

CURRICULUM VITAE – **ANDREW JORDAN FREWIN**

Born: July 1982, Toronto, Ontario, Canada
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Guelph, Ontario, Canada, N1E 7K1
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EDUCATION

Ph.D. Evolutionary Biology, University of Guelph (2015)

Thesis: The Application of DNA Barcoding to Enhance Integrated Pest Management

Co-Advisors: Drs. Robert Hanner and Cynthia Scott-Dupree

M.Sc. Environmental Biology, University of Guelph (2010)

Thesis: Biology Of *Aphelinus Certus* And Its Susceptibility To Insecticides Used For Soybean Aphid Management

Co-Advisors: Drs. Rebecca H. Hallett and Arthur W. Schaafsma

Bachelor of Science (Honours) (Biological Science), University of Guelph (2006)

Undergraduate-thesis: Neuroactive Properties Of Monoterpenes.

Advisor: Dr. Jonathan M. Schmidt

RESEARCH INTERESTS

Integrated pest management, biological control, non-target effects of pesticides, molecular diagnostics insects, ecology of agro-ecosystems

AWARDS AND SCHOLARSHIPS

MITACS Elevate Mitacs Elevate Postdoctoral Fellowship – August 2015

IOBC NRS Robert J. O’Neil Award - 2014

IOBC Student Grant: Ghent 2014 - June 2014

MITACS Accelerate – February 2012

W.E. Coates Memorial Scholarship - January 2008

W.E. Coates Memorial Scholarship - September 2007

W. G. Matthewman Scholarship - September 2007

Entomological Society of Ontario Student Poster Competition – October 2006

RESEARCH PUBLICATIONS

Peer Review Publications

- Frewin, A.J.**, Scott-Dupree, C.D., Murphy, G., Hanner, R. 2014. Demographic trends in mixed biotype populations of *Bemisia tabaci* (Hemiptera: Aleyrodidae) in commercial poinsettia under biological control- and chemical-based management. *Journal of Economic Entomology* 107: 1150-1155.
- Frewin, A.J.**, Schaafsma, A.W., Hallett, R.H. Susceptibility of *Aphelinus certus* (Hymenoptera: Aphelinidae) to neonicotinoid seed treatments used for soybean pest management. 2014. *Journal of Economic Entomology* 107:1450-1457.
- Naaum, A., **Frewin, A.J.**, Hanner, R. 2013. DNA Barcoding as an Educational Tool: Case Studies in Insect Biodiversity and Seafood Identification. *Teaching and Learning Innovations*. Vol 16.
- Frewin, A.J.**, Scott-Dupree, C. D., Hanner, R. DNA Barcoding for Plant Protection. 2013. CABI: Crop Protection and Crop Pathology and Crop Science (APS)
- Gradish, A.E., Scott-Dupree, C.D., McFarlane, A.D., **Frewin., A.J.** 2013. Too much work, not enough tarsi: group size affects *Bombus impatiens* worker reproduction with implications for sub-lethal toxicity testing. *Journal of Economic Entomology* 106:552-557.
- Gradish A.E., Scott-Dupree C.D., **Frewin A.J.**, Cutler G.C. 2012. Lethal and sublethal effects of some insecticides recommended for wild blueberry on the pollinator *Bombus impatiens*. *Canadian Entomologist* 144:478-486.
- Xue Y., Bahlai C.A., **Frewin A. J.**, McCreary C.M., Des Marteaux L.E., Schaafsma A.W., Hallett R.H. 2012. Intraguild predation of the aphid parasitoid *Aphelinus certus* by *Coccinella septempunctata* and *Harmonia axyridis*. *Biocontrol* 57:627-634.
- Frewin, A.J.**, Schaafsma, A.W., Hallett, R.H. 2012. Susceptibility of *Aphelinus certus* (Hymenoptera: Aphelinidae) to pesticides currently or potentially registered for management of the soybean aphid, *Aphis glycines* (Hemiptera: Aphididae). *Pest Management Science* 68:202-208.
- Frewin, A.J.**, Xue, Y., Welsman, A.W., Broadbent, A.B., Schaafsma, A.W., Hallett, R.H. 2010. Development and parasitism by *Aphelinus certus* (Hymenoptera: Aphelinidae), a parasitoid of soybean aphid, *Aphis glycines* (Hemiptera: Aphididae). *Environmental Entomology* 39: 1570-1578.
- Xue, Y., Bahlai, C.A., **Frewin, A. J.**, Sears, M.K., Schaafsma, A.W., Hallett, R.H. 2009. Predation by *Coccinella septempunctata* and *Harmonia axyridis* (Coleoptera: Coccinellidae) on *Aphis glycines* (Hemiptera: Aphididae). *Environmental Entomology* 38: 708-714.

