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NSERC-CANPOLIN
CANADIAN POLLINATION INITIATIVE

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HAPPY HOLIDAYS FROM NSERC-CANPOLIN !

As 2009 draws to a close, we can reflect back on a very productive first year at NSERC-CANPOLIN. In total, over 40 researchers, 80 HQP and several external partners conducted CANPOLIN research at field sites and in labs across the country . Significant progress was made on many fronts (see pg 3) - all the more impressive considering the late start up and delays in fund transfers.

Thanks to the support of our partners and researchers' efforts to find matching funds, CANPOLIN was able to leverage just over a 1:1 ratio on its Network funding this year. With much work still to do over the next four years, leveraging funds will continue to be an important focus for the Network.

Planning and budgeting are already underway for Year 2. Be sure to check out our website (www.uoguelph.ca/canpolin) for regular updates and news, and links to presentations and other useful information.

All the Best for 2009!

The CANPOLIN Team

Course Announcements

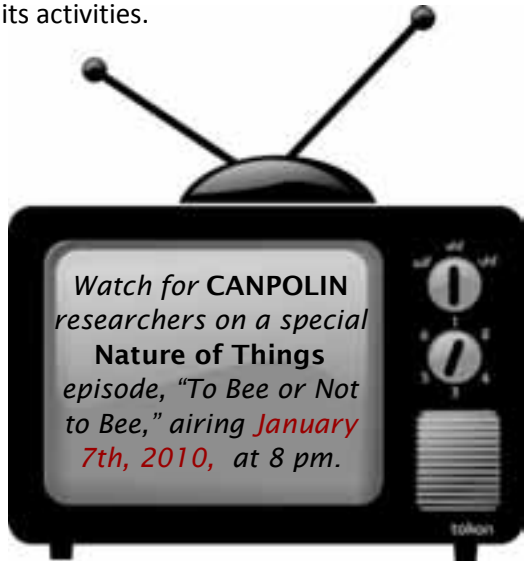
The **CANPOLIN** field course in **Pollination Biology** has been tentatively scheduled for April 17 to May 1st at the Missouri Botanical Gardens. Details to follow as they become available.

The annual **International Pollination Course** will also be held in Rio Grande do Sul, Brazil, in late November, 2010. A limited number of spaces will be reserved for Canadian students.

For more information, contact canpolin@uoguelph.ca

NSERC Announces Strategic Networks

NSERC formally announced CANPOLIN and eight other new Strategic Networks on September 24, 2009, at McMaster University. The announcement was made by Gary Goodyear, Minister Science & Technology (2nd from left), and NSERC President Suzanne Fortier (second from right). The official announcement now clears the way for widespread promotion of CANPOLIN and its activities.



News & Updates

- It is with great regret that we report that **Rob Roughley**, member of Working Group 1 at the University of Manitoba, passed away unexpectedly on November 9, 2009. Rob has been a major figure in the taxonomical community in Canada and he will be sorely missed. Donations to support the J.B. Wallis Museum of Entomology, the insect collection to which Rob devoted much of his life, may be made in Rob's name. Visit http://umanitoba.ca/admin/dev_adv/donate_now/index.html or contact the Department of Entomology for a donation package.
- **John Purdy**, an Environmental Scientist formerly with Syngenta, has joined CANPOLIN as a CropLife consultant and will also serve on the Science Advisory Committee. John will be working with CANPOLIN on a number of different projects related to managed pollinator health and will act as an additional liaison between the Network and industry partners.
- **Peter Kevan** recently retired from the University of Guelph but will continue as Professor Emeritus and Scientific Director of CANPOLIN. Peter was also recently inducted into the Royal Society of Canada. Congratulations, Peter!
- Our **Graduate Student Listserv** (CPI-student), for CANPOLIN students and others interested in being affiliated with the Network, is now up and running . To join, send an email to amcgrawa@uoguelph.ca.

