

Developing new long-range micro backpacks for bees

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A project to develop a new means of tracking bees in the landscape is progressing well according to scientists at Bangor University.

An ecologist and a microsystems engineer are working together to develop micro-backpacks for bees that will enable the bees to be followed by [small drones](#) as they fly from plant to plant.

This will enable scientists to learn more about where the bees collect nectar and what might be affecting their numbers.

The lightweight, long range bee-tracking device will harness the bee's own electrical energy to power the backpacks and the scientists have just proven their capability to do this.

The next step will be to test the 'back-packs' on some bees in a poly tunnel and the scientists hope to be doing this in the next few months.

Paul Cross, Senior Lecturer in the Environment at the University's School of Environment, Natural Resources & Geography explains:

"Bee populations, our vital crop and fruit pollinators, are in serious decline; their survival faces challenges on several fronts, insecticides and varroa mites to name a few.

The ability to track [bees](#) or other insects over their entire foraging range will be useful in various circumstances. Neonicotinoids and other

insecticides, for example, affect the bee's ability to navigate. The ability to track them over long distances can help us work out how the nicotinoids are affecting their direction finding. Other applications include tracking Asian hornets (a serious threat to many [bee species](#)) in Europe with a view to controlling or eradicating them before it's too late."

Dr Cristiano Palego, a microsystems expert at the University's School of Electronic Engineering explains:

"Existing bee monitoring devices face limits due to their weight, range, and how long their power source lasts- and these are the problems that we've set out to resolve using cutting-edge micro-technology.

"We have proven our ability to harvest the bee's [electrical energy](#) to enable us to do away with the need for a battery and our end product will weigh only a third of the bee's body weight, or less than a raindrop. This solves the weight and battery longevity problems.

"Our next step is to develop a mobile receiver to track and follow the bee's transmitted signal as it forages."

As Paul Cross explains:

"This new device really is akin to a bee wearing a rucksack- as opposed to carrying the equivalent of the kitchen table and chairs as at present."

Provided by Bangor University

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