



It's all go here at the Buzz Club! Our twelfth newsletter is also the first from the new-look Club, and we've had a great summer of projects - all thanks to our members' efforts in planting, painting, counting and weighing. We couldn't do this without your support, and while the wet weather might have made everything a bit soggy and difficult at times, you persevered, and we're able to share some early results from our 2019 projects.

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But first...

The Buzz Club has over 200 members!



With ecological issues increasingly in the news¹, the importance of helping people to engage with and understand what is around them cannot be overstated. Citizen science has always formed a hugely important part of the way we study the natural world, so the Buzz Club is in some illustrious company², both historical and contemporary. Our focus on carrying out active experiments is still a fairly unusual strategy for citizen science, and that's why we are thrilled to see our membership numbers tick over 200!

The map to the left shows (broadly) where Buzz Club members are based in the UK. We've got a cluster of folks in the South of England, particularly around Brighton and London (since we're based in Sussex that's no surprise), but there's pretty good coverage across the country. It's great to see how far the interest and enthusiasm of our members reaches.

Can you spot yourself?

1) Dave's recent article about insect decline: [https://www.cell.com/current-biology/fulltext/S0960-9822\(19\)30796-1](https://www.cell.com/current-biology/fulltext/S0960-9822(19)30796-1)

2) Sir David Attenborough recently spoke to the BBC about the value of citizen scientists. Worth a watch! <https://www.facebook.com/bbcearth/videos/1017274611639428>

Dave invites you to the Garden Jungle

Now a Sunday Times bestseller, Dave's latest book *'The Garden Jungle'* was released in July, and explores the wide variety of life that lives right under our noses (and paths, and sheds). As Buzz Club members, we have a bit of a head start in recognising the importance and interest in our smallest neighbours - and indeed, watch out for mentions of the Buzz Club through the book.

Importantly, the book focuses on the role that gardens can play in combating climate change, biodiversity decline and other ecological issues. Each individual garden won't save the planet, but together even small things can make a huge difference overall - from boosting provision of oft-overlooked habitats, to demonstrating how growing-your-own helps to reduce your carbon footprint, and improving your understanding of the natural processes that sustain a garden, and us!

Plus, check out the next article to see hot-off-the-press science about choosing the flowers for your own patch of jungle.

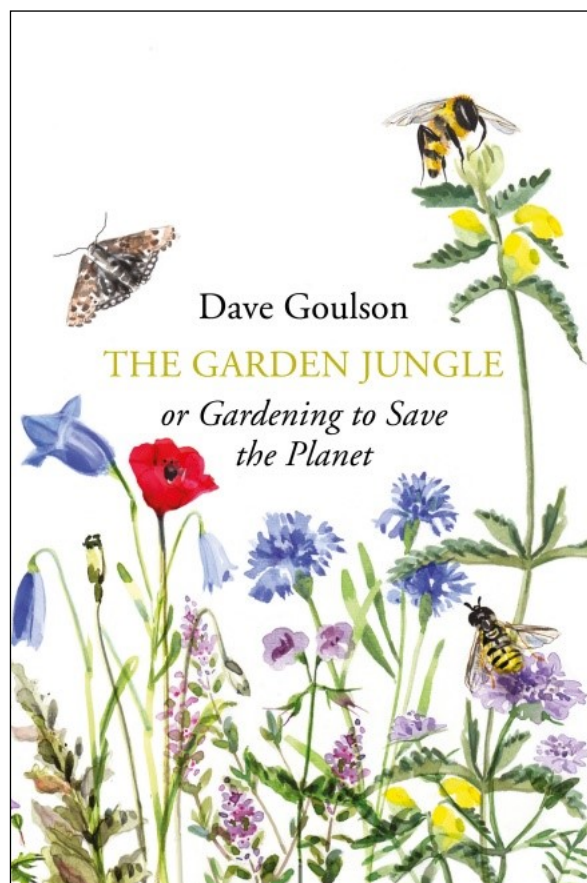
Reviews:

"[Goulson] is master of intriguing details of a world beyond our ken... *The Garden Jungle* is an eye-opening book... [and Goulson's] enthusiasm is infectious. This is a man you'd just love to visit your garden and show you its invisible wonders, teach you how to nurture them."

- *The Times*

"Woodlice, earthworms, earwigs: a seething Serengeti lurks in many a back garden. **Apiologist Dave Goulson's wonderful book encourages such richness by delivering solid science on garden wild-ing...** Goulson demonstrates that the domestic nature reserve is the first step towards saving the planet."

