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With travel restrictions reminding us how valuable local green spaces are to our physical and mental health¹, gardens both great and small have been stars of a difficult year. Seed companies have seen record demands², compost has been flying off the shelves³ and houseplant jungles have taken over home offices as many people have turned to their green fingers to handle lockdown. Buzz Club members and Team are no exception, and we are proud to bring you our autumn 2020 newsletter.



Membership

Membership of the Buzz Club has nearly doubled since our last update in 2019, with the map to the left showing (broadly) where in the UK we're found. Having a good coverage of the country means that data collected by our projects is properly representative of what is going on across the nation, so it's fantastic to see how wide a distribution we've got!

This year has required a lot of us to change plans and adapt to new circumstances, and the Buzz Team are hugely grateful to our members for finding time to take part in projects, send us photos and let us know about your questions and successes.

Can you spot yourself?

- 1) Health benefits of gardening. <https://www.rhs.org.uk/advice/health-and-wellbeing/articles/Lockdown-lowdown>
- 2) Seed companies seeing record profits during lockdown <https://www.theguardian.com/environment/2020/may/08/gardens-bloom-under-lockdown-with-record-demand-for-seeds>
- 3) UK spending on gardening rises in lockdown. <https://www.theguardian.com/money/2020/mar/28/britons->

Project updates (2020)

While 2020 may not have gone as anyone planned, the Buzz Club were able to press on with some of our projects. We've also been answering lots of questions from members over the last year, identifying insects, giving advice on bee hotels and checking out some fantastic photography.

So, what did we find out this year?

Polli-Nightors

A new project in development, looking at the nocturnal insect life found in our gardens. Since we are still working on this project's final form, we're trying out a few things - and feedback is very helpful!

This year, we piloted a night time garden safari, asking members to get to know their night-time neighbours by doing a garden walk (or using a focal point like an outdoor light or large plant) and recording what insects (and other invertebrates) they saw within a 10 minute time window.

Unsurprisingly, moths were the most common insect spotted, with **118** records; followed by flies (not 'midge-like') at **74** and midge/ mosquitos at **64**. Earwigs and spiders featured at least once for all participants (15 and 14 respectively), and most people also spotted woodlice and lacewings. So there is quite a range of creatures out there, on windows, plants and around lights.

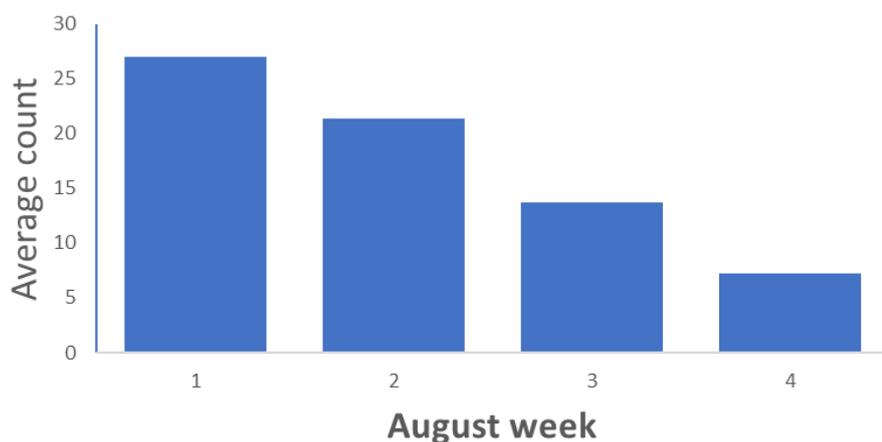
A surprise observation was of woodlice and earwigs found on flowers (particularly on ivy) at night. They aren't considered 'traditional' pollinators, so this might be something we look into in future.

The number of insects spotted per week dropped off noticeably over the August month of counting. The graph below is averaged (since some people were not able to count every week), but still shows this drop. We would expect people to spot more insects as they get more used to doing the survey, so this decline is probably showing the approach of Autumn, where colder nights may have more effect on the insects out and about than comparatively warm days.



Mosquitoes and woodlice feeding on ivy at night.

