Speaker 1:

Welcome to Urban Plan Health Networks Podcast Series; The Good, The Bad, and the Bug-ly.

Drew Radford:

Urban gardens are a bit like mini ecosystems with all kinds of ornamental and fruiting plants and trees, with insects and wildlife that all interact together. We've talked a bit about the bad bugs that we want to keep out of our gardens in previous episodes but what about the good bugs? These beneficial insects can help control bad bugs and also limit the use of chemicals in our gardens, helping to keep our backyard ecosystems healthy.

Drew Radford:

To find out more. I'm joined in the Urban Plant Health Network studio by Dr. Lizzy Lowe from Cesar Australia. Lizzy, thanks for your time.

Speaker 1:

Yeah, thanks for having me on.

Drew Radford:

Lizzy, we depend a lot on insecticides to control pests in gardens. There is though, another way. You talk about a patchwork ecosystem. What is that?

Lizzy Lowe:

When we talk about gardens and urban areas in general, they're really, really complex ecosystems because it basically means when you've got lots of people with lots of different gardens, everybody is managing their back garden differently.

Lizzy Lowe:

So in one kind of suburban block, you can have what, 20 to 50 land managers and it means you end up with a real patchwork. You end up with one person who might have a very holistic garden. They don't use any insecticides. They've got lots of native plants and right next door, you might have somebody who prioritises a very highly maintained garden or a very kind of manicured garden and they have very, very different approaches. So you end up with this fascinating ecosystem where there's a lot of different things happening.

Drew Radford:

So Lizzy, why does that matter in terms of having different ecosystems throughout your neighbourhood?

Lizzy Lowe:

Yeah, so it can make it really difficult for people on an individual level to understand what's going on in their back garden and to have much of an impact of what's living there on a broader scale.

Lizzy Lowe:

If you think about things like insects, they're moving in and out of ecosystems all the time. So if you're trying really hard to encourage the insects in your back garden, then you may actually be having trouble because the person next door doesn't have a similar approach. That's why we really like to talk to whole communities about their approaches to insect management and trying to get everyone on board with that idea of using fewer chemicals in order to deal with their pests.

Drew Radford:

So Lizzy, what are some of the good bugs, good insects, that people should be trying to have in their backyard so you've got a healthy local ecosystem?

Lizzy Lowe:

Yeah, there are a lot of really important insects that we should be encouraging in our back gardens. Insects do a range of really important jobs. Most people will recognise that pollinators are a really important part of our garden ecosystems, so we've got things like bees and butterflies that are coming in. They're pollinating our plants, in order for those plants to seed and grow up into the future.

Lizzy Lowe:

But there's also decomposers and predators which play really important roles. Decomposers are there to break down the nutrients in the soil, so this includes things like slaters, worms, slugs, all those kinds of insects that people don't usually like to think about, but they're really, really vital soil organisms and if you think about, if we didn't have those decomposers in our ecosystems, we have dead leaf litter and things sitting around that wouldn't actually get taken back into the soil and the plants wouldn't have access to those nutrients.

Lizzy Lowe:

And I mentioned predators as well. So if we're talking about trying to reduce the amount of pesticides we're using, we need a different way to control our pests and these predators have been evolving for what, hundreds of millions of years, in order to eat insects. They're perfectly designed for the job and they're very, very good at eating a range of different pests that we have in our back garden. There's lots of examples of things like spiders, lacewings, which are beautiful flying insects which are really good predators, ladybugs, and even dragonflies. Dragonflies are fantastic predators, both in their juvenile stages, when they actually live in the water and they can eat mosquito larvae and then they hatch out of the water, they fly around and there are amazing mosquito predators when they're adults as well.

Drew Radford:

Lizzy, what are parasitoids and how do they work into this whole process?

Lizzy Lowe:

Yeah, so we've talked about predators and how they can attack our pests, but parasitoids are the next level. They're really, really great at controlling pests because what they do is they're insects that have evolved to lay their eggs in other insects and so this creates like a really nice kind of warm environment, full of food, for their eggs to develop.

Lizzy Lowe:

So how this happens is it's often a wasp and the wasp will come along and lay its egg into something like a caterpillar and then fly away. Its job is done. That egg will grow inside the caterpillar, actually feeding off the insides of the caterpillar and then burst out when it's ready to hatch. It sounds very, very gruesome but if you think about it, it's a very targeted way of dealing with caterpillars in your back garden. That wasp isn't going to lay its egg into any of our beneficial bees or spiders. It's just going to be targeting those particular caterpillars and not going to be affecting anything else.

Drew Radford:

Yeah, Lizzy, I think gruesome is probably the understatement in terms of the term, but you describe it well, as in terms of being targeted.

Drew Radford:

Ladybugs; we don't usually think of them as predators, but I understand there's also bad ladybugs. How can that be?