2010 Dates to Remember

Jan 15	Annual Network Research Progress Report delivered to Science Advisory Committee and Board of Directors
Feb 8-9	Science Advisory Committee* Face-to-Face Meeting, U of Guelph
Feb 11	Board of Directors Face-to-Face Meeting, U of G; Year 2 Budget Approval
Feb 15-24	Pollinator Identification Course, Ottawa
March	Transfer of Year 2 Funds
April 17 - May 1	CANPOLIN Pollination Biology Field Course, Missouri (dates TBC)

* Note that due to budget limitations, the Network will not be able to host a wider meeting of researchers in 2010. In keeping with the original work plan laid out in the Proposal, only the SAC will meet face to face to discuss and approve research plans for the Year 2 field season, along with representative Working Group leaders.

Cherryvale Organic Farm (left), a new partner with NSERC-CANPOLIN (see right)

Peter Kevan inspecting honeybee hives at Cherryvale

New Partners

NSERC-CANPOLIN is continuing to build partnerships with organizations and groups interested in pollination and sustainability issues across the country . Recently added partners include:

Cherryvale Organic Farm, located in Prince Edward County, ON (see photo, left) is a working demonstration 'farm of the future', with a focus on local, organic, biodiverse, and self-energizing agricultural production. The farm offers unique research and educational opportunities for pollination biologists and others interested in sustainable agriculture.

Pollinator Gardeners of Canada is a newly-formed organization which will educate Canadian gardeners about creating pollinator-friendly habitat, launch a national pollinator garden certification program, and advocate for pollinator-friendly by-laws. CANPOLIN will assist with designing the citizen-science component of the program.

Through consultant John Purdy, **CropLife Canada** will support and work with CANPOLIN on a number of projects of interest to the agriculture and agri-food industry.

The **New Brunswick Department of Agriculture** and the **Conservation Council of New Brunswick** are working with CANPOLIN to identify and address research priorities related to crop pollination, bee health and pollinator conservation in the province. A workshop for CANPOLIN researchers , growers, beekeepers and conservation groups is being planned for March, 2010.

Year 1 Research Highlights

WG 1 (Native Pollinators) has made excellent progress on a several species and generic keys for Canadian pollinators (including *Megachile*, *Dufourea* and *Dialictus* bees, Calliphoridae, Syrphidae and Lepidoptera). Barcoding and databasing are also well under way.

WG 2 (Managed Pollinators) has established molecular disease diagnostic capabilities within labs at U of Guelph, U of Manitoba and Beaverlodge (AAFC). A joint publication to document causes of colony losses in Canada has already been produced, and a national survey of disease abundance and colony impacts is underway. A number of novel methods to control diseases and parasites are also being explored. Other WG2 activities include the investigation of the impacts of new pesticides on pollinators, and the development of biomarkers to assess pesticide impacts on honeybee health.

WG 3 (Plant Reproductive Biology) focussed its efforts this year mainly on *Vaccinium*. Pollen limitation studies have been carried out, as well as studies on the effect of clonal population structure on pollination and fruit set. Work is also progressing on screening for molecular markers and genotyping for future mating system analyses. WG3 also made progress in elucidating the role of interspecific pollen transfer in the adaptive evolution of sunflowers.

WG 4 (Wind Pollination) activities included morphometric analysis of *Picea mariana* and *Brassica campestris* flowers and bagging experiments to relate pollen concentration to seed set in *P. mariana*. Pollen abscission as a function of wind speed was measured in *P. mariana* and *Ambrosia artemisiifolia.* Long-term data collection for pollen flux began at artic and alpine treeline locations using passive "megastrobili" samplers (see photo, pg 4).

WG 5 (Ecosystems) members sampled pollinators and assessed plant community characteristics in a range of environments and locations across Canada, including agroecosystems, endangered habitats (i.e., the Garry Oak ecosystem, Point Pelee National Park), rough fescue prairie, tall grass prairie, managed forests, degraded habitats (decommissioned landfill and aggregate quarry), urban habitats, and northern sites including Labrador, Churchill and Wapusk. Collected data will contribute to all major WG5 study objectives: 1) the influence of pollinator diversity and abundance on seed set of native and non-native plants; 2) the influence of non-native plants and pollinators on native pollinator biodiversity; 3) the influence of non-native plants on the pollination of native and non-native crop plants; 4) the importance of connectance of pollination webs and generalization and specialization of pollination; and 5) the influence of plant phenology and spatial distribution on pollination services at the landscape level. Pollinator identification is ongoing. Sampling protocols have been updated for 2010 (see website) and a databasing protocol is being finalized this winter.