Insects spotted per week



The results and general feedback from members has been very helpful, so we are now thinking about next year; possibly counting during more months, to see if e.g. we see the reverse pattern in spring.

Left: Average counts of insects spotted each week of August 2020 night survey.

Hoverfly Lagoons

Creating habitat for overlooked pollinators with milk bottles & leaf litter/grass, and recording visitors.

Our hoverfly lagoons got going quickly in the early warm weather. We've had a record-breaking number of participants this year, so thank you very much if you took a chance on a Lockdown Lagoon!

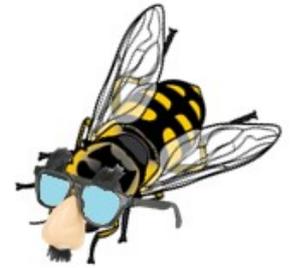
June saw a **new species** record: *Rhingia rostrata*, the rarer of the pair of 'Snout' hoverfly species found in the UK. The common name refers to the impressive, nose-like protrusion on the front of its head (although insects 'smell' with their antennae, so this isn't actually involved with olfaction). The larvae and pupae of these hoverflies are much smaller than the familiar *M. florea* long-tailed larvae, so they could be easily missed. This record came from a very dense grass-filled lagoon, which might be more to *R. rostrata*'s tastes than a watery lagoon. As a long-tongued hoverfly, adult *R. rostrata* pollinate very different flowers to *M. florea*, so they are a welcome addition to any garden's pollinator populations.



R. rostrata pupae (left), compared to much larger *Myathropa florea* pupa (right).



Freshly emerged *R. rostrata* male showing his eponymous protrusion.



Despite the name, the snout isn't really a nose.

Alternative lagoons

Having extra time at home has seen opportunities for observing lagoons and their residents more closely this summer.

Project lead Dr Ellen Rotheray took this a step further with her viewing lagoon (below left): using a **large glass vase** rather than the usual opaque milk bottle,



so the different layers of litter breakdown can be seen, as well as the larvae and their breathing tube 'tails'.



Comfrey comfort

Several times this year, long-tailed larvae were spotted in other suitable / 'accidental' lagoons elsewhere in gardens. Once you get your eye in for spotting insects, you realise how many are around us!

In this case, large numbers of larvae have been found in buckets of rotting down **comfrey leaves**.



This shouldn't interfere with making your comfrey fertiliser, but it may be worth adding some sticks into the bucket if you have one, so that larvae can climb out when it's time to pupate.

Garden Shop calculator

Recording harvests, calculating the cost of shop-equivalents & showing what % is from insect pollination.

Modifications made to the calculator this year added in three new categories for recording: handfuls, mugful and supermarket packet. These were intended to help with measuring yields in places where there is no easy access to scales, or where produce might be used up on-site before it can be weighed (such as community gardens). These seem to work, and will be kept in for next year.

Linda's community apple picking (for local cider maker) suggests larger categories might sometimes be needed...

As well as the publishing of the Nicholls *et al.* paper (p7), which used the Garden Shop method, we've also had records for this year. **£1700** of produce was recorded by volunteers (organic values), with **£1035** of this **directly due to pollinators** (61%). This is very similar to last year's 60%, and again suggesting that over half of our gardening success is dependent upon those bees, flies, beetles and other pollinating insects.



Rejected extra categories for apples:

- Plant pot full - Binbag - Shirt-front

For 2021 we're looking for more community groups to be involved. **Let us know** if you're interested!

Strawberry Rocks!

Testing whether or not red-painted stones can protect strawberries from birds.

This was *planned* to be based around in-person sessional work with more local groups, to see if last year's results were as promising as they appeared. Alas, 2020's events and its weather made this difficult! However - as with Hoverfly Lagoons - one positive to this year was more opportunity to **observe in detail** what was happening to strawberry setups:

- 🍓 Two participants who were very sure that **small birds** like sparrows were damaging their plants, seemed to find the rocks worked.
- 🍓 When **squirrels** were the main culprits, the rocks don't seem to help. Which we might expect, since mammals rely more on smell than sight.
- 🍓 **Blackbirds** were observed stealing strawberries from plants with rocks. They were not seen going after those in raised-up pots or hanging baskets.