- *Nature*



"The Garden Jungle is about the wildlife that lives right under our noses, in our gardens and parks, between the gaps in the pavement, and in the soil beneath our feet. Wherever you are right now, the chances are that there are worms, woodlice, centipedes, flies, silverfish, wasps, beetles, mice, shrews and much, much more, quietly living within just a few paces of you."

Dave Goulson gives us an insight into the fascinating and sometimes weird lives of these creatures, taking us burrowing into the compost heap, digging under the lawn and diving into the garden pond. He explains how our lives and ultimately the fate of humankind are inextricably intertwined with that of earwigs, bees, lacewings and hoverflies, unappreciated heroes of the natural world."

<https://www.penguin.co.uk/books/111/1117058/t>

Choosing the best plants for pollinators. (Paper)

When selecting plants for your garden, there are a near-dizzying array of varieties and cultivars available, each providing a different balance of resources for wildlife. **So how do you choose?**

A recent study by Rosi Rollings and Dave Goulson seeks to help answer, by investigating which plants are best for attracting **pollinators** to the garden. They compared insect visits to plots of 111 different ornamental plant cultivars, all of which are types that are often claimed to be good for pollinators.

There were enormous differences in how many insects each plant type attracted. Overall, the most-visited plants were lesser calamint (*Calamintha nepeta*), *Helenium autumnale*, *Geranium*, borage and marjoram.

However, patterns of visitation to the

different plants were quite different for every insect group examined. For example, different species of short-tongued bumblebees showed surprisingly little overlap in their most-preferred flowers. Very similar plant cultivars often attracted different insect communities; for example, 72% of visitors to the *Aster novi belgii* were honeybees or bumblebees, while the related dyer's camomile (*Anthemis tinctoria*), which also has daisy-like flowers, did not attract a single honeybee or bumblebee but was very popular with solitary bees, hoverflies, and 'other' pollinators.

Some plant cultivars such as sea holly (*Eryngium planum*) and forget-me-not (*Myosotis arvensis*) were attractive to a broad range of insects, while others attracted only a few species but sometimes in large numbers (e.g. culver's root, *Veronicastrum virginicum* and *Helenium autumnale* which were both visited predominantly by honey bees).

Overall, the study found that native species did not attract more insects than non-native species, but did find that native plants attracted a significantly *higher diversity* of flower-visiting insects (so, more different types of insect).

Read the full paper for recommendations about how to use this information to provide nectar / pollen for as many sorts of pollinator as possible, from early spring to autumn!

The full paper can be read here: <https://tinyurl.com/RRDGFlowers>



The most-visited plants overall (left – right, top down). Lesser calamint (*Calamintha nepeta*), *Helenium autumnale*, *Geranium*, borage and marjoram.

Images: D.Goulson, 2013
P. O'Conner, 2010 (Borage)
Agnieszka Kwiecień, 2017. CC-BY 3.0 (*H. autumnale*, Wikipedia)

Project updates (2019)

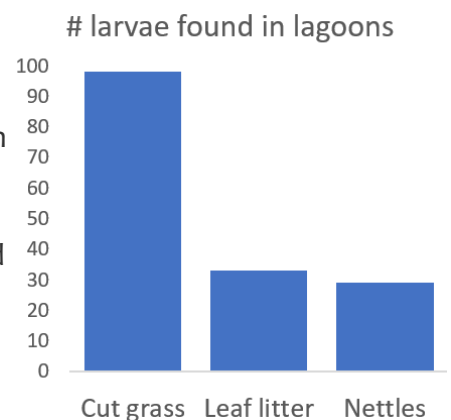
As those who have been with us for a while will know, 2019 was the first season that the Buzz Club ran projects based on research questions posed by members, along with those from the Buzz team. This section gives updates from this year's projects.

Hoverfly Lagoons

The longest-running project in the Buzz repertoire, Hoverfly Lagoons is still going strong in 2019. Last year's high temperatures led to a lot of problems with lagoons drying out and larvae having to compete with other thirsty wildlife, but this year was a lot more hoverfly-friendly! There is still data to come back in for 2019 (so don't panic if you're still to do your final counts), but here's an overview:

The loveliest lagoons:

Part of this project is to see what the best substrate is for making lagoons. **Cut grass** lagoons seem to be consistently the most attractive to larvae, compared with **leaf litter** and **nettles** (averages shown to the right). The biggest hoverfly haul this year was from June (peak month), with a massive 274 larvae reported from a single lagoon. There has also been an increase in all flying insects observed within lagoon locales this year; so lagoons may entice other insects as well.