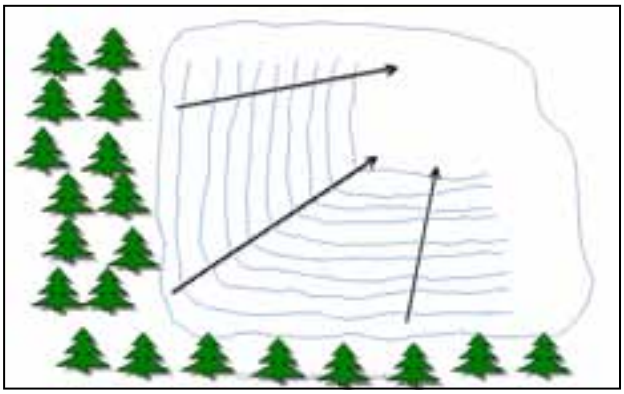
WG 7 (Prediction) has established the necessary infrastructure to process large data volumes and is working with other researchers to identify and acquire suitable data sources. Preliminary modelling results for some Syrphid species have already been obtained.

WG 8 (Economics) HQP were recruited in early September and are now in the process of collecting information for a comprehensive report on the structure of the beekeeping industry in Canada, and the potential economic impacts of declining pollinators on beekeepers and growers dependant on pollination services.

The **Blueberry Hit Team**, organized by Chris Cutler and Cory Sheffield, undertook a number of studies in NS, NB and QC. In addition to the plant studies described above (WG3), plant/pollinator interactions were studied in the field to determine the following : 1) the spatial and temporal distribution of bee species in blueberry fields, 2) the identity of pollens harvested by bees collected in blueberry fields; 3) pollen deposition rates in different regions of the field (i.e., field edge vs interior), and 4) the correlation between fruit-set and yield in different parts of fields with pollination rates and species distributions.

Toxomerus germinators (Syrphidae). Over 7500 high-magnification images of morphological characteristics of Syrphids alone were taken by WG1 researchers for key building purposes (photo courtesy of S. Marshall).

Pollinator choice test between male and female flowers of the protected hop tree, *Ptelea trifoliata*, in Point Pelee National Park (photo courtesy of T. Woodcock).



Blueberry Hit Team schematic showing data collection zones along three transects in lowbush blueberry (diagram courtesy of C. Cutler).

CANPOLIN Research in Action...

Some highlights from the 2009 Field Season

A passive anemophilous pollen collector ("megastrobilus") designed to collect pollen coming from any direction, including the vertical, at the meteorological station at the Kananaskis Biogeosciences Stations near Banff. Similar collectors have been set up at Churchill, MB, and Inuvik, NWT, for long-term pollen flux data collection (photo courtesy of D. Greene)

The endangered Garry Oak ecosystem in BC, where the Elle lab at Simon Fraser University is investigating how pollinator diversity and abundance change with changing plant diversity, and whether pollen limitation of several wildflowers (including common camas, inset) is affected by pollinator diversity and visit patterns (photo by E. Elle)

"Polly", the CANPOLIN research vehicle used to support field work in disturbed forest systems by Trent University researchers at Algonquin Park, ON (photo courtesy of E. Proctor)

Platycheirus obscurus (Syrphidae), photographed at Algonquin Park, Ontario (photo by A. Young)

Pollinator sampling in the Hudson Plains ecozone: a Malaise trap in a patch of hairy marsh ragwort (*Senecio congestus*) in a fen near Churchilll, MB (photo courtesy of T. Woodcock)

Assessing causes of winter mortality in honeybee colonies in Manitoba in spring (photo courtesy of R. Currie)

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