Caught in the act!

While this does complicate the question, it is a good example of why trying out projects in **real gardens** (and getting feedback from them) is so important. We want to test if the red rocks deter *birds*, so if squirrels are going to be a separate problem, we need to account for it.

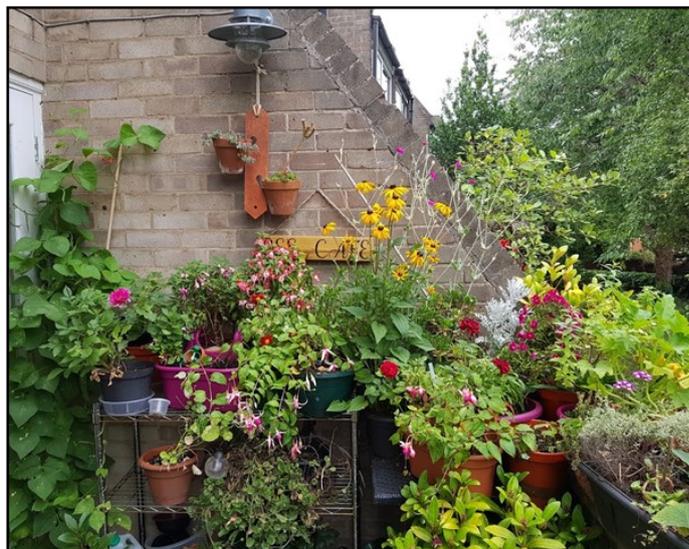
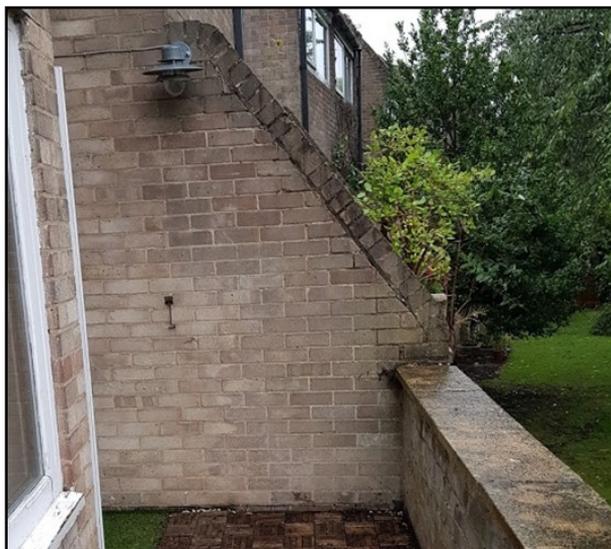
The plants' **positioning** may also be relevant. E.g. if blackbirds target plants placed at ground level more than plants that are raised up, we need to make sure that all the experimental plans are raised (or not) in the same way, since we are interested in if the **rocks** work, not the height.

Strawberry Rocks! will be run again in 2021, with modifications made based on your feedback from this year. Hopefully we will be able to do more in-person work next summer as well!

Bee Café

Committing to making a place for pollinators to be welcome all year round.

One of the concepts we have tried out this year is the (lockdown-friendly) idea of a **Bee Café**. Since it can be a little daunting to consider managing an entire garden for pollinators - and because honestly **every little helps** - the idea of the Bee Café is to commit to keeping a minimum of 1m square 'open for bees' all year. This means making sure there is always **something flowering** there, so using potted plants in particular can help with swapping in and out depending on the season.



Linda's Bee Café is shown above, both before she got started and the result. Plants are in pots, which can be moved to maximise flowers in the 'Café' space. Most plants were either grown from seed (snapdragons, rudbeckia, runner beans) or brought from the last house in pots (fuchsias, skimmia, dahlias). All shelving / furniture follow the **Rule of Free**: If it isn't wanted in the house, it goes in the garden! Takeaway lids, old pans, an unwanted pan rack, wobbly folding chairs; all move outside, making it easy to swap pots around from place to place. This Café was set up where it could best be seen from the living room, so we get to enjoy the blooms as well.

