

GRADUATE STUDENT INTERNSHIP / CO-OP PROJECT FORM

PROJECT	TITLE:	Building an innovative long-term biodiversity monitoring program for the UBC Farm		
	LOCATION:	UBC Farm & Macmillan Building Room 170		
	TERM:	Summer 2017	FROM: April 1 (flexible)	TO: August 31 (flexible)
PROJECT SPONSOR	NAME:	Hannah Wittman	TITLE:	Academic Director & Associate Professor
	ORGANIZATION:	University of British Columbia	BRANCH / SECTION:	Centre for Sustainable Food Systems/IRES
	ADDRESS:	MCML 179, 2357 Main Mall, Vancouver, BC V6T 1Z4		
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TOPIC OR RESEARCH QUESTION: (Briefly describe the research question being addressed through this project)	<p>Understanding how the biodiversity present in agricultural landscapes varies through time and space, what variables drive this variation, and how this affects a range of ecosystem services is key to developing sustainable agricultural systems. This includes both planned biodiversity (that associated with the planted crops and managed livestock) and associated biodiversity (the flora and fauna present in hedgerows, forest buffers, wetlands, etc. that colonize agroecosystems from surrounding environments). This project will use the UBC Farm – a unique living lab and organic farm - as a case study to develop a comprehensive and integrated agricultural biodiversity monitoring program. The project will offer the selected student an exciting opportunity to build the foundation for a long-term, practical, biodiversity monitoring program that incorporates the opportunities and constraints of a working farm while still having the potential to offer new scientific insights and be exportable to other farms and agricultural landscapes.</p>			
KEYWORDS: (List key words to describe the field of study and project)	Agriculture, biodiversity, ecosystem services, monitoring, birds, arthropods, soil biota, pests.			
PROJECT DESCRIPTION & RELEVANCE: (Provide an overview of the context for the internship and why it is important. Describe the project, its tangible, intended outcomes and the role of the student.)	<p><u>Overview:</u> While biodiversity underlies many of the important ecosystem services upon which agriculture relies, our understanding of these relationships is currently incomplete. The result is that agricultural management decisions often impact biodiversity in ways that is detrimental for agricultural production. The UBC Farm provides a unique case study for the long-term monitoring of biodiversity in agricultural landscapes along with data on farming practices, climate data, and crop production. However, there is currently no comprehensive framework or program for long-term biodiversity or ecosystem service monitoring on the farm. Thus, designing such a monitoring program offers an opportunity to better understand the important variables that affect agricultural biodiversity and related ecosystem system services on the UBC Farm itself, as well as at temporal and spatial scales relevant to other working farms. The selected BRITE intern will work closely with a number of faculty and staff at the Centre for Sustainable Food Systems, the UBC Farm, the Biodiversity Research Centre, and the Institute for Resources, Environment, and Sustainability to develop the framework for a practical and long-term biodiversity monitoring program for the UBC Farm with the goal of producing an easily implementable program that will link with data already being collected at the farm.</p> <p><u>Project Details:</u> The project will consist of the following core components, although there is room for variation depending on the expertise and interests of the student:</p> <ol style="list-style-type: none"> (1) Choosing specific taxa to monitor and linking these to specific ecosystem services of interest, although this will likely include birds, select arthropods, and soil biota; (2) developing a sampling design and protocol in collaboration with an advisory team, UBC Farm staff, and selected UBC course instructors [i.e. towards annual student-led sampling campaigns]; (3) integrating this protocol with a digital data collection application for the farm that is currently in development to link biodiversity outcomes with farm management practices; (4) producing a budget for the program. 			

<p>Funding Requested from BRITE</p>	<p>Additional project components that could be added depending on interest and time constraints include:</p> <p>(1) piloting sampling techniques on the farm and creating guides/keys to important species and taxa; (2) exploring opportunities for UBC students from specific classes to assist in future data collection; and (3) creating a plan to communicate monitoring results to farm employees, farm market customers, or the wider public through the Beaty Biodiversity Museum.</p> <p>The student intern will develop all aspects of the project, with direction from supervisor Hannah Wittman as well as an advisory team of UBC faculty members Sean Smukler, Kai Chan, Juli Carillo, and UBC Post-Doctoral Fellows Matthew Mitchell (IRES, working under Navin Ramankutty and Kai Chan), and Zia Mehrabi (working under Navin Ramankutty and Hannah Wittman).</p> <p>Please note that there is flexibility in the time commitment for this position, ranging from a part-time position of ~15 hours/week over the entirety of summer to a condensed full-time position of ~6 weeks.</p> <p style="text-align: center;">AMOUNT: \$6000</p>		
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<p>AVAILABLE FUNDING (to match BRITE funding):</p>	<p><input type="checkbox"/> NO <input checked="" type="checkbox"/> YES</p>	<p>IF YES, THEN LIST AMOUNT:</p>	<p>\$1500</p>
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PROJECT TYPE (Check the relevant type(s) of work to be undertaken for this internship / co-op project)			
<input checked="" type="checkbox"/>	FIELD WORK	<input type="checkbox"/>	GIS ANALYSIS (potentially if the student has the skills and interest)
<input checked="" type="checkbox"/>	RESEARCH PROPOSAL DEVELOPMENT	<input type="checkbox"/>	POLICY ANALYSIS
<input checked="" type="checkbox"/>	LITERATURE REVIEW	<input checked="" type="checkbox"/>	SURVEY DESIGN
<input checked="" type="checkbox"/>	SHORT STUDY / ASSESSMENT	<input type="checkbox"/>	MODEL DEVELOPMENT (research prioritization framework)
<input checked="" type="checkbox"/>	DATA COLLECTION	<input checked="" type="checkbox"/>	OTHER please describe: budget creation, communication planning
<input type="checkbox"/>	DATA / STATISTICAL ANALYSIS		

<p>EXPECTED DELIVERABLES: (Summarize the intended project deliverables, e.g., research report, data analyzed, and presented in a spreadsheet format, etc.)</p>	<p>The minimum expected deliverable will be a written proposal for a long-term monitoring program. This will include a rationale and purpose for the program, a list of the taxa to be collected and what level of taxonomic detail they will be identified to, a sampling scheme and plan including sampling locations and seasonal timelines across the UBC Farm, sampling protocols for each taxa, a draft data collection database, and a budget for the monitoring program for its first five years.</p> <p>Additional deliverables to be agreed upon with the project supervisor and advisory team could include</p> <ol style="list-style-type: none"> (1) designing a data collection page for the UBC Farm digital data collection application; (2) piloting the collection of biodiversity data from the UBC farm to test sampling methods; (3) securing commitments from UBC instructors to involve their students in future data collection; and (4) developing a communication plan for the results of the biodiversity monitoring plan. 		
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