Wider impacts:

Hoverflies seem to like the lagoons, but what about in the wider garden? Using the methods tried and tested out by Hoverfly Lagoons, this year we investigated if providing these extra habitats improved pollination (of strawberries) - and it **seems it does!** Full analysis is still ongoing, so more details either on the website or in the next newsletter; but it's exciting to have some evidence that there is a demonstrable impact in play.

Remember: don't throw away your lagoons when you've done the final October counts. Several species (such as *Myathropa florea*) will overwinter in the substrate, snug until spring, so just tuck them somewhere sheltered.



Tales from the lagoons

"A hefty cat likes to knock over my lagoons! I had to make a cage of garden canes to make him lose interest."

"I set up a lagoon near a cut back marjoram as it supported the milk bottle. The plant grew so much I lost the lagoon! Found it when cutting back and it has nice fat larvae. A nice surprise."



"Last year I had a frog that liked to hang out in one of my bottles. This year he has brought a friend. Personal pond, room service larvae - no wonder I'm not finding many left!"



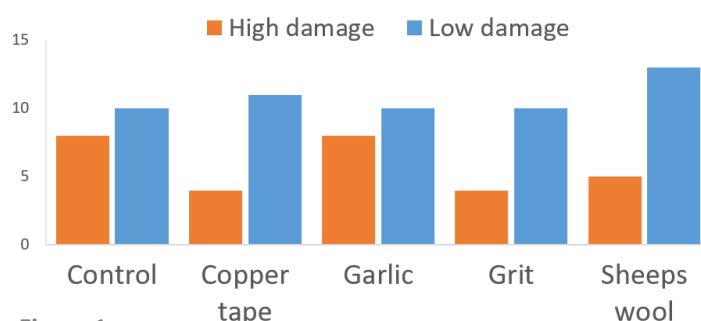
Slowing down Slugs

This project examined the effectiveness of various 'home remedy' / non-toxic slug and snail controls in real-garden situations. We looked at: Copper tape, copper coins, sheeps' wool pellets, sharp grit, garlic mulch, and using a mini bottle greenhouse.

Results:

In the real-garden environments of the project, **copper coins** proved useless in staying attached to the pots, with gaps leaving potential slug highways. **Bottle greenhouses** seemed to keep plants safe in early stages, but were quickly outgrown (and could damage constricted plants if not removed).

The results of other treatments needed a bit more analysis. The levels of slug damage suffered by plants under each treatment is shown Figure 1 below.



Statistical testing (chi-squared, for those interested) showed no significant difference between the treatments. And since all experiments had a control (that had no treatment), this means that none of the actual treatments had an effect.



A setup with all the starting treatments.

However, there was another part to the story. We asked participants for information about where they grew their experimental plants - and a pattern emerged from that. Only plants that were **on the ground** were completely killed off by slug damage. **Raised-up** plants (e.g. on tables or shelves) seemed to suffer **much less damage** than plants on the ground (Figure 2.).

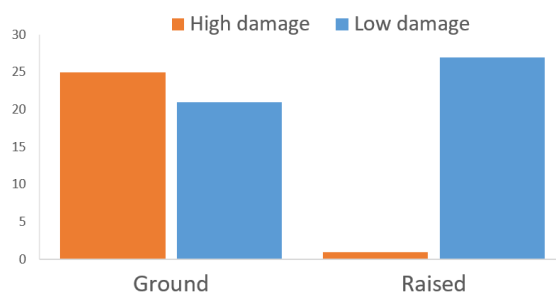


Figure 2

Statistical tests confirmed that this difference was unlikely to be due to chance.

So what does this mean?

There's no need to spend money on rolls of copper tape, for one thing! The intervention that worked best for protecting young plants was literally just getting them out of harm's way, where it was difficult for menacing molluscs to get to. We hypothesise that on e.g. a table with narrow legs (only 4 small points of contact with the ground) might be better than up on an old bin that touches the floor all the way around (although we didn't test for this). If you have particularly voracious slugs, try dedicating a table to your beans and squashes for a few more weeks before planting out.

Some participants' anecdotal reports suggest that although sheeps' wool (and possibly grit) don't seem to do much to deter slugs, it does seem to be a good mulch, keeping plants from drying out.

Garden Shop calculator

The Garden Shop calculator has now graduated from Linda's PhD project to an outreach / community tool, and is gaining momentum. It uses records of garden harvest (in counts/weights) to work out how much it would have cost to buy it in a shop, and how much of that **directly** needed insect pollination.