Seasonal menus

With our weather only set to continue on its erratic trajectory, it is more important than ever that gardens try to provide winter forage for insects that might find themselves unable to hibernate, or being rudely awakened early. If you're thinking of setting up a Bee Café, or generally improving your garden for pollinators, consider the following:

Winter-flowering heathers. Don't get painted ones, though.

Hellbores. Both the larger varieties and the smaller 'Christmas roses' are great for pollinators.

Skimmia. Pink or white, and happy to grow in pots. Female plants will also made red berries.

Viburnum tinus. Another shrub that grows well in large pots.

Sarcococca varieties. Winter flowers and fine in pots.

Don't forget to plant your bulbs for spring! Grape hyacinth and crocuses are both great for pollinators. In general, look for varieties with open flowers (avoid doubles).

In the (digital) Garden Jungle

With in-person appearances limited this year, Buzz Club founder Professor Dave Goulson has been seen on all sorts of screens! Some highlights are below - did you spot him?

His real-life Garden Jungle was featured on **Gardener's World**, while he demonstrated some of the insect-friendly gardening choices, and discussed the important role any size of garden can play in insect conservation. The unusual pot of Bird's Foot Trefoil was a big hit in particular: grown from a cutting in a mix of garden soil and *molehills* (it can also be grown easily from seed, sold by wildflower specialists) If you missed it, the episode is still available on the BBC: <https://www.bbc.co.uk/programmes/p08lwfx3>.

You may also have spotted him on Jimmy's Big Bee Rescue.

Also still available is 'Averting the Insect Apocalypse', where Dave dives into more detail about current threats to biodiversity, particularly to insects, and what we might be able to do about it. Once again, our gardens and food growing can - and do - play a hugely important role. Available at: <https://youtu.be/bnoz7LXpkplk>

For more practical examples of how many ways we can boost insect populations (and have done so!), check out 'Reversing the decline of insects', a report from the Wildlife Trusts, on which Dave was lead author. The overall message is what underpins the Buzz Club too: that insects are important and in trouble, but that we *can* help in all sorts of ways. Read here: <https://www.wildlifetrusts.org/news/new-report-calls-ambitious-pesticide-reduction-target>

Upcoming Events

Upcoming (online) events from the Buzz Club Team, to the end of 2020. As before, these are the confirmed dates, so keep an eye on the social media to see the most up-to-date places to find us!

November

- 5th Colorado Pollinator Conference
- 11th Brighton & Hove Organic Gardening Group
- 18th University of the Third Age, East Grinstead
- 21st Society of Garden Designers autumn conference
- 23rd Wales Biodiversity Partnership

December

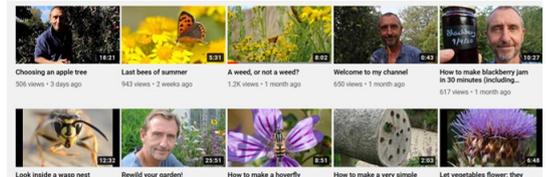
- 5th Gloucestershire Wildlife Trust
- 9th Kent Wildlife Trust
- 12th Bumblebee Conservation Trust AGM



Dave and his 2nd year parsnip flower. Distracting aphids, feeding natural enemies, perfect for pollinators - and free!



Bird's-foot trefoil is a fantastic food plant for the blue butterfly and burnet moth caterpillars, as well as for pollinators.



Dave also has lots of videos on his Youtube channel on topics from butterflies to cider making and choosing garden trees. You can also watch his lockdown beard progress.

(Paper) The contribution of small-scale food production in urban areas to the sustainable development goals: a review and case study

Production of food relies heavily on nutrient resources and 'ecosystem services' (such as pollination and pest control) provided by the natural environment. On the other hand, food production is **also** one of the biggest drivers of environmental damage, essentially undermining itself. Looking for more sustainable ways to produce food is a massive ongoing global challenge, and there is potential in increasing the contribution from local, small-scale food production in more urban areas.



