

# Bringing Research to LIFE

## Upcoming Events

### Visionary Conversations

### The Food we Eat

Reception at 6:30 p.m.  
Discussion at 7:00 p.m.

Wednesday, June 13, 2012

Robert B. Schultz Theatre  
St. John's College

Join the experts as they talk about the safety and supply of the food we eat – from the local and the global perspective.

Featured speakers:

**Ryan Cardwell**

(Agribusiness and Agricultural Economics, Faculty of Agricultural & Food Sciences)

**Rick Holley**

(Food Science, Faculty of Agricultural & Food Sciences)

**Joyce Slater**

(Human Nutritional Sciences, Faculty of Human Ecology)

**Shirley Thompson**

(Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources)

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### Save the date!

It's never too early to start planning your submission to the:

### Undergraduate Research Poster Competition

November 1, 2012

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## Parasitic wasp could be farmers' best friend

### Researcher says insect's behaviour is like something out of a sci-fi thriller



Submitted Photo

Entomology Prof. Barb Sharanowski (far right) is an expert in insect systematics, which involves describing, classifying, and examining the evolutionary relationships among organisms.

#### BY KATIE CHALMERS-BROOKS For The Bulletin

Entomologist Barb Sharanowski wants to give farmers the tools—including a mobile phone app—to help them protect their crops using wasps in place of insecticides.

Sharanowski investigates little-known species of parasitic wasps that attack and kill other insects, often from the inside out. They go after many of the same bugs that damage and destroy popular crops like canola. Sharanowski says the wasps could provide an efficient, natural alternative to spraying fields with harsh chemicals.

"It is something that can be done," she says.

But few farmers are familiar with this type of wasp, which is actually more abundant and diverse than the recognizable, stinging, yellow and black variety. Even scientists don't know much about them yet.

"They are extremely understudied," says Sharanowski, noting the majority of these species remain "unknown to science."

The wasps have been unleashed to control pests in orchards, vineyards, greenhouses and smaller crops. It's not normally done on large-field Canadian crops.

"These parasitic wasps are a means of natural control but we can't really utilize them if we don't know what we actually have," says the assistant professor in the Faculty of Agricultural and Food Sciences.

Sharanowski is researching their evolution and how they're related to

each other by extracting their DNA. She is uncovering and documenting their characteristics so she can educate the public, in particular the farming community. One way to do so would be through a mobile phone app that helps farmers in the field recognize species for their particular crops. It would include easily identifiable features like colour, shape, and size.

"They're trained to look for the pests, not trained to look for the beneficial insects," Sharanowski says.

These wasps already frequent farmers' fields but planting certain flowers nearby might help further build populations by providing additional food sources; Sharanowski is researching which types appeal to the wasps.

She finds these insects fascinating, describing their parasitic behaviour as something out of the science fiction film *Alien*.

"Not only are they beautiful but their life histories are so interesting," she says. "The fact that they live off other



Sharanowski discovered this parasitic braconid wasp; she plans on naming it after an indigenous tribe in Colombia where it was collected.

organisms is really cool but also they can alter the behaviour of their host to their advantage."

They often plant their eggs inside their target insect along with a suite of venoms and viruses. Caterpillars, aphids, beetles, moths, and flies are among their prey. Once the larvae are fully grown, these internal parasites bite their way out through the victim's skin. They will then spin a cocoon to transform into an adult wasp. Meanwhile, the venom bouquet earlier delivered with the egg takes hold in the victim, sometimes causing paralysis or immune suppression. It can even alter the victim's behaviour, causing the insect to protect the developing wasp at the expense of its own survival. In some cases, the victim will sit atop the enemy cocoon, defending it until its death from starvation.

These ruthless wasps could also be used to stop the spread of invasive, exotic species of insects that have found their way to Canada in shipping crates, Sharanowski says. Non-native populations are on the rise given the prevalence of global trade. "The more that we can know about beneficial insects, the more likely we are to control future pests quickly."

Sharanowski is identifying new species of these wasps, and has travelled the world collecting specimens, including South Africa, Central America, and Europe. To date, she has discovered and classified eight species. She named one *Maxfischeria ameliae* after her niece Amelia, who lives in Australia where the wasp was discovered.