Proceedings

- Frewin, A.J.**, Scott-Dupree, C.D., Murphy, G., Hanner, R. Demographic trends in mixed biotype populations of *Bemisia tabaci* (Hemiptera: Aleyrodidae) in commercial poinsettia. 2014. IOBC-WPRS Bulletin Vol. 102.
- Frewin, A.J.**, Scott-Dupree, C.D., Murphy, G., Hanner, R. DNA Barcoding of Commercial Biological Control Agents: A Quality Management Framework. 2014. IOBC-WPRS Bulletin Vol. 102.

Technology Transfer Publications

- Frewin, A.J.**, Murphy, G. 2014. Are All Whiteflies the Same?. *GrowerTalks Magazine*. 78.

Publications in Preparation

Frewin, A.J., Scott-Dupree, C.D., Murphy, G., Hanner, R. Rapid Field Deployable for Diagnostics for *Bemisia tabaci* (Hemiptera: Aleyrodidae).

Gradish, A.E, Culter, G.C., **Frewin, A.J.**, Scott-Dupree, C.D. Comparison of buckwheat, red clover, and purple tansy as potential surrogate plants for use in semi-field pesticide toxicity assessments with *Bombus impatiens*.

RESEARCH AND OUTREACH PRESENTATIONS

Conferences Presentations

Frewin, A.J., Renkema, J., Fraser, H., Hallett, R.H. Evaluation of Potential Attractants for Monitoring Spotted Wing *Drosophila*. 2016, 17-18th February. Ontario Fruit and Vegetable Convention (OFVC) 2016. Niagara Falls Ontario, Canada

Frewin, A.J., Scott-Dupree, C.D., Hanner, R. Application of DNA Barcoding for the Identification of Intercepted Pests. 2015, Aug 18 – 21st. 6th International Barcode of Life Conference. Guelph, Ontario, Canada

Frewin, A.J., Scott-Dupree, C.D., Hanner, R. Plant Pest Barcoding Campaign Site Update. 2015, Aug 18 – 21st. 6th International Barcode of Life Conference. Guelph, Ontario, Canada

Frewin, A.J., Scott-Dupree, C.D., Murphy, G., Hanner, R. Demographic trends in mixed biotype populations of *Bemisia tabaci* (Hemiptera: Aleyrodidae) in commercial poinsettia. 2014, Sep 14-18th. IOBC Ghent 2014 – Integrated Control In Protect Crops. Ghent, Belgium.

Frewin, A.J., Scott-Dupree, C.D., Murphy, G., Hanner, R. DNA barcoding of commercial biological control agents: A quality management framework. 2014, Sep 14-18th. IOBC Ghent 2014 – Integrated Control In Protect Crops. Ghent, Belgium.

Naaum, A.M., **Frewin, A.J.**, Maw, H.E.L., Foottit, R.G., Hanner, R. DNA barcoding applications for pest identification and control. 2013. Oct 27-31st. Fifth International Barcode of Life Conference. Kunming, China.

Frewin, A.J., Scott-Dupree, C.D., Murphy, G., Hanner, R. Demographic trends in mixed *Bemisia tabaci* (Hemiptera: Aleyrodidae) cryptic-species populations in commercial poinsettia under biological control- and insecticide-based management. 2013. Nov 6th. Ontario Pest Management Conference. Guelph, Ontario, Canada.

Frewin, A.J., Scott-Dupree, C.D., Hanner, R., Murphy, G. Occurrence of *Bemisia tabaci* biotypes in Ontario poinsettia production. 2012. Oct 18th. OMAFRA - Emergency Management Expo. Guelph, Ontario Canada.

Frewin, A.J., Scott-Dupree, C.D., Hanner, R., Murphy, G. Occurrence of *Bemisia tabaci* biotypes in Ontario poinsettia production. 2012. Nov 8th. Ontario Pest Management Conference. Guelph, Ontario, Canada.

Frewin, A.J., Hanner, R., Scott-Dupree, C.D. DNA Barcoding for greenhouse integrated pest management. 2012. Oct 3-4th. Canadian Greenhouse Conference. Niagara Falls, Ontario, Canada.

Gradish, A.E., Scott-Dupree, C.D., McFarlane, A., and **Frewin, A.J.** Too much work, not enough tarsi: the effect of group size on *Bombus impatiens* queen-less worker reproduction. Entomological Society of America Annual Meeting, 2011. Nov 13-16th. Reno, Nevada, United States.