This recent paper from the Buzz Club's Dr Beth Nicholls *et al.* reviews how urban and peri-urban (surrounding) agriculture can contribute to more sustainable food production. Part of this work was a **citizen science** case study from Brighton & Hove, which used the **Garden Shop calculator** method to collect data on crop yields (as well as information about pest control and insect observations).

They found that home-growers in the city used few agro-chemicals and yet had crop yields comparable to or higher than those from large-scale conventional farms, while also contributing to other Sustainable Development Goals. Using the organic produce values the **maximum** reported value of an annual harvest was **£2300**, with home-growers 'saving', on average, **£550** (with **£310** on average 'owed' to insect pollinators).



The same methods are also currently being used in a study in the city of Kolkata, India, looking at the contribution of urban and peri-urban agriculture to food security and potential impacts on biodiversity.

This illustrates (for the first time) the mass and value of food that can be produced from urban agriculture in a city, and how much of that value is provided by pollinators. The paper concludes that this sort of food growing is likely making a significant contribution to feeding the world and supporting healthy soils.

The paper is open-access and can be found at: <https://link.springer.com/article/10.1007/s11625-020-00792-z>

For more information, Professor Jeff Ollerton has written a blog post about this paper and others on a similar theme, which is an excellent introduction to the wider topic:

<https://jeffollerton.co.uk/2020/06/16/biodiversity-plant-pollinator-interactions-and-the-unsustainable-development-goals/>

(Paper) Companion planting to attract pollinators increases the yield and quality of strawberry fruit in gardens and allotments

For our second paper - and second strawberry-themed section - this year saw this publication based on a sister-project to the Buzz Club: 'Super Strawberries'. As part of Janine Griffiths-Lee's PhD research, this project used a combination of more conventional researcher-lead experiments and **citizen science** methods to examine whether planting of 'bee-friendly' flowers beside strawberries would affect the yield of fruits.

Companion planting is a traditional gardening practice where additional species are deliberately planted alongside crop plants to improve the yield. Often this is done for pest control reasons (to provide food for natural enemies and sustain their populations before crop pests emerge, for example; or to 'distract' pests away from the crop itself by providing a more attractive alternative), but crop **pollination** can also be improved by companion planting. Exactly how this works may differ for different pollinators - such as increasing local populations before crop flowering; or attracting more pollinators into an area through larger floral displays. There is also debate over if more attractive flowers might *detract* from crop pollination by diverting away pollinator attention.

This is what Janine and the Super Strawberries team looked into. They used borage (*Borago officinalis*) as the companion plant, and recorded both the insect visitors and fruit yields of the strawberry plants. Strawberries collected during the researcher-led experiment were also subject to fruit measurements and assessments of market quality.



Bee-friendly borage



High market value strawberry



Low market value strawberry

Companion plants were found to **significantly increase** both **yield** and **market quality** of strawberries, suggesting an increase in insect pollination per plant. Companion planting with borage produced an average of 35% more strawberry fruits, and 32% increased yield by weight. Those fruits produced were also of higher aesthetic quality (when assessed by Marketing Standards for strawberries). Although there was no significant difference in the overall insect visits, when broken down by broad insect group there were significantly **more flies** visiting the strawberries with companion plants than the controls.

The whole paper is open-access and can be read here: <https://onlinelibrary.wiley.com/doi/full/10.1111/een.12880>

(Since flies and hoverflies are known¹ to be important pollinators for strawberries, then, it may be worth focusing on improving your gardens for flies. And the Buzz Club has ideas for that!)

1) <https://doi.org/10.1016/=j.baae.2016.11.007>.

Finally:

We want to hear from YOU!

As the citizens doing the science, we literally could not do these projects without **you**. We're always on the look out for new project ideas, new questions to think about, and new problems to get stuck into - so give us a Buzz any time!

Find us on the website, our social media (Twitter and Facebook), by email and hopefully more of us in person as soon as we can do so safely. Meanwhile, do send us pictures and tales from your wildlife gardens; we'd love to see them.

*Thanks again,
from the Buzz Club Team!*



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