



REPORT

Green Foundation Ireland
invites you to an online TALK on
Biodiversity and Bees



Photo: 'Bee on Verbena' by MARTIN NOLAN, Director of Green Foundation Ireland

Speakers

Mary Montaut: *"Bees and Plants, the Best of Friends"*

Julia Jones: *"Better Bees in Ireland: Identifying Stressors and Assisting Beekeepers"*

by Zoom *(details given after registration)*

Thursday 12 November 2020 – 15:00 to 16:30

Admission to this event is **FREE** but you **MUST** register beforehand.
You can do so through our website at
www.greenfoundationireland.ie

Biodiversity and Bees

THEME

In order to promote biodiversity, it is essential to have a wide variety of pollinators. Insects are well adapted to this and the most effective pollinators are colonies of bees. Within this group, the various bumble bee species pollinate a wide variety of plants but their colonies are much smaller than colonies of honey bees. While honey bees are rightly thought of as providers of honey and wax, their more important role is as pollinators.

This event will cover what trees, shrubs and plants are helpful to bees throughout the year for both pollination and honey and explain what the main state sponsored scheme, the National Apiculture Programme, is doing to identify stressors of bees and assist beekeepers in dealing with them.

ABOUT OUR SPEAKERS

Mary Montaut

Mary, who is the Editor of *The Irish Beekeeper (An Beachaire)*, has been keeping bees in Bray, Co. Wicklow, for about twenty years and regards herself as an Eternal Beginner, because there is always so much to find out and understand about bees. Her interest in honey bees has gradually extended to include all sorts of pollinators, and she is on the Steering Committee of the All-Ireland Pollinator Plan, representing the Federation of Irish Beekeepers' Associations.

Julia Jones

Julia is an Assistant Professor at the School of Biology and Environmental Science in University College Dublin. Social insects, bees in particular, have been a fascination since her PhD at the University of Sydney in Australia, and drove her postdoctoral fellowship work on the interaction between environmental landscape, gut microbial community, and bee health and behaviour. This interest has also fuelled work on genomic selection for a suite of honey bee traits, including a focus on resistance to a major honey bee parasite.

Our talk on bees was moderated by GFI Director **Claire Downey**, while **Graham Hall** from the Federation of Irish Beekeepers' Association introduced our speakers.

The afternoon began with all of us watching a wonderfully informative video on bees by 9 year old **Rijin Lim** from Korea which told us amazing facts and figures on bees. Rijin is amazing herself, having spoken about her school project in the video as well as doing the artwork as part of home-schooling during the COVID-19 restrictions. Rijin went to school in the Ballinteer Educate Together National School in Dublin; however, after spending 4 and a half years in Ireland while her father was studying in Trinity, Rijin and her family are returning to Seoul next month.

Mary Montaut started by talking about the evolution of pollen – 125 million years ago it was spread by wind, and the first angiosperm was 100 million years ago. Pollen is an excellent source of protein, and insects started to diversify their diet and eat it. One early insect stuck in a piece of amber from Borneo has hairs on its legs – the first sign of pollen collection.

Mary went on to mention co-evolution, where a plant and animal evolve together for mutual benefit. However, if they become too dependent on each other, this can lead to problems. The honeybee possum has become dependent on a rare plant in western Australia. However when a new road was put through this area, the habitat became fragmented, and the possum could no longer cross to pollinate the plant. The dependency of the system was broken, and this may lead to the extinction of both plant and possum. A very close mutual relationship is risky.

Other plants which depend on insects include Epipactis, which is pollinated by a small wasp. The scent smells like the leaf is being eaten by an insect – the wasp comes in to eat the insect and is fooled into pollinating the plant.

Mary then talked about the fig wasp which lays its eggs inside the fig – the fig has no flowers, and the young wasps pollinate the figs.

Some plants like laurel have extrafloral nectar with stick buds. These attract ants to defend themselves from other insects.

Mary spoke about bumblebees which seem to be affected by climate change as they don't move area and adapt very well. Their range is diminishing.

She gave wonderful advice on what to do to help pollinators:

- Plant open flowers like daisy and bell flowers – open flowers allow access to the bees and late flowers allow them to overwinter.
- A tidy lawn is a desert and useless for pollinators. Let the dandelions and clover flower and cut the grass less often. Bumblebees don't go more than half a mile from its nest, so they need food nearby. Plants like oilseed rape are only in bloom for 2-3 weeks, and bees need food all year around.
- Every garden should have plants in flower all year round. Mary recommended a book by Margery Fish – "*A Flower for Every Day*". She suggested planting winter flowering shrubs such as Viburnum. At the moment bees are foraging on ivy. Daphne bholua is a wonderful plant for bees in winter. Flowering trees are fabulous, as are shrubs.

- However, flowering cherries are of no use to bees – single flowers are best like those found in the bird cherry.
- Her advice for flowerbeds was important – do not plant F1 hybrids which are sold as bedding plants. They have no pollen. Plants with spires like Lupins, Lavender, etc are excellent for bees. Flowers like Iceplant are excellent too, as are plain Fuchsia. Honeybees have short tongues so can't get into deep flowers. Sometimes the bumblebees bite into the back of flowers to get the nectar.

Mary showed us photos of pollinating flowers, with bees on salvia, bee orchids and campanula. The bee orchid looks like a bee and tricks a bee into mating with it, and then drops its pollen on its back. Mary recommended a book called "*The Intelligence of Flowers*" by Maurice Maeterlinck, which is now back in print, for lots of interesting stories on pollination.

She also spoke about the problems of seeds being coated with neonicotinoids. Many bulbs have also been soaked in this – and it is very detrimental to bees.

Finally, Mary mentioned the importance of weeds – easy to grow and good for pollinators !

Graham next introduced **Julia Jones**, an assistant professor in UCD, who works on the National Apiculture Programme.

Julia is working on a two-year programme called *Better Bees in Ireland*. This programme assists beekeepers and helps in transferring knowledge, looks at combating bee invaders and diseases, and collects information on colony losses by looking at pathogens, determining pesticide and agri-chemical levels and investigating adaptations to climate change.

Julia told us of a national survey which she is carrying out, where beekeepers are asked to sample bees, brood, pollen, and honey. She is looking for beekeepers to participate in this programme.

She worked in Australia discovering which bees do each task in the honeybee colony, and what influences the behaviour – is it a mix of age, genotype, and environment? To look at the mechanisms of the underlying division of labour, Julia kept bees in greenhouses to study them. This allowed her to regulate temperature and humidity. Brood temperature needs to be from 33-32° Celsius, and Julia wanted to see how bees achieve this temperature.

She looked at the bees fanning behaviour, where they shake their wings to thermoregulate the hives. She genotyped individuals and exposed both genetically diverse and non-diverse colonies to different temperatures and looked at their behaviours. She also looked at Asian honeybees in Thailand.

Julia found that different bees had different temperature thresholds for performing fanning behaviours, and that genetic diversity was very important for a stable brood nest temperature.

Julia is also interested in finding out if gut microbial/bacteria influences health in bees. Julia worked with the University of Surrey to investigate this. The sociability of honeybees allows for the transfer of gut microbes and bacteria within hives. She put hives in a variety of different landscapes (including some oilseed rape fields with neonicotinoids) and she age-matched colonies. Her analysis showed that there is a difference in the abundance of gut bacteria between different landscape types, and between foraging and indoor bees. This may influence the behaviour of the bees.

53 people attended these two fascinating talks on the intricacies of such small creatures. And the wonderful news is that we can help them by simply doing nothing, and letting our garden go wild !

***Donna Mullen, Chairperson
Green Foundation Ireland***

16 November 2020