

OPIRG Public Interest Grant Proposal

Project Title: McMaster Beekeeping Initiative

Primary Applicants:

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Summary and Objectives of Project

The objective of this project is to initiate a long-term beekeeping program on campus in partnership with the Hamilton Urban Beekeepers. It is common knowledge that the world's honeybee population is under threat and that they, along with other native pollinator species, play a critical role in the health and biodiversity of local ecological settings, and in the security of our food supply. Currently there is a global conversation happening around this crisis and the impacts that we see on a local scale. Experts agree that educational outreach is one critical component for addressing this issue. We envision this project as an opportunity to engage in that conversation. This proposal seeks funding to support a portion of the installation of 1-3 hives, and primarily to support the development of a workshop educational outreach program in alignment with OPIRG McMaster's objectives.

This project is a collaboration between Brandi Lee MacDonald, owner of Three Bees Honey Co., and Amina Suhrwardy, coordinator of the Hamilton Urban Beekeepers. Brandi is a seasoned beekeeper who manages her own apiary and honey business, who holds education and public outreach on issues related to beekeeping as a core value of her company's mission. She has certification from the University of Guelph's Apiculture program as well as the Ontario Beekeeper's Association Technology Transfer Program. Brandi would be the primary coordinator of hive maintenance. Based on exposure to the success of beekeeping initiatives on other university campuses, Amina was inspired to initiate one at McMaster, a community leader within the city. McMaster seemed like an ideal place because of its educational, environmental and community mandate that complemented the vision of the Hamilton Urban Beekeepers. Amina will work with Brandi as a Liaison for the Hamilton Urban Beekeepers, and together with Brandi will help facilitate the workshop program.

The vision of this collaboration is to utilize the existence of honeybee hives on campus as a site for educational and community outreach. We propose developing a workshop series, open to the McMaster and surrounding Hamilton community, to educate participants on a range of subjects related to honeybee health and biology, the significance of pollinators to biodiversity, honeybees and the local food industry, and issues related to policies and practices of urban beekeeping. Furthermore, we will make available local honey and hive products to the McMaster community via the Mac Farmstand program.

Aligning with OPIRG's Objectives

This project will meet OPIRG McMaster's objectives on non-profit activities for advancing the welfare of the University and broader community. Supporting local, healthy beestock contributes to improved pollination and strengthens the biodiversity of our immediate local area. Furthermore, the existence of hives in this unique educational and ecological setting will provide the opportunity to educate on the importance of honeybees to our local ecology. In partnering with the Hamilton Urban Beekeeper's Network we will create a strong foundation for developing a program for facilitating the outreach of our educational objectives. This project also has strong potential for skills and research training for students in a range of areas including, but not limited to, biology, sustainability, and psychology.

Project History and Current Activities

This program began in summer 2012 when Brandi approached Kate Whalen with a proposal to initiate a beekeeping program on campus. Over the course of fall 2012, Brandi began to make pathways and assess the feasibility of this project in a campus setting. In January 2013 Brandi took on the mentorship of a group of students in the Sustainability 2A03 course (Sustainable Futures Project) to work on strengthening partnerships within the university towards implementing the program for the 2013 beekeeping season. Over this timeline Brandi has partnered with Prof. Reuven Dukas (Animal Behaviour Group, Department of Psychology, Neuroscience and Behaviour), and with Dr. Marvin Gunderman (Entomologist, Department of Biology). The partnership developed with these faculty members has resulted in two key objectives: to forge an agreement on the use of a suitable fenced-in enclosure previously used to keep honeybees by Prof. Dukas; and to integrate the existence of the honeybee colonies into their respective undergraduate curriculums. For example, the honeybee hives will serve as a teaching tool for the courses BIO 2F03 (Fundamental and Applied Ecology ~400 students), BIO 3R03 (Field Biology ~10-12 students), PNB 2XC3 (Animal Behaviour and Evolution, ~150 students), and PNB 3S03 (Animal Behaviour Laboratory ~20 students). This agreement of the use of space from the department of PNB in exchange for utilizing the bees as a teaching tool is integral to the success of this project. Furthermore Brandi will continue to develop project-specific opportunities with the Office of Sustainability for students in the SUSTAIN 2A03 course. Currently, we are in the process of securing funding from multiple sources to support the costs of implementing this program (described in more detail below).

Budget Structure

We have sought funding from multiple sources to support the startup costs of installing three beehives, although none have yet been verified. Brandi submitted a proposal to the Academic Science Fund (McMaster Undergraduate Science Community) for \$3500 to cover costs to install three beehives, with results to be announced in late April. We are also currently in negotiations with the Office of Sustainability to secure financial assistance for this project. This proposal seeks \$1,000 from the OPIRG Public Interest Grant competition toward the implementation of this program. Should it be successful the allocation of these funds will go toward the total costs of the project, with emphasis on purchasing the necessary safety equipment to host workshops and for producing educational materials. Should none of the other sources of funding be successful it will still be possible to install one hive, although this will significantly affect the logistical capacity and scale and scope of the workshop and educational activities.