Frewin, A.J., Hanner, R., Scott-Dupree, C.D. Barcoding of commercial biological control agents: Implications of observed divergence patterns. 2011. Nov 3rd. Ontario Pest Management Conference.

- Gradish, A.E., Scott-Dupree, C.D., McFarlane, A., and **Frewin, A.J.** Too much work, not enough tarsi: the effect of group size on *Bombus impatiens* queen-less worker reproduction. 2011. Nov 3rd. Ontario Pest Management Conference.
- Frewin, A.J.**, Hanner, R., Scott-Dupree, C.D. Barcoding of commercial biological control agents: implications of observed divergence patterns. 2011. Oct 21-23rd. Entomology Society of Ontario, Annual General Meeting. St. Catharines, Ontario, Canada.
- Gradish, A.E., Scott-Dupree, C.D., McFarlane, A., and **Frewin, A.J.** Too much work, not enough tarsi: the effect of group size on *Bombus impatiens* queen-less worker reproduction. 2011. Oct 21-23rd. Entomology Society of Ontario, Annual General Meeting. St. Catharines, Ontario, Canada.
- Frewin, A.J.**, Hanner, R., Scott-Dupree, C.D. Progress in reference library construction for agricultural bioinformatics. 2011. Sept 19th. OMAFRA - Emergency Management Expo. Guelph, Ontario, Canada.
- Frewin, A.J.**, Schaafsma, A.W., Hallett, R.H. Susceptibility of *Aphelinus certus* Yanosh to foliar-applied insecticides currently or potentially registered for soybean aphid control. 2010. Ontario Pest Management Conference.
- Frewin, A.J.**, Xue, Y., Welsman, A.W., Broadbent, A.B., Schaafsma, A.W., Hallett, R.H. Development and parasitism by *Aphelinus certus* (Hymenoptera: Aphelinidae), a parasitoid of soybean aphid, *Aphis glycines* (Homoptera: Aphididae). 2010. Oct 15-17th. Entomological Society of Ontario – Annual General Meeting. Grand Bend, Ontario, Canada.
- Hallett, R.H., Xue, Y., Bahlai, C., **Frewin, A.J.** Improving soybean aphid management: Building beneficials into your soybean aphid spray decisions. 2010. Jan 5-6th. Southwest Agricultural Conference. Ridgeway, Ontario, Canada.
- Frewin, A.J.**, Hallett, R.H., Schaafsma, A.W. Temperature-dependent development Of *Aphelinus certus* and implications for integrated pest management of *Aphis glycines* in southern Ontario. 2008. Oct 19-22nd. Entomological Society of Canada, Entomological Society of Ontario - Joint Annual Meeting. Ottawa, Ontario, Canada.
- Frewin, A.J.**, Schmidt, J.M. Neuroactive properties Of monoterpenes. Entomological Society of Ontario Conference. 2006. Oct 27-29th. Guelph, Ontario, Canada.

Invited Presentations

- Frewin, A.J.** DNA Barcoding and its Application to Integrated Pest Management. Guest lecture in ENVB4100 – Integrated Management of Invasive Insect Pests. 2010. Jan 10th. University of Guelph, Ontario, Canada.
- Frewin, A.J.** Biodiversity Institute of Ontario Tour and NAPPO Delegate Orientation Presentations. 2013. Oct 28th - Nov 1st. NAPPO Annual Meeting 2013. Guelph, Ontario, Canada.
- Frewin, A.J.**, Scott-Dupree, C.D., Murphy, G., Hanner, R. *Bemisia* population dynamics under insecticide and biological control based management. 2013. Jun 13th. OMAFRA – Poinsettia Grower IPM Meeting. Vineland, Ontario, Canada.
- Frewin, A.J.** Introduction to DNA Barcoding and its Applications. Guest lecture in BI488 – Invertebrate Biodiversity and Conservation. 2013, Oct 25th. Wilfrid Laurier University, Ontario, Canada.
- Frewin, A.J.** Introduction to DNA barcoding and its Applications. Guest lecture in BI488 – Invertebrate Biodiversity and Conservation. 2012, Oct 25th. Wilfrid Laurier University, Ontario, Canada.

Frewin, A.J. The Importance of Species Concepts to Agriculture. Let's Talk Science 'Species Problem' symposium at Philopolis Guelph: A Feast of Philosophy. 2012. Oct 4-5th. University of Guelph, Ontario, Canada.

Frewin, A.J., Hanner, R. Innovative Methods to Measure Biodiversity. Canadian network for cement and concrete research - NSERC Partnership Workshop. 2012. Aug 16th. Woodbridge, Ontario, Canada.

Frewin, A.J. Applications of DNA Barcoding for Plant Production and Forestry. OMAFRA DNA Barcoding workshop. 2012. May 29th. Biodiversity Institute of Ontario, University of Guelph, Ontario, Canada.

Frewin, A.J. DNA barcoding and its Application to Integrated Pest Management. Guest lecture in ENVB4100 – Integrated Management of Invasive Insect Pests. 2012. Mar 26th. University of Guelph, Ontario, Canada.

Professional Experience

January 2014 – March 2014: **Teaching Assistant** (ENVB 4100: Integrated Pest Management of Invasive Pests), U. of Guelph

January 2013 – March 2013: **Teaching Assistant** (ENVB 4100: Integrated Pest Management of Invasive Pests), U. of Guelph

February 2012 – July 2012: **Mitacs-Accelerate Research Position**: Canadian Bioscience Education Through DNA Barcoding.

Established a long term arthropod biodiversity monitoring program at Kortright Conservation Area, for the not-for-profit group Earth Rangers.

October 2012 – October 2013: **Student Representative** for the Entomological Society of Ontario.

May 2012 – August 2012: **Teaching Assistant** (BIOL 2060DE: Ecology), U. of Guelph

January 2012 – March 2012: **Teaching Assistant** (ENVB 4100: Integrated Pest Management of Invasive Pests), U. of Guelph

September - December 2011: **Teaching Assistant** (BIOL 2060DE: Ecology), U. of Guelph

May 2011 –December 2011: **Teaching Assistant** (BIOL 2060DE: Ecology), U. of Guelph

January 2010 – December 2010: **Regulatory Associate**, Syngenta Crop Protection Canada, Inc., Guelph ON

Prepare data packages for submission to the Pest Management Regulatory Agency (PMRA) to register, amend and/or renew company pesticides in accordance with the Pest Control Products Act. Interact with science team and PMRA staff to ensure all registration criteria are met. Responsible for Fungicides, and Insecticides, and seed care products.

September 2009 – December 2009: **Research Assistant**, University of Guelph

Research assistant for a study examining the effects of pesticides on native bees. Responsible for performing laboratory assays, collecting data, and maintaining insect colonies.

July 2009 – September 2009: **Course Consultant**, University of Guelph

Assessment of course topics and learning objectives. Evaluated primary scientific literature suitable for inclusion in undergraduate course reader.

May 2006 – September 2011 (Seasonal): **Research Assistant**, Arcturus Testing, Guelph ON

Data collection for novel mosquito repellents

September 2007 – May 2008: **Teaching Assistant** (ENVB 3040DE: Natural Chemicals in the Env.), U. of Guelph

January 2007 - May 2007: **Teaching Assistant** (ENVB 3040DE: Natural Chemicals in the Env.), U. of Guelph

May 2006 – October 2006: **Research Assistant**, University of Guelph

Research assistant for a study investigating methods to improve the efficacy of industrial composting. Responsible for conducting experiments, collecting data, and presenting results at bi-weekly lab meetings.

June 2005 – September 2005: **Research Assistant**, University of Guelph

Research assistant responsible for data collection for a study examining the effect of synthetic honey bee diets.

May 2005 – June 2005: **Research Assistant**, University of Guelph

Field assistant for the establishment of long term forest monitoring plots in Point Pelee National Park.

CERTIFICATES (WORKSHOPS, COURSES)

Project Manager Workshop

Syngenta Crop Protection Canada, Inc. (2010)

Crucial Conversations: Tools for Talking When Stakes Are High (VitalSmarts® Registered Workshop)

Syngenta Crop Protection Canada, Inc. (2010)

Teaching Assistant Professional Development Series: Demystifying Learner-centeredness

University of Guelph, Guelph ON (2008)

Teaching Assistant Discussion: Academic Integrity

University of Guelph, Guelph ON (2008)

Teaching Assistant Professional Development Workshop

University of Guelph, Guelph ON (2008)

Terrestrial Ecosystem Monitoring Protocols Workshop

Ecological Monitoring and Assessment Network (EMAN), Environment Canada (2005)

VOLUNTEER EXPERIENCE

Youth outreach talking to grade 1-3 students about insects (Fall 2010)

Volunteer research assistant on a study assessing the impact of pesticides on wild bees (summer 2008)

Designed and created the Entomological Society of Ontario conference program (2006)