We've had nearly £1000 worth of produce recorded via the website (over £1600-worth if the Organic values are used!), and developed new ways of recording that are designed to be more useful in e.g. community gardens and allotments - where there might not be scales, or the produce might be eaten before it could get near a spreadsheet.

The overall 'bee values' of project gardens came out at 60% (very similar to previous years, which range 55% - 61%), so it seems that **over half** of domestic produce growing relies **very heavily** on insect pollination. Without our bees, hoverflies, wasps (and others) performing their services, we'd have empty pie crusts, stingy-topped pizzas and very sad fruit salads indeed.

We'll be continuing with the Garden Shop next year, focusing on pairing up its valuation and 'need for bees' estimations with practical advice for boosting pollinator populations in your garden, based on the specific crops that **you** grow. We'll let you know when we have a final plan!

Strawberries Rock!

A new project for this year, based on a garden remedy suggested by volunteers from 2018: do fake strawberries (red painted rocks) deter birds from eating real strawberries, if you place them around the plants? We didn't know - so we decided to find out.

Star pilots

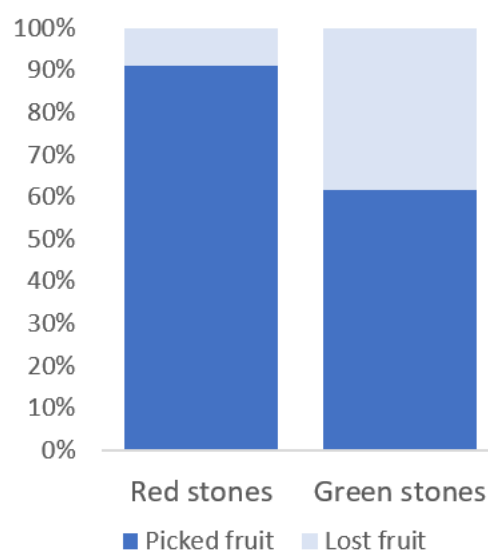
This was a 'pilot' year for this project, meaning that part of the goal was to work out how well the initial protocol actually worked in real-garden environments. Actual gardens can be a lot more variable and unpredictable than green houses or on-campus spaces, so having a first year where a project can be run and thoroughly reported on by trusted volunteers (Buzz Club folks!) is **really important**. The test year should also indicate if the project is worth pursuing longer-term.

Do Strawberries Rock?

It seems that they might! Despite a growing season beset by rain (leading to large losses at some sites from mould, which had no regard for painted rocks), we were able to get some data back, and a lot more valuable feedback on what worked and what didn't, plus additional useful observations.

The data suggest that the 'red stone' sites suffered fewer losses of strawberry fruit from something actively *taking* the strawberries (fruit lost to mould or broken branches was not included). 'Green stone' sites seemed to lose more fruit.

There were not enough full returns to do statistical analysis (pilot years often see this), but a) the data is encouraging, and b) we have had plenty of feedback about the protocol, and can improve it for a full roll-out next year!



The Buzz Club diary / upcoming events

Various members of the Buzz Team will be out and about at events in upcoming months, and always love to meet members of our Club (Dave is quite happy to sign any of his books). We'll doubtless be attending more events, or even organising a few of our own, so keep an eye on the website and social media for the most up-to-date Buzz tracking.

Place	Event	Date	Presenter
Summerwood Garden, Nottingham	"Not-so-Spooky Spiders"	29th October	Linda
Stroud Book Festival	"The Garden Jungle"	8th November	Dave
Llandudno	"Averting the Insect Apocalypse"	23rd November	Dave
Hyde Park, London	"Citizen Science: What works?"	28th November	Ellie
Newick, Sussex	"Saving our Bumblebees"	6th February	Dave
Horton cum Studley, Oxon	"Averting the insect apocalypse"	13th February	Dave
York	"The Garden Jungle"	17th March	Dave
Framfield, Sussex	"Wildlife Gardening"	7th April	Dave
Clifton, Nottingham	"Insects, gardening and Science!"	11th May	Linda



Do let us know if you have any questions, ideas for projects, or tales from your wildlife garden! We're always on the look out for pictures of people doing our projects, so check out our social media (including the new Facebook community page, and twitter) and the website.

*Thanks again,
from the Buzz Club Team!*

www.thebuzzclub.uk

twitter.com/The_Buzz_Club

www.facebook.com/