It must be noted the full range of in-kind contributions that have already been confirmed for this project. The use of space granted from Prof. Dukas and the PNB Department is integral to the success of this project and

we consider this contribution to be invaluable. Brandi has offered the use of existing Three Bees Honey Co. honey extraction equipment which will negate the necessity to purchase such equipment. This equipment typically ranges in price from several hundred to several thousand dollars and would otherwise be prohibitively expensive. Brandi has also agreed to allow for the use of her equipment and resources (such as a pickup truck, hive equipment building tools and other miscellaneous items) for the delivery and ongoing maintenance of the hives to offset initial capital infrastructure costs. Furthermore, the profits from yearly honey sales will go back into a pool of funds necessary for ongoing hive maintenance, and for honey jar labeling and marketing and associated costs.

Timeline of Activities

The activities surrounding the hives will be dictated by their seasonal biological cycles and hive dynamics. We propose installation of hives beginning in the 2013 summer beekeeping season (~June 1), and will follow through with immediate implementation with undergraduate courses and workshops over the spring / summer term and into fall term. The beekeeping season runs year-round with opportunities on an ongoing basis for educational involvement. A typical season begins in late winter with preparation of equipment and planning. We propose hosting a late spring / early summer workshop on honeybee biology, pollinators, and basic hive maintenance. In early spring (March-May) the bees emerge from their winter clusters and begin to forage once temperatures rise above ~10°C. The queen begins egg-laying, the population grows rapidly, and bees begin to forage on and pollinate nectar sources. June to September marks the height of nectar foraging and honey production. Spring, summer, and early fall seasons will allow for the opportunity to observe full-scale hive population dynamics. Honey harvesting takes place in September, and in late fall, bees begin fall feeding in preparation for winter. Late summer and early fall priorities will include a group honey harvest and bottling activity (which is, generally speaking, an enjoyable gathering for all). We plan to connect with the Mac Farmstand organizers over the summer to develop a strategy for honey sales after harvest in September. The intention for this project is to develop a long-term plan of sustainability whereby profits from honey sales can be pooled to sustain ongoing hive costs. This is not an overly-complicated task, however the challenge is in securing the startup funds to begin. Over time, provided the bees are managed properly and kept to the best level of health, and provided there are members of the Hamilton Urban Beekeepers Network who agree to assist as stewards / volunteers for maintaining the hives, the costs of sustaining such a small-scale operation are relatively minimal and can be sustained through honey sales. Should the project not receive ongoing support, either due to finances or sustained management support, a simple exit strategy will be to sell or donate the hives to a local beekeeper.

Proposed Budget

The budget below outlines the cost estimate for a single hive of beestock, all required hive equipment, necessary safety equipment for hosting hands-on workshops, and other basic miscellaneous expenses. All equipment pricing based on 2012 catalogue quotes from Canadian Bee Supply. The expenses currently go above the \$1,000 limit for this grant award, however we are confident we will be able to secure a minimal amount of funding from the Office of Sustainability toward this project. Not included in this budget are the costs of developing workshop and promotional materials, which we anticipate will be contributed to by the Hamilton Urban Beekeeper's Network operating budget, or other possible one-time support funds through OPIRG.

Required Resources	Description	Funds Required
Honeybee stock	One colony @ \$350.00, plus delivery (gas)	\$400.00
Basic hive equipment	Frames and bodies, entrance reducer, bee escape, queen excluder, wooden top feeder, paint, winter wrap \$139.53 plus taxes (per hive)	\$163.25
Extra hive equipment	Funds for extra honey supers and frames should it be a high yield season (@ 82.90 per hive plus tax x 3 hives)	\$82.90
Safety Equipment	Hats and veils for group of 10 students = \$39.56 plus tax each, hive tools (\$6.96 plus tax each x 2, smoker (x1 @ \$45.50 plus tax) Total = 455.02 plus tax	\$532.37
Honey jars and labels	Jar styles to be determined, but average prices per honey yield per hive per season range ~\$50; needed for first year but subsequent years costs can be sustained by honey sales profit	\$50.00
Hive maintenance expenses	Estimated cost for gas for weekly, seasonal hive maintenance per year (\$25 per month for ~8 months) Use of Three Bees Honey Co. truck is in-kind contribution	\$200.00
Misc. Expenses	Log book, organic medication treatments where necessary (<\$20 per year), re-queening of colony where necessary (~\$35 per year), Epi pen in case of emergency (\$100)	\$155.00
	Total Funding Required	\$1,583.52
	Total Funding Requested	\$1,000.00