Lizzy Lowe:

Ladybugs are actually ferocious predators. They're very, very good in both their juvenile and adult stages at controlling things like aphids, but there are actually over a hundred different species of ladybird in Australia. Some of them are predators. Some of them eat fungi and there's one or two species which will actually eat plants. And so that's... They're the ones that we would refer to as the bad ladybugs, because they can actually become pests eating the plants in your garden. But the main species you need to look out for there is the 28 spotted ladybug, so if you have the time to go out there and count the spots, you can work out which species you have. But the vast majority of species of ladybird that you'll see in your garden are actually doing a really important job by controlling those pests.

Drew Radford:

Lizzy, the other one is pollinators. What our pollinators and are they just bees or are there other pollinators out there?

Lizzy Lowe:

Yeah, that's a great question. A pollinator is basically any animal that will take the pollen from one plant to another and the pollen is really important because it actually enables the plants to make their seed.

Lizzy Lowe:

So when we see this in insects, we see things like bees, they'll come in and feed on the nectar that's provided by a flower. They'll get that pollen stuck onto them and then they'll take that over to the next flower when they go feed again and they've transferred basically the genetic material from one plant to the next.

Lizzy Lowe:

We know that bees do this really well. We have the honeybee, which has been introduced to Australia for the pure idea of pollinating plants, especially some of the plants they need in agriculture. But Australia has hundreds of species of native bees as well, that are also very good pollinators. They just are not able to be carted around on such a large scale as the honeybees.

Lizzy Lowe:

But also you've got butterflies that can be pollinators, even things like beetles and flies. Any insect that's regularly visiting different types of flowers can be a pollinator. And of course we have birds and even mammals in our back gardens like the little honey guiders and sugar gliders. They can act as pollinators as well.

Drew Radford:

Lizzy, how do we encourage some of these pollinators? You know, we hear about things like bee hotels.

Lizzy Lowe:

Yeah, the best thing that you can do to encourage pollinators in your garden is to make sure they have enough food and water. That's the main things we need to think about in terms of habitat. So food of course, is any type of flowering plant and having different types of plant flowering throughout the year can be really useful to make sure they've still got that food continuing throughout the year.

Lizzy Lowe:

Water is important as well, but of course, remember to keep an eye out for mosquitoes. It's good to refresh the water. When it comes to a place for them to live, Australian native bees live in all sorts of different types of vegetation and also some of them even live in the ground. So, that's where this kind of idea of the bee hotel came from. They've got these long kind of tubes in them to encourage the resin bees, which will usually live down in the holes, in sticks. And sometimes they'll have clay and things in there for the ground nesting bees as well.

Lizzy Lowe:

The problem with the bee hotels is that they can also sometimes encourage the diseases that bees carry and the parasites that might come in and feed on the bees as well, because the bees aren't used to living in such close proximity as a bee hotel. So it's great for an opportunity to see the native bees that are living in your garden, but it's not the only way to encourage bees and other pollinators in your garden.

Drew Radford:

Lizzy, what about some of the other beneficial insects? How do you encourage those to live in your garden?

Lizzy Lowe:

When it comes to predators, the best way that you can encourage predators is again to make sure that there's enough food for them. And when it comes to predators, their food is these pests. Of course, we don't want to have lots and lots of different pests in our gardens, but I think we need to kind of get used to the idea that having a low level of some types of pest is actually an okay thing.

Lizzy Lowe:

If you've got a couple of aphids around or a couple of cockroaches in the back garden, this isn't a huge problem and it does actually encourage those predators to come in and start eating those pests, rather than you getting straight onto that pest problem, spraying everything straight away and then the predators have no reason to come into your garden and you don't have any ongoing biodiversity because of that.

Drew Radford:

Lizzy, some of the reading for this interview, I found few other terms that I'm unfamiliar with, one of them is augmentation. Can you explain actually what that is? And also insectariums.

Lizzy Lowe:

Yeah. So when we talk about augmentation, this is again to do with pest control. You can either rely on the predators to come in on their own terms, or you can actually use augmented pest control, which is where you breed up large numbers of these predators, such as ladybirds, and you can actually release them in your garden. So there are companies which do this. They do it for back gardens but also on a larger scale in agricultural systems and there's even a group that uses drones to fly around the fields and drop the predators onto their fields so that they can do the pest control work. It's very cool.

Drew Radford:

Lizzy, I've actually seen a photograph of yours, which is a Styrofoam box on the front seat of a car, and it looked like it was full of insects; live insects. So you're involved with that.

Lizzy Lowe:

Yeah, that's exactly right. So we had some ladybirds that were shipped out to us and we were having a look at how those ladybirds behave in terms of what kind of different aphids they can eat.

Drew Radford:

Lizzy, wrapping all this up, it sounds like working with insects is a much healthier and a more productive way to run a garden.

Drew Radford:

Dr. Lizzy Lowe from Cesar Australia. It's always wonderful to talk with you and thank you for joining me in the Urban Plant Health Network studio.

Lizzy Lowe:

Thanks so much. I always enjoy having a good chat.

Speaker 1:

Thank you for listening to The Good, The Bad and the Bug-ly. For more episodes in this series, find us and subscribe wherever you get your podcasts. We would love to hear your feedback, so please leave a comment or rating and share this series with your friends and family. All information is accurate at the time of release. This podcast was developed for the Urban Plant Health Network.