

# THE GREEN FUSE

A natural history magazine created by young naturalists for young naturalists



Issue 5  
Winter 2021

# Welcome

Hello and welcome to the winter issue of The Green Fuse Magazine 2021! It has been a year since the publication of our first issue of The Green Fuse. It has been a really exciting year meeting amazing people, learning more about the natural world and the environmental challenges we are facing. We would like to thank all of the people who have contributed to and supported The Green Fuse magazine over the past year. We are excited to bring you this issue.

We would also like to thank you, our readers, for taking the time to read our magazine!

The Green Fuse is a natural history magazine created by young naturalists, for young naturalists. We made this magazine with the hope to spread enthusiasm for the beauty of nature and to inspire others to love nature just as much as we do.

The name 'The Green Fuse' was inspired by Dylan Thomas's poem. The Green Fuse editorial team consists of home educated children who live in the UK. Many of us live in Carmarthenshire, the home of Dylan Thomas, so we found The Green Fuse a fitting name to take. If you want to read the poem, you can find it on our website at: [www.thegreenfusemagazine.com](http://www.thegreenfusemagazine.com).

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# About Us



Rose Fulton (13)

Editor, Illustrator, Journalist, Graphic Designer, Photographer

I am home educated and a keen naturalist. I have always loved nature and would like to pursue a career in zoology when I am older. I particularly enjoy birdwatching and woodland walks.



Megan George (11)

Photographer, Journalist

I am a young naturalist living on a farm in the beautiful countryside of Carmarthenshire. I love photography and watching wildlife and particularly birds, but my favourite animal has to be my pet sheep Daisy.



George Rover (14)

Web Designer, Journalist, Photographer

I am a home educated nature enthusiast. I live in the countryside of south-west Wales. I love to read. I am passionate about wildlife, conservation and the environmental impact of humans. After saving up, I have just bought myself a camera and love spending time at our river.



Tom Fox-Dean (14)

Journalist, Photographer

I am Cornwall based and home educated, this gives me a lot more time to explore the Cornish coast and walk the cliff paths. I find sea life fascinating and love freediving with my underwater camera. I also love playing cricket and hockey.



George Fulton (10)

Illustrator, Photographer, Journalist, Puzzle-master

I love aquatic life. I like birds and would like to work in conservation when I am older. I have my own museum with lots of natural history exhibits. I love drawing and creating things.



Libby Greenhill (12)

Writer, Poet, Journalist

I am an enthusiastic naturalist who loves going on walks through the woods and spending time with my pets. I have always loved writing and have started writing more stories and poetry about nature.



## GUEST CONTRIBUTORS:

Miller Kew-Moss (14)

Journalist, Photographer

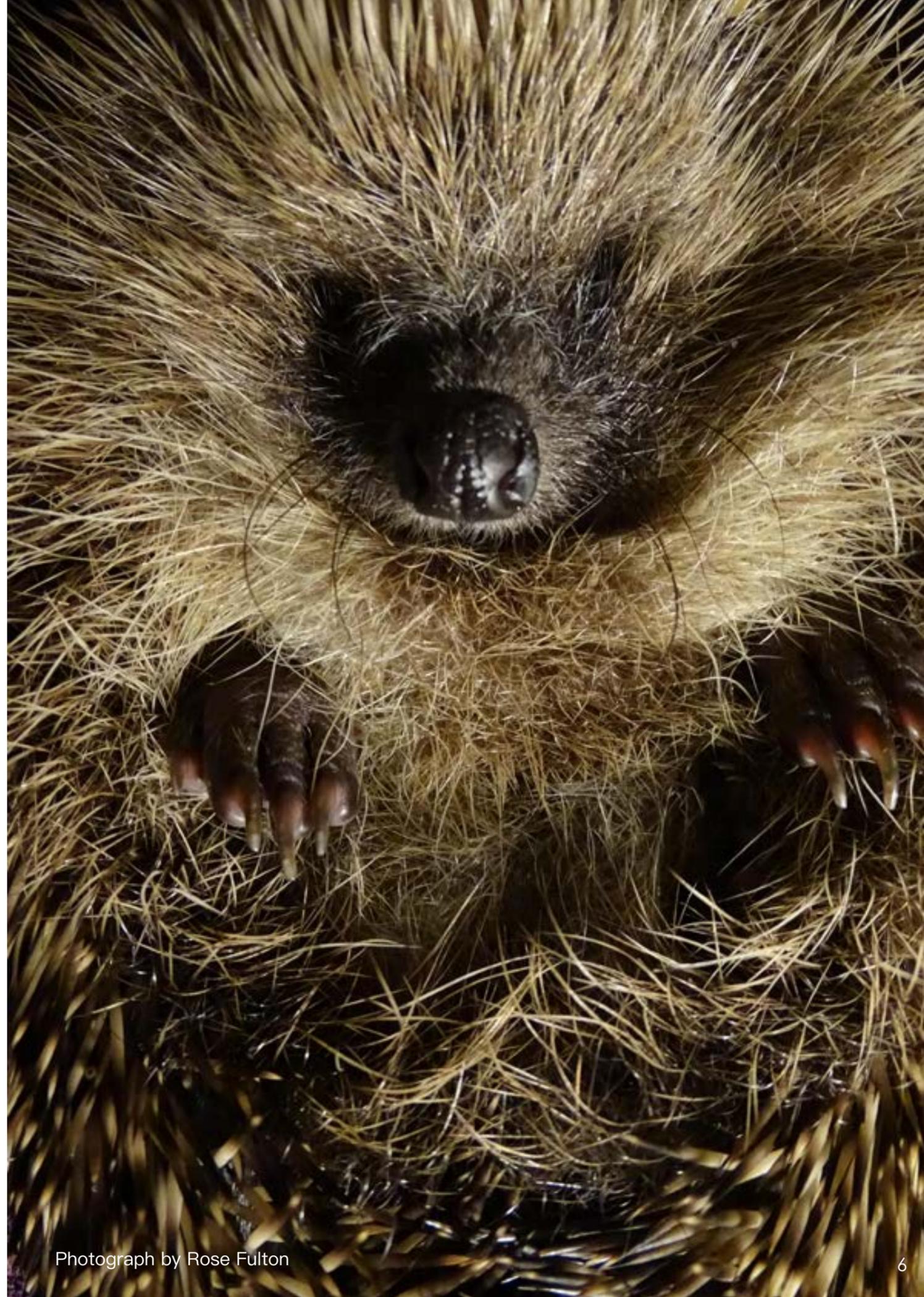
I'm Sussex based and I love wildlife photography, my favourite animals are kestrels and buzzards but I also love insects. I spend a lot of my time in the countryside looking for (and trying to photograph) wildlife and natural wonders.



Heidi

Writer, Journalist, Photographer

I love nature and capturing its beauty through art, stories, poems and articles. I enjoy finding out about all of the incredible species that are out there and why they do the things they do.



Photograph by Rose Fulton

An interview with

# George McGavin

By The Green Fuse Team



## What was your earliest memory of connecting with nature?

I don't think there really is one. From as far back as I can remember, the natural world seemed to be very interesting. Although I enjoyed other things at school, they were much more abstract to me, or they seemed that way. I just liked being outside.

Growing up, we had a month's holiday in August and we normally spent the month in a cottage somewhere on the West coast of Scotland. I suppose that's what I recall. I remember the smell of bracken very clearly. I remember the smell of peat. Once, many years ago, when I drove over the Scottish border and on into the highlands, the first thing I did was to get out of the car and roll in the heather and the peat. Just to smell it again was sheer joy.

## Who was your mentor or role model when you were growing up?

Yes, I think that this is very important – that you have somebody who you admire and somebody who you like. At school, our biology teacher, Mr John Mounsey was very good. I enjoyed biology because I did well at it. I think that is to do with the way it was taught. So, I think the way that things are taught is very, very important. If any subject is taught in a boring way, you aren't going to find it interesting. After I left school and went to Edinburgh University where I had a tutor in my second year who was an absolute inspiration. Dr Henry Bennet-Clark was everything I wanted to be. He knew so much stuff – he understood the biology of so many animals, and I thought this is exactly what I should be doing.

I'm quite sure that if I had met a geologist who was similarly interesting about their subject, I would probably have become a geologist or if I had met an inspiring astronomer, I might have become an astronomer. I think there is a period of your life, when you're young and up and you're learning about stuff, if you connect with anybody who has a particular passion and can get it across, it's very likely that you will follow that path.

## What would you describe yourself as – an entomologist, a TV presenter and author, or something else?

All of the above! A naturalist, a biologist – of which zoology is a subset, of which entomology is a subset. So I'm all of those three things: I write books so I'm an author. I go exploring, so I'm an explorer; and I have presented stuff on the TV for the last 15 or so years. So yes, I'm all of those things.

I am very fortunate in having had two dream careers. I thought my Oxford job, which I had for 25 years, was the dream job. It was a little bit of a surprise when I suddenly and relatively quickly decided that I didn't want to be an Oxford academic anymore – instead I would become a television presenter. It's worked out fairly well and I've made numerous documentaries and short films. I'm very lucky that I have had, not one, but two dream jobs.

## What did you have to face in your career to get where you are now?

Well, a lot of challenges actually. I had quite a bad stammer as a kid. It started when I began to speak fairly and by the time, I was three or four and certainly when I began school, I had a pretty bad stammer. It got worse and worse and worse, until I was in secondary school and, aged about 14, I thought there was no point in speaking, I literally didn't speak for a year and although it's amusing now, I had a school report at the end of that year that said 'George answers well in class.' It made me realise, of course, that they don't know who the hell you are anyway, because I can put my hand on my heart and swear that I never answered a single question in class. If you had come to me when I was 14 years old, when my stammer was at its worst, and said to me, 'right, George, you're going to be a university lecturer at Oxford University for 25 years and, when you finish that, you're going to become a television presenter', well, I don't think I could have imagined anything less likely!

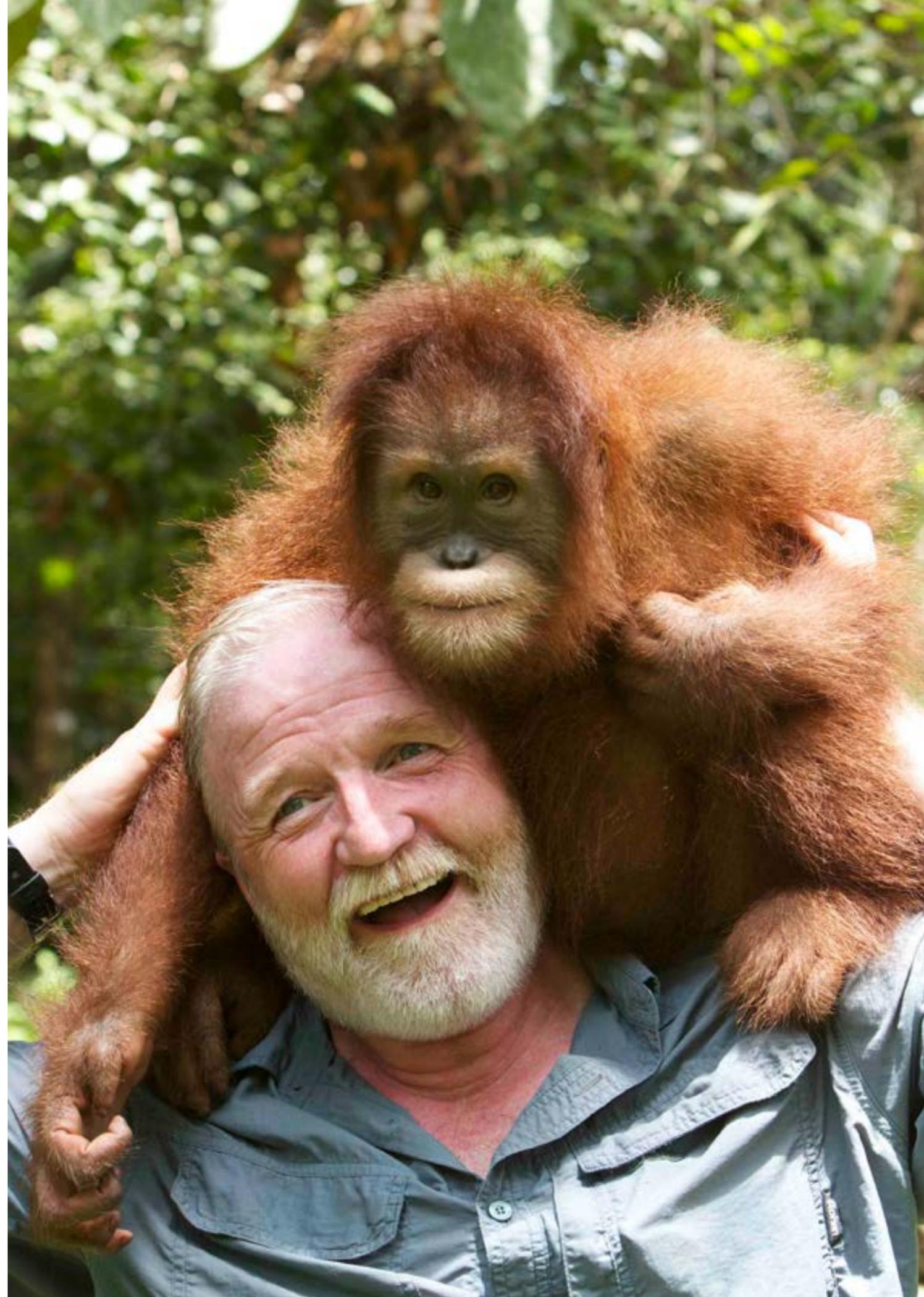
I went to speech school in Edinburgh, which was pretty difficult. Every week, I went along on a Tuesday evening and I didn't really believe that they could do anything for me. Of course, we now know that you can't cure a stammer. You can control it, you can be in charge of it, if you like, but there are no cures for it. It's probably something to do with the wiring of the brain. There's actually a lot of very interesting work on this. Stammering mainly affects males and males who are left-handed. It affects twins more than others, and I'm a twin, I have a twin sister, – and there's also a correlation between having interests other than those of your family. My family was artistic and I was the only scientist in the family so the speech school staff were not surprised that I had a stammer. I didn't really get on top of it until I was about 40. I'd been at Oxford for 15 years – teaching with a stammer, and then things began to improve slightly. The first television I did was the most frightening thing I've ever done. Why did I do it? I keep asking myself, why I put myself through that? Why did I want to give myself such an amount of grief and stress? I think I just had to do it. I have a passion inside me for telling people about how the world works. I want people to love insects, I want people to look at the natural world and go, 'Yes, I understand part of that natural world. It's what keeps us all alive – and that overcame my pretty major terror of actually having to speak on camera. As a teenager, doing interviews would have been impossible – I'd have run a mile, over broken glass to avoid having to do it. I tell this story to lots of audiences. In any audience of a hundred people, there is one person like me who has a bad stammer and I like to think that they hear what I'm saying and they might think to themselves, 'Well, yes, I've got a bad stammer, but it needn't hold me back. It doesn't have to define who I am'.

I should say that I'm currently doing an audiobook which will be released next year. As you can imagine, it's about insects and it's called *All Creatures, Small and Great: how insects made the world*. All eight chapters will be read by me and I will be recording it in early January. I have to confess I'm rather nervous about it. Of course, anybody who has a stammer knows that when you speak and there are difficult words you can change words around as you talk. If you think there's a word coming up which will be a problem, you can try to use a different word. But when you've got a text to read, it's more difficult because you can't easily alter it.

**What is your favourite non-arthropod animal that you've researched feel to be here?**

Most of my TV work has been to do with insects so I was very surprised when BBC1 said to me, let's do a show about primates. Primates? I'm a zoologist, so I know a little bit about primates. I thought we'd be doing a show about bugs, but no, it was primates. So we were flying all over the world – this was at a time when it was possible to fly all over the world – and we filmed aye-ayes, bonobos, orangutans and chimpanzees. It was the most enjoyable thing I think I've ever done, non-insect wise, and I fell in love with a baby orangutan. We were filming in South East Asia Sulawesi, I think it was, at a sanctuary where orphans are kept. This is because when they clear the forest for palm oil plantations, or whatever else it is, the hunters often kill the adult orangutans and they take the young ones as pets.

This little thing had been in a cage in someone's house for about three years. You can imagine how grim it was – a concrete floor with a wire cage where it was kept and thrown some scraps to eat. Well, it was eventually freed and taken to this orphan school. The idea behind this, and it was part of the film that we made, was to try to educate the baby orangutan about how to live in the forest, because this animal has never seen a forest – it hasn't been in the forest. It doesn't know how to eat, what's safe to eat, what isn't safe to eat, how to hunt for food. In the wild these animals spend up to nine years with their mum, who will show them exactly how to live in the forest – how to survive – how to be an orangutan. Without that, the baby orangutan's chance of survival is pretty low. So, you can't just take them and say, 'right, you're doing it and here's the forest, off you go, bye bye, have a nice time', it won't work. They have to teach them over a period of three or four years. Although that seems a long time, it's really not quite enough. I filmed with this young orangutan and she was gorgeous, she was utterly, utterly gorgeous. At one point, I was actually showing her how to eat a particular plant stem, is a tough, spiny thing called Rattan but if you break it open, inside the stem is white pith, which is very edible. I was trying to break this thing open on camera and as I was biting away, I broke a crown on one of my teeth, but I knew we couldn't stop filming so I keep going and not swallow the crown, which would have been a bit awkward. As I broke open the stem and took out a piece of this pith, I began eating one end of it and she put her face forward and began eating the other end of it. Our lips met in the middle and I was smitten. That young orangutan eventually went off into an area of the forest that they thought was safe. I don't know what happened to her, I almost don't want to know, because even after all that training, her chances of survival are only about 50/50. I think that's a disgrace the way we treat members of our own biological family. The fact that 50% of all primates are now threatened in some way is scandalous – and it's purely our fault. There's no excuse.





### What's your favourite arthropod?

I get asked this a lot – I don't know, there's so many of them. As a group of insects, the bees probably have to be my favourite because they're so interesting and they've been around for 100 million years. Without them, we wouldn't have any vegetables or fruit or any of that stuff. So, I think bees are arguably the most important insects of all.

I do like the human bot fly, a creature you will meet if you ever go to the Amazon or other parts of South America. It is a large, bee-sized fly that lays eggs in your skin. Well, it doesn't actually lay them directly in your skin. It's a bit sneakier than that. You might wonder how a large bot fly lays eggs on your skin without you being aware of it. Well, it catches a blood-feeding fly like a mosquito and holds it very gently and lays its own eggs on the abdomen of the blood-feeding fly, which it then let's go. While you're in your hammock asleep, the mosquito, now with the eggs of the bot fly stuck to his abdomen, will land on your skin and, as it's feeding on your blood, the heat from your skin makes the bot fly egg hatch and the larva will go burrow straight into your skin, where it will begin to feed. It gets bigger and bigger and then, when it's fully grown, it will pop out onto the ground and pupate. It's a pretty amazing fly. Well, when we were filming in Guyana, I remember I really wanted to get one in my skin. I rolled my sleeves up in the hope that a mosquito might bring bot fly eggs which then might make their way onto me, which we could then film. Sadly, I didn't get a bot fly one of the camera operators did. At the end of the shoot he said to me, 'I can hear something scratching in my head', and he had a bot fly larva under his skin. He could actually hear the rasping of the larva's jaws as it was scraping away at his flesh right next to his ear. Lucky devil.

**What's the most interesting or exciting encounter with an animal you've ever had?**

One of the most exciting, for me, was army ants in Guyana. Army ants are interesting animals, and they have a soldier caste that have enormous great jaws – I mean huge jaws, and they move in a big band. They basically swarm over the forest floor, eating everything in their way, then in the evening they haul up in a tree trunk or somewhere and form a massive ball of ants. I thought it'd be really good to get a camera inside this hollow tree we found, inside which was a great ball of these army ants. We always take a huge amount of kit on these trips, including a probe camera, which is a small camera made up of a very long cable with a steerable tip. So I said 'This is great guys, come on, I'm going to film this big ball of ants, let's stick the probe camera in'. What I hadn't realised, of course, was that the probe camera itself connected me directly to the ants, so it wasn't very long before several hundred soldier ants rampaged up the camera cable onto my hands. I was standing there, trying to steer the camera into this hole, while these massive soldier ants were gnawing me. I eventually dropped the camera and ran into the forest!

A slightly quieter excitement was when I was filming in Borneo, I think it was, and the crew were all off to film something large and hairy – that's what audiences like to see. Audiences are generally not that interested in arthropods, which of course, they are wrong about, but that's why I'm there. Every time you go on a trip, you will get diarrhoea. This is one of life's unavoidable things, no matter how careful you are with your hygiene and what you eat, no matter how often you wash your hands, eventually you'll get diarrhoea. In a jungle environment, it can be hard to avoid and this was what happened to me. On this particular day, I stayed in camp, I said to our director, 'look, I can't really film today, so off you go, have a nice time and I'll see you when you get back'. I was standing in camp, basically minding my own business with a hot drink in my hand, wondering when I might have to go to the toilet next, when this thing came down on a silk thread right in front of my nose. It was about four inches from my face. I looked at it and I thought, 'what is that?' It looks like an ant but it can't be an ant because it's hanging off a silk thread – it must be a spider. And of course, it was a spider, one of these incredible spiders that eats ants and looks exactly like an ant. You can see why it evolved that way so it can move among the ants basically unseen.

I looked at the spider and I knew immediately that this spider has never been seen before, it was an undescribed species of spider. I couldn't remember seeing anything similar in collections or books. I was very excited when I realised that I was looking at something that nobody had seen before and recognised as a new species – it was pretty cool.

**What advice would you give to a young naturalist?**

Follow your heart. Follow your dream. Never, ever let anybody tell you that it's not what you should be doing.



# Chris Packham thinks The Green Fuse Team are a load of Punks!

We asked Chris if he thought the ideals of punk rock hold any relevance for today's young people:

For a lot of people, punk rock was about the music. For me, it was a lot more about the whole attitude. The attitude to the music was, you didn't go on X Factor and wait to be discovered or sell yourself to Simon Cowell. No, you bought a guitar and you started writing songs in your bedroom or in a garage or somewhere, and then you went down to the local pub and you said "can I play there on a Friday night?" It was about do-it-yourself, it was about you've just got to set your alarm clock, get up and get on with it.

And that, I think, was the punk attitude. It was, if you thought something was important and you had something to say about it, you weren't going to wait for someone to invite you, you just got up and used your voice to start saying it yourself. And you could say whatever you liked, even if people didn't like it. George Orwell's a famous author and he said something that's very important to me, he said freedom is the right to say what other people don't want to hear. And that's very punk as well, to be honest with you. Freedom is the right to say what other people don't want to hear. They might not want to hear it, but sometimes they need to hear it.

That's what punk did, it made people listen to things about politics, about racism, about homophobia, all of those issues. And things were pretty bad when punk rock was going on, they weren't great. Now, we still have problems with all of those social ills, bullying, all that sort of stuff, but it was much, much worse in the 1970s. There were a lot of angry young people who wanted to stop those sorts of things, so they started making a noise about it, and they didn't just do it with music, they did it with fashion and with politics.

Modern music might be more interesting, it might be more up your street if you're into music, but I think the attitude of do-it-yourself is really important. You might make the case and say that your magazine is a punk rock publication, because you didn't go to a publisher and say, "we've got an idea, can you give us loads of money? We want to do a magazine" — you've gone and done it yourself. You know, you haven't waited for someone else to think, "oh, that's a good idea, I can make some money out of that". What you've done is you've got together as a group, and instead of making a ghastly noise on stage with guitars and drums, you've done your do-it-yourself magazine. So I think the do-it-yourself part of punk rock is something that we should enjoy and protect and keep going.

If young people can do that, then I think that's important, it gives them that freedom to say what other people don't necessarily want to hear. I mean, I still think the music's superb, I like the art, I like the fashion, the hair — I like all of that stuff. But you know, that's really just on the surface. What's more important is what's underneath — what's underneath is a determination to do it yourself, and obviously you're doing things for yourselves. You're a bunch of punks! You're bunch of young punks, that's what you are!!



# Help the Environment Challenge

By Libby Greenhill

I'm sure you all, just like me, have great concerns about what we are all doing to our beautiful planet. It is certainly not sustainable to keep abusing it as we are. But I made a decision to start doing little things that I (along with my family) could do to start making a difference. For the real changes to happen, we are dependent on governments and large corporations, but while waiting for that to hopefully happen, what can we do?

The decision I made has been really simple to achieve, that being, each month to switch one thing we use in our lives to something more sustainable.

So far as a family, we have changed to using bamboo toothbrushes, refillable cleaning sprays, refillable deodorants, shampoo and conditioner bars, and reusable cloths instead of paper towels. And you can do this too, perhaps you already do. Can you try and change one item in your house to something eco-friendly per month? Everyone at The Green Fuse would love to see photos of what you have done! Please contact us at [thegreenfusemagazine@gmail.com](mailto:thegreenfusemagazine@gmail.com). We can't wait to see what you have done to help the environment!



# Insect Hotels

By Megan George

Insects are very important, not only for pollinating flowers, fruit and vegetables, but they also provide a food source for a huge variety of birds, mammals, amphibians and reptiles. Here's how you can make an insect hotel in your garden to help our insect friends out!

## Why you should you have an insect hotel:

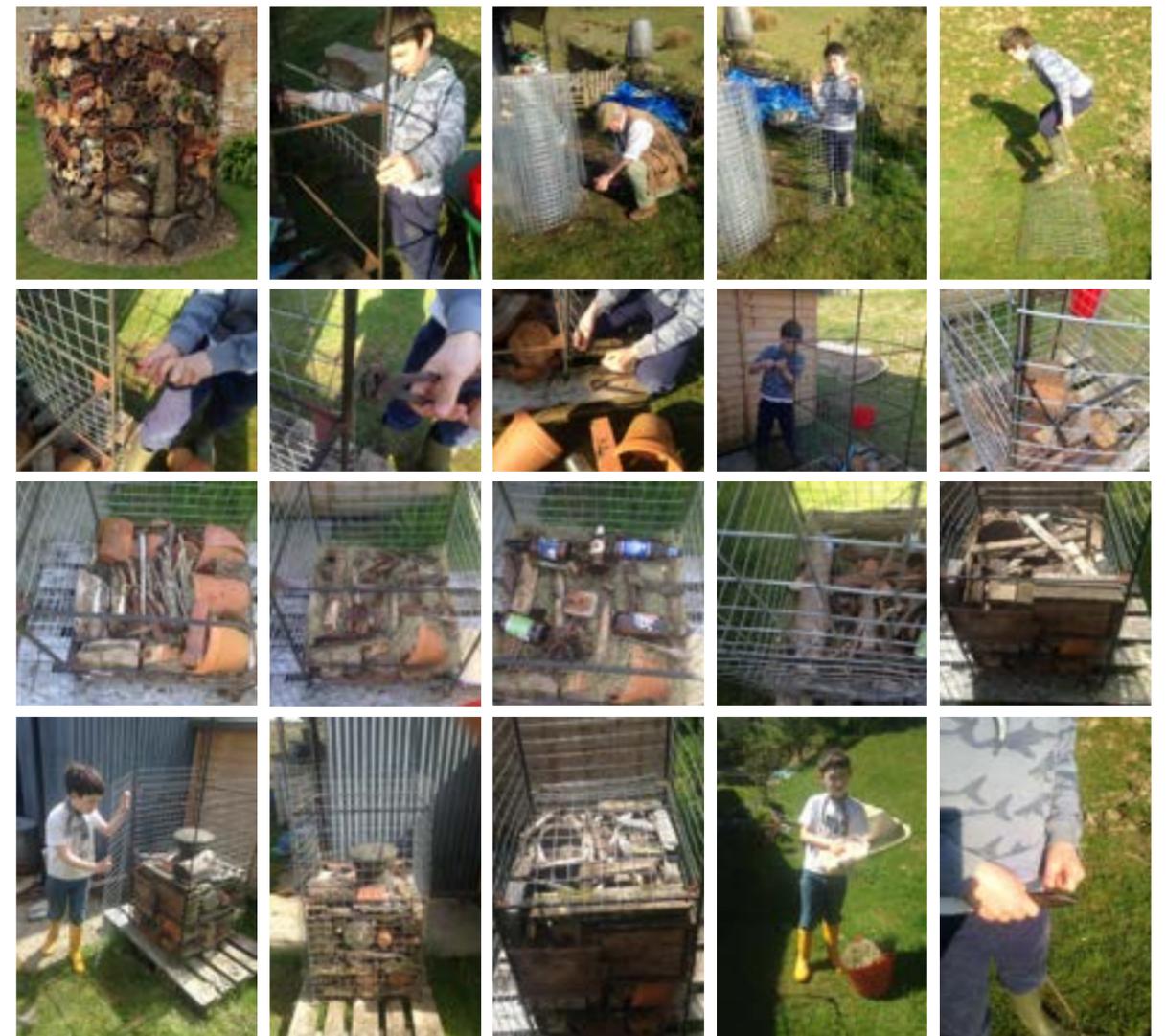
Insects can struggle find enough suitable places to live (both larvae and adults) and to safely hide out the cold winter months when gardens, parks and farm land are kept too neat and tidy. By providing an insect hotel you can help replicate their natural habitat and give them a helping hand.

## Which hotel should you have:

You can buy a variety of insect hotels or you can make one of your own, which I think is fun and means you can re-use and recycle things you may already have in you garden like old bricks, slates, clay pipe etc.

- You could make a very simple one by stacking a pile of rotting logs or you can make more complex ones or aim them towards a particular species.
- Bundles of dry sticks and stems are great for ground beetles, ladybirds and hover-fly larvae.
- Bamboo canes or drilled holes in wood are a good place for solitary bees to use, you may see them filled by leaf cutter bees, just like in my photo. Piles of rotten logs are ideal habitat for wood-boring beetles, stag beetle, centipedes, millipedes, woodlice and more.

Here are some bug hotels that I made in my garden which I hope will give you an idea of what to create and inspire you to get out and build your own. Whichever type of hotel you are able provide for your tiny friends will help, so go and give it a go!



Photographs on the right by George Fulton  
Photographs on the left by Megan George

# A Diary of a Young Naturalist Review

By Libby Greenhill

Diary of a Young Naturalist is the incredible book by Dara McAnulty. It is all about Dara's journey with nature and the beauty he finds within it. After reading the book, I have felt a personal connection with Dara, though the language used in the book has made me feel like I've always known him.

As well as creating an incredibly personal feeling in his book, Dara has taught the readers about the magnificence of nature and finding beauty in the simple things. When I read this book I wasn't just hearing Dara's story, I was absorbing the magic of nature in which he was telling.

I was heartbroken when I finished the book, I felt like I had lost a part of me. But then, Dara published his new masterpiece, Wild Child. Wild Child is the incredible book written by Dara McAnulty and illustrated by Barry Falls. It's packed full of the adventure and excitement of nature and is filled with activities to take part in. I loved this book just as much as Diary of a Young Naturalist, and even though it was aimed as younger readers, I felt that Wild Child taught of nature's beauty in just the same way as his other beautiful creation.



# Why Insects are the Building Blocks for the Best Garden and How to Attract Them

By Heidi

A few weeks ago, I was sitting on a chair in my garden and I was not at all pleased. There was something wrong and I couldn't quite put a finger on it. I stared out at the vast area of grass in front of me and sighed. I could've painted the view just by pouring a bucket of green paint onto a canvas. There was no movement, no variety. It was just... green. And at that moment, I decided that I needed to do some serious gardening.

Not only do insects such as butterflies, ladybirds and bees liven up and add a bit more colour into your garden, but they guarantee you a whole nature reserve at your doorstep as the birds, hedgehogs, frogs and more follow along. You will be able to gaze for hours at the adorable ball of quills that will stumble forwards, its small, pointy, wet nose, a dot of ink, sniffing its way across your lawn. The flash of wings as birds glide effortlessly through the dreamy, blue sky and their piercing black eyes reflect the light of the mild, soft sun as it peeps up over the fluffy clouds. The elegant leap of a shiny, colourful frog as it hops from one lily pad to another, its reflection copying, on the calm but slightly rippling pond. But that's not all. The ways to try and attract insects are altogether just plain beautiful. With dancing flowers, bubbling ponds, the harsh smell of chemicals replaced by the soft smell of wildlife, a variety of habitats bursting with life and much, much more.

It has been estimated that private gardens in Britain cover more than 1,000,000 acres. Many people use this area to plant a few flowers or feed the birds but often insects are overlooked or killed, and that is where the mistake is. We should focus on the insects and not only on the bigger species such as birds, as these will just follow along. Since 1970, 50% of all insects have disappeared. That is 50% of all bright, fascinating, incredible insects, the building blocks of most lives. Gone. This has led to a drastic fall in all other species as they depend on these insects as a source of food or pollination. We depend on insects as a source of pollination and yet we let them fall through our fingers like sand, slipping away into a place we can never reach. Just like David Attenborough says, "if the invertebrates were to disappear, the world's ecosystem would collapse." So, when you next look at your modified garden, as well as thinking about its beauty, you can feel proud that you just supported a whole bunch of different species... including your local farmer!

So, enough of why you should have insects in your garden and onto how you can attract them. Some ways that you can do this are:

**Dig a pond.** Ponds are a beautiful addition to your garden and will be quickly inhabited by a range of different species including dragonflies, damselflies, pond skaters, back swimmers, water beetles, aquatic larvae and many other insects. These insects will also attract other, larger species such as frogs but make sure to create a ramp leading out of the pond so that if any other animals fall in, they have a way of getting out again.

**Stop using chemicals.** Pesticides will kill a range of different insects, not just the ones you are targeting, and even if some survive, they will still harm or kill the larger species that eat them such as hedgehogs or birds.

**Plant native plants.** Ever wondered why you bought all of those pretty flowers from the garden centre and none of the bees or butterflies are going for them? Try planting native plants as the insects that live in your area have adapted to feeding from them.

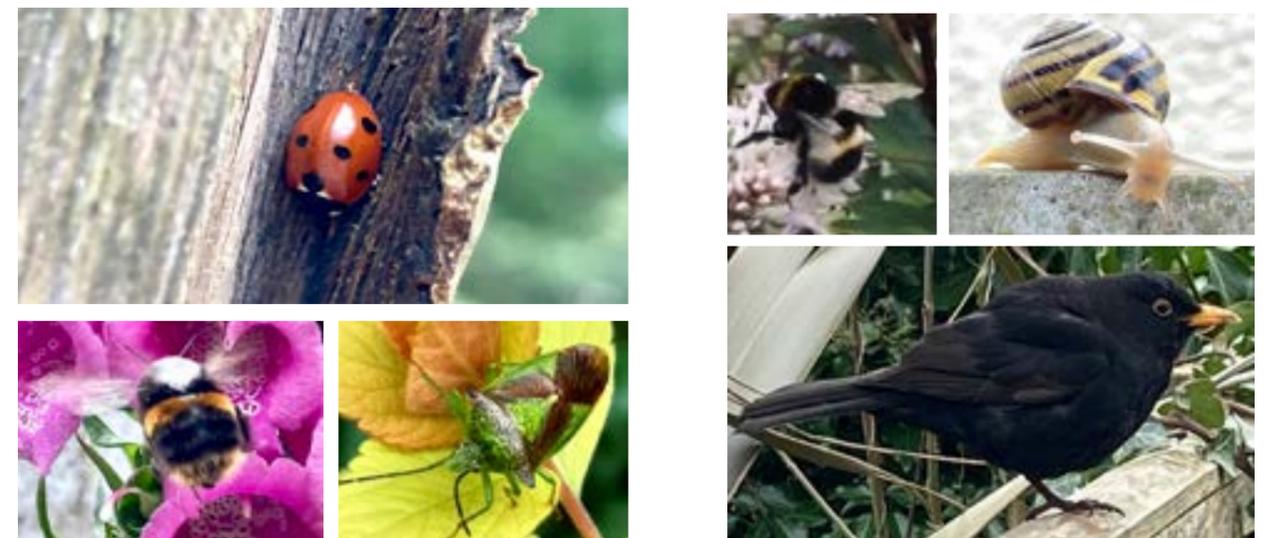
**Compost your waste.** Not only does composting your waste reduce the number of things that you send off to landfill for other people to deal with, it also acts as a haven for insects and other wildlife. This is a great thing to do if you don't have a garden as well because compost bins don't take up much space and you can just pop it outside your house.

**Set aside an area.** If you set aside an area in your garden that you don't cut or weed, it can look truly beautiful as wildflowers start sprouting up and insects and other wildlife will adore it.

**Consider making a bug hotel.** A bug hotel can be a great project for children to get involved in or even just you on your own and it provides the perfect habitat for a range of different insects!

**Be more tolerant.** I know the odd nibble of one of your nice plants or a fruit that you were waiting to eat can be frustrating but the satisfaction you get in return of the extraordinary species that come to your garden is worth it. So let them eat it because a plant will keep on giving and maybe you could even plant a few sacrificial plants just for the insects to eat.

...And that's it! I hope that you enjoy your fabulous new garden and all of the magnificent creatures along with it! So, what are you waiting for? Go and modify that garden of yours!



Photographs by Heidi

An interview with

# Tammy Shadbolt Georgina Gerard



By Rose Fulton and George Fulton

Tammy Shadbolt and Georgina Gerard work for the Zoological Society London (ZSL) on a project reintroducing the dormouse to the British countryside.

**Tammy, what is your earliest memory of connecting with the natural world?**

When I was about four, I took a shine to woodlice in the garden. I loved woodlice, so I thought they needed rescuing from the garden. I would make big houses out of cardboard and wood chippings with tunnels and all kinds of things. I'd sort of keep them almost as pets in the utility room. They ate their way out of their cardboard house and went back to the garden, but that was fine. So that was one of my first connections to nature – I fell in love with wildlife through woodlice!

**Georgie, what is your earliest memory of connecting with nature?**

Mine is probably less cute than Tammy's, but my parents tell me that, when I was about three or four, in our garden I would run around and find anything that had died, whether it was a small bird or a dead insect, and then I would line them up on the kitchen table and pretend I was doing a post mortem. I did this for many years, finding foxes and other animals and dragging them up to the house to dissect. This is obviously something my parents hated and was quite disgusting but I was just so fascinated with any type of animal, dead or alive! I have been in love with the natural world ever since I can remember.



Photograph by ZSL

**How did you get into working in conservation, Tammy?**

Quite a long journey, lots of different degrees and lots of extra training, but in essence, I went to vet school, so I became a vet first, but alongside that I kept doing extra qualifications in wildlife and taking the opportunity to travel and do extra field work and training courses. In the end, I completed another degree in veterinary conservation medicine and a masters degree in wild animal health and then a PhD in The Pathogenesis of Tasmanian Devil Facial Tumour Disease, and then put all that together and finally got this job at ZSL. So I am a vet but a wildlife vet!

**Georgie, how did you get into working in conservation?**

A slightly different route to Tammy. I've always loved animals and we've always had lots of animals at home, but I actually didn't go down the traditional biologist route, I went to university to study psychology. Then I worked in communications, PR and marketing for quite a while. But I was volunteering on the side with animals and always knew that I wanted to work with animals, but wasn't sure how to get into the industry without a vet degree. I volunteered at lots of places including various zoos and rehabilitation centres and I went to South Africa to volunteer with Rhinos and other endangered species, which was amazing. Whilst in South Africa, I realised that I wanted to go back to formal education and become a wildlife biologist. So, I did the masters that they run here at the Zoological Society of London, which is really great, and got a job as a wildlife technician here shortly afterwards. So it was a less than direct route, but I eventually got there!

**Tammy, I wonder if you could begin by giving our readers some background information about the dormouse and its life cycle?**

Dormice can live for up to five years. They are born very small and naked and blind, then they develop their fur, their eyes open and they mature over the next six months. Once they're about six months old, they're able to start creating families of their own and starting to breed, forage and make nests. They actually tend to be awake and active from spring time through to autumn time, then they hibernate during winter time. So they have this hibernation period during their life cycle where they go to sleep and, strangely, they build their nests actually in the ground. You'd have thought they might be safer up in the trees but no, they like to build their nests in the leaf litter, so that's unusual.

**I read on your website that dormice numbers have declined by 55% over the last 25 years, what, in your opinion Georgie, is the main reason for this decline?**

I would say one of the main reasons is the reduction in quality habitat for the dormouse. Fragmentation of woodland and hedges as well as inappropriate woodland management are thought to be the reason dormice are declining. They need quite a specific type of woodland habitat to live in and because they are fully arboreal, they need good tree, shrub and hedgerow connectivity. Sadly, lots of mature woodland areas have been cut down and this reduction in their natural habitat, has caused a decline in their population.



### Are there any challenges or difficulties associated with reintroducing dormice?

There can be because, first of all, we have to find good habitat that's been well managed, and then there's lots of people involved in making the reintroduction successful. People involved include People's Trust for Endangered Species, who oversee the translocation, our group of vets and biologists at ZSL, and the group of captive breeders who breed the dormice. After they've bred successfully and they're approaching maturity, the dormice come to us for a quarantine period. Georgie and I look after them very closely here for about 10 weeks, we feed them and clean them out and check them every day. We also do lots of health tests and checks on them because it's really important to make sure that they're healthy before they're released into the wild and also to make sure they're not carrying any diseases that could be detrimental to the population that we're going to add them to. So, there's lots that goes on here, we do proper veterinary health checks and tests and then, once they're all clear, then People's Trust for Endangered Species coordinate the release day. We take the dormice to the selected release site, and there's loads of volunteers and helpers. All the soft release cages have to be set up in the trees, and we put the dormice in them. These are the cages where they will live, sort of semi wild, up in the trees, but they are still fed every day and still protected for about a further 10 days. Then when we're happy that they're doing well, the cages are opened and the dormice are free to go. So there's lots of steps and lots of people involved and lots of coordination. Lots of things can potentially go wrong, but thankfully they usually go right!!

### Georgie can you tell us about the dormice reintroduction day that you were involved in earlier this year?

After looking after the dormice for ten weeks solidly, we'd grown quite attached to them! On the day of the release, we came to the zoo quite early and put them all into their nest boxes, making sure they were secure and comfy with access to some food. We then drove up to the Lancashire–Cumbria border. It was an interesting journey making sure none of them escaped and that they were all happy and at the right temperature.

When we arrived, all the brilliant volunteers helped us move the nest boxes into their new woodland home. We keep the dormice individually in quarantine and then when they go out to be released, they go out in pairs for breeding. So, the male and female dormice are paired together with genetics in mind to ensure a healthy population. The dormice were then put into their soft release cages quietly to reduce disturbance and left with food and water until they were ready to be fully realised into their new woodland. Sadly, as they are nocturnal we didn't get to see them being released but to see where they were going to be living was great, it is a really amazing habitat, perfect for them.

### Tammy, have you had any updates in terms of whether the released dormice were able to breed successfully over the summer months?

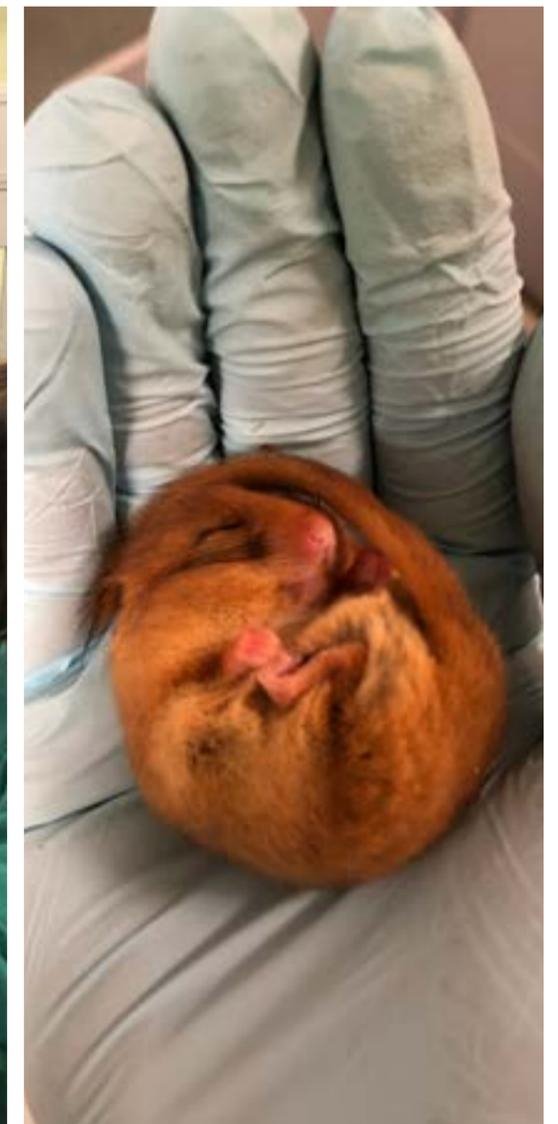
Our volunteers have been sending us the results of checks they do on the nest boxes that are still up in the trees, which the dormice can come back to for breeding. So the volunteers check those nest boxes every couple of weeks. If the dormice are in there, they'll scan them for a microchip to see if they're the ones that were released. They'll check their body weight and see if they've had any babies. We have certainly had good reports that most of them have been found again, they've been coming back to their nest boxes and are a good weight. There are no major health problems in them so far. We have had reports of at least a couple of nests of babies, so it all sounds good.

### Georgie, how do the soft release cages work?

The dormice live in the soft release cages in the woodland for ten to fourteen days. They stay in their cages in pairs, and are fed and given water by the volunteers. This is so they can acclimatise to their new surroundings because, for example in quarantine, we keep them at quite a nice cosy temperature at the right humidity and obviously, in the wild in England, the temperature could be freezing or it could be too hot. So we give them a bit of time to acclimatise and then, after ten days, the volunteers simply open the cage doors. The cages and nest boxes stay where they are so that the dormice can come and go as they wish.

### Georgie, what would you say the chances are of the dormouse being taken off the IUCN Red List at some point in the future?

That's a very difficult question. I would like to say very high because we're hoping the populations will increase through more reintroductions into good habitat but it's dependent on the habitat we can find for them in this country. People's Trust for Endangered Species and other partners work hard to find the perfect habitat for them but I think it's still a struggle to find enough of it and to breed enough dormice which then have to go through the strict quarantine protocols to get enough of them out in the wild to boost the population. All of this is obviously quite difficult and takes a long time, so I'll say maybe one day...



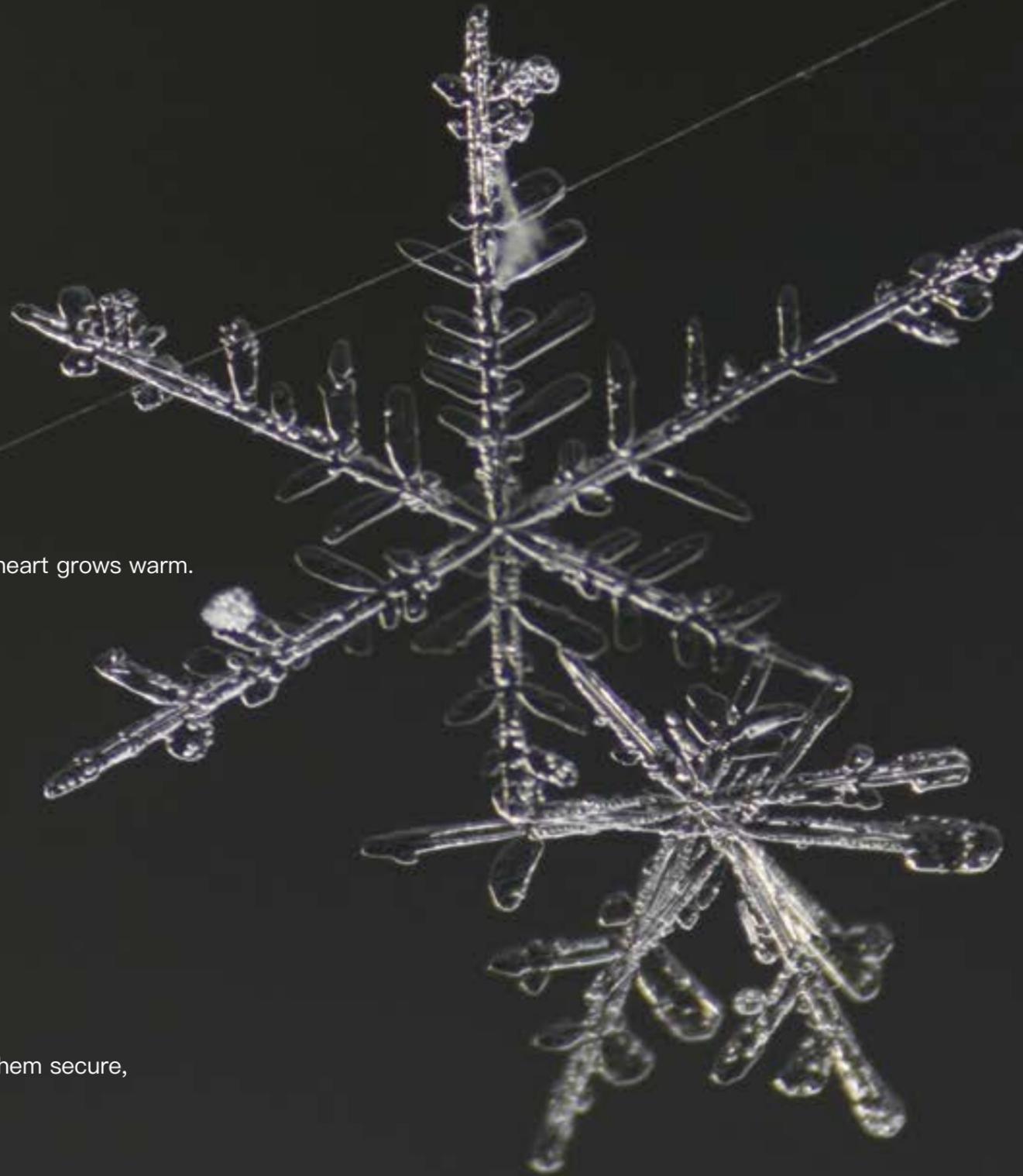
# A Sense of Winter

By Libby Greenhill

Look out of the window,  
See the white,  
The blanket that smothers the grass.  
Look at the blue  
That encases the trees,  
Look at that dripping ice.  
See the cool blue of frosty sky,  
The freezing shards of sun.  
Wait for a second, just look– a twittering robin,  
See that red as it blends–brown.  
See honour planted on face.

Now open the door, step into the wild.  
Feel that crunch of the cold snow on your feet.  
Put your hand on a tree,  
Feel ice liquefy,  
Seep into your hand.  
Stop for a second as your hand becomes cold– heart grows warm.  
Close your eyes,  
Feel the wind on your eye lids,  
Take a deep breath of air,  
Feel a cold rush in your throat.  
The frost in the air crisp on your skin,  
Feel this winter wonderland surround you.

Open your eyes,  
Hold a hand to ear–  
Hear the song,  
Birds' beautiful twitter.  
Listen intently to harmony,  
Delight in winter tunes.  
Take a step forward,  
Hear that crunch,  
The melody of snow.  
Close your eyes and just listen,  
Listen to the wind, as it wraps the trees, keeps them secure,  
and whistles along to winter song.



Take a breath through your nose,  
Take in atmosphere.  
Smell the ice as it waves through air,  
Smell bark of trees as they linger in your nostrils.  
Take another deep breath,  
Feel the scents of frost as they seep into mind,  
Freeze you into winter bliss.

Now,  
Before you leave this glowing world,  
Just taste the air as it fills your lungs,  
Just taste that chestnut from tree.  
Just taste the sunbeams rain down on earth,  
Splitting into shards,  
Filling you with worth.  
Feel taste of melting snow.  
Taste winter at its fullest,  
The fragrance of leaves in air fills throat  
With taste of silence, peace.

# Where Art Meets Nature

By Rose Fulton

Even if the facts are simple, the intricacies of scientific language aren't always easy to fathom with their many complex meanings so carefully documented on pages and pages of long words and intense wisdom. Sometimes, when the world of science is overflowing with phrases such as 'greenhouse gases' and 'global warming', it is easier to see and feel instead of trying to understand. One way to see and feel is via the medium of art. Whether detailed and delicate or abstract and eye-catching, art always evokes an emotion in the viewer and, no matter how big or small, always leaves an impression. Some artists seek to make the viewer feel something in particular (think of Rachel Whiteread's House) while others just want their art to have an effect on the viewer (Warhol's Campbell's Soup Cans, anyone?).

Here are three ways I appreciate art:

1. **The artwork as a whole.** Sometimes it is important to enjoy a piece of art as just that, a piece of art. One should be able to observe a painting and admire the colours, or relish the shapes made by a statue, without having to look for a message hidden by the artist.
2. **The creative process and skill of the artist.** Art can be made more powerful when one can appreciate the time and effort that has gone into creating the artwork, as well as noting the tools and materials used (how they feel to use, what marks they make, why the artist decided to use them). The precision behind a brush stroke curving into a face, the deliberate carelessness of an artist creating a pulsing wave of colour across a plain white canvas and the painstaking dot, dot, dot of pointillism on its way to becoming a valuable masterpiece.
3. **The potential political message or social commentary.** There might sometimes be in the artwork a level of meaning not immediately visible to everyone who sees the piece. The piece might reflect the artist's feelings when they were creating it, or perhaps it might be the artist's way of documenting what was going on around them, or maybe the piece is simply conveying a message too complicated to put into words.

In the next few issues of The Green Fuse Magazine, we will be looking at some amazing artists who are inspired by nature and the natural world. The first such artist who caught my eye is Zaria Forman. She is an inspirational artist who works to convey through her art the ever increasing urgency of global warming. Forman gathers references for her artwork by travelling to the polar regions to record the rapidly melting ice and to the Equator to document rising sea levels. Forman creates beautiful pastel drawings on a large scale, capturing every detail and exploring moments of turbulence, transition and tranquillity in the landscapes she draws. Her art gives the viewer an opportunity to experience the wonder of witnessing an iceberg up close, to travel to places they might not otherwise be able to visit, and to connect with environmental issues which, seen from a different perspective, might seem remote or abstract. Where other artists might portray the devastation of these vulnerable regions, Forman, in an attempt to move the viewer to help preserve these regions with the same passion she feels, chooses instead to depict their beauty. As Forman observes, "according to behavioural psychology, we take action and make decisions based on our emotions, which art has the ability to stoke".



Photographs provided by Zaria Forman

An interview with

# Daniella Rabaiotti



By Rose Fulton and George Fulton

## What is your role at the Zoological Society of London (ZSL)?

I'm a postdoctoral researcher. Usually, that's the step that you go on to after you do your PhD but before you get to run your own lab. I research the impact of climate change on African wild dogs, which was the research topic of my PhD. I currently do this as part of the 'Hot Dogs Project', headed by Rosie Woodruff, one of the professors at ZSL.

So what I do day to day is analyse and manage a lot of data that comes from the field. The field sites that we have are in Kenya, Zimbabwe and South Africa. I also help our field team with their data collection, their data storage and deploying their collars, as well as posting all the equipment out to them. Normally we would go in person, but because of Covid, we've not been able to do that, so everything has had to be done remotely.

## And what did you study in order to do this kind of work?

I did 'A' levels in biology, geography and psychology – only one science, which is quite interesting for a scientist. You don't necessarily have to have chemistry and physics to go into biological sciences, so I went to Bristol University and studied zoology. Then after that I went to Leeds University to do my masters degree in biodiversity and conservation, and after that I started my PhD at ZSL, but based at University College London. So I've been at ZSL now for about six years, but for four and a half years of that I was doing my PhD.

## Did your psychology studies help you at all?

Yes, I think so, I found psychology very useful at 'A' level. It definitely had more close and transferable skills compared to what I imagined physics would have done, so I did find it really, really useful. I have friends who did psychology who now work in animal behaviour, so it's definitely relevant, particularly if you want to work on primates. Because a lot of what I do is ecology, I think about how animals interact with their surroundings and how they behave. I think another really interesting thing to look into is the field of behavioural ecology, because that often has conservation implications as well. So it can be a really neat niche to get into.

## Who has been your mentor or your greatest influence in conservation?

I've had so many people who have inspired and helped me along the way, so in some ways it's quite hard to just pick just one.

When I was a kid, I grew up in the middle of Birmingham, a really big city, so I didn't get that much access to wildlife. Neither of my parents was into wildlife, so we didn't go specifically looking for it. Most of my introductions to wildlife came from television and from going to the zoos nearby, which were incredible. That's what got me really excited about wildlife. So I think in some ways I could say David Attenborough, because obviously who doesn't like David?! But I would also say that actually, for me as a kid from Birmingham, there was a man who used to be on the telly called Mark O'Shea. When I was younger, it was really important for me to see this man, who was from Wolverhampton, a big industrial area, with a local accent, making it on wildlife television!

## Did you always want to study animal behaviour or was it an interest that developed?

When I was really young, I wanted to be a marine biologist, but then I realised that you had to study chemistry to do marine biology and I really didn't like chemistry very much. Not knocking chemistry, but it just wasn't my thing when I was younger. So I changed my mind and decided to do zoology and ended up kind of getting a bit distracted from the sea. I still really enjoy scuba diving, more as a hobby than for work. I moved into terrestrial animals and tropical ecology. As I started studying all the different elements of climate change impacts, that's when I got really interested in animal behaviour and how, when it's hot, animals behave differently. This can cause problems, like impacts at a population level.

## Do you have any advice for a young naturalist?

I think my advice would be to not ignore nature at home here in the UK. I think I did that a little bit when I was younger, I was very excited about all these amazing animals abroad. I think you can get so much cool experience here in the UK and we have wonderful wildlife here, if you take the time to appreciate it. You can learn some really good field skills and some really good skills as a naturalist here in the UK. You don't have to go to far flung places or pay loads of money to travel. That would be my advice – go and find the really cool stuff here in the UK and make sure you take advantage of it.

## And what is your current research about?

I look at the impacts of climate change on African wild dogs. What I did for my PhD was I looked at how their behaviour, reproduction and survival were impacted, but what we're doing now is we're really, really drilling down into that behaviour. We've got these really cool new accelerometry collars, kind of like a Fitbit but they measure even more useful information, for example how much the wild dog is moving up and down, backwards and forwards and side to side. The collars measure these movements 40 times a second so you get really, really, really fine-scale behaviours back off these collars.

At the moment, my work on that front involves fitting the accelerometry collars to the wild dogs at the zoo