role in pollen limitation, a scenario in which a plant's reproduction is limited because not enough pollen is transferred. Although traditional wisdom predicts that there will be less pollen limitation when pollinator diversity is high, the group found that this link is actually somewhat weak. The authors encourage other researchers investigating the phenomenon of pollen limitation to measure pollinator diversity more explicitly, so that it is easier to identify what makes a plant-pollinator relationship stable.

A second review makes the case that pollinator network analyses are an important tool for understanding pollination systems at the community level. Rather than traditional measurements that focus simply on what

species are present, pollinator networks provide information on what each flower visitor is actually doing. "Network analyses are considered by many to be the next frontier in pollinator biology" says Elizabeth Elle of Simon Fraser, senior author of the review and co-leader of CANPOLIN's Ecosystems Working Group with Vamosi. "They provide a functional understanding of pollination systems as opposed to just an inventory. As such, they are likely to become an essential part of developing conservation strategies for pollinators."

The idea for the special issue took hold during a pollination symposium at last year's Canadian Society for Ecology and Evolution annual meeting in Banff, AB, an event that was co-organized by Elle and fellow CANPOLIN member Risa Sargent of University of Ottawa. The symposium brought together researchers from four different working groups in CANPOLIN (Taxonomy, Plant reproduction, Ecology and Prediction) to explore pollinator biodiversity and pollination services in Canada. "The symposium was a great success and generated quite a lot of interest. With the help of NRC Research Press, we have been able to capture many of the ideas presented and make them available to the wider research community through this special issue," says Vamosi.

For a full overview of the July 2012 issue and its contents, see the list of articles as well as the introductory article by Vamosi et al: "*Pollination biology research in Canada: perspectives on a mutualism at different scales"* (Botany, 90(7): v-vi, doi: 10.1139/b2012-051). The full issue is now available online.

List of special issue articles (by title) in July 2012 issue of Botany:

Ecosystem services of pollinator diversity: a review of the relationship with pollen limitation of plant reproduction. (Y.C. Davila, E. Elle, J.C. Vamosi, L. Hermanutz, J.T. Kerr, C.J. Lortie, A.R. Westwood, T.S. Woodcock and A.C. Worley) 90(7): 535-543 doi:10.1139/b2012-017

Pollen diversity collected by honey bees in the vicinity of *Vaccinium* spp. crops and its importance for colony development. (M. Girard, M. Chagnon and V. Fournier) 90(7): 545-555 doi: 10.1139/b2012-049

Pollen-ovule ratios in seven species of *Vaccinium* (Ericaceae) and stamen structure in *Vaccinium myrtilloides* and *Vaccinium vitis-idaea*. (D.T. Stephens, D.E. Levesque and A.R. Davis) 90(7): 599-614 doi: 0.1139/b2012-061

A phylogenetic analysis of trait convergence in the spring flora. (L.E. Hensel and R.D. Sargent) 90(7): 557-564 doi: 10.1139/b2012-029

Sex-ratio variation and the function of staminodes in *Aralia nudicaulis.* (E.I.E. Nicholls and M.E. Dorken) 90(7): 575-585 doi: 10.1139/b2012-016

Sex-ratio variation versus interplant distances in the regulation of pollen deposition and seed production in dioecious *Cirsium arvense* (Asteraceae). (W.E. Drunen and M.E. Dorken) 90(7): 565-573 doi: 10.1139/b2012-014

Systemic range shift lags among a pollinator species assemblage following rapid climate change. F.E. Bedford, R.J. Whittaker and J.T. Kerr) 90(7): 587-597 doi:10.1139/b2012-052

The use of pollination networks in conservation. (E. Elle, S.L. Elwell and G.A. Gielens) 90(7): 525-534 doi: 10.1139/b11-111

Reciprocal gender effects of a keystone alpine plant species on other plants, pollinators, and arthropods. (C.J. Lortie and A.M. Reid) Botany, 90(4): 273–282.

Pollination biology research in Canada: perspectives on a mutualism at different scales. (Vamosi, J.C., R.D. Sargent and E.Elle) Botany, 90(7): v-vi, 10.1139/b2012-051

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Links: ***Botany July 2012 (Volume 90, Number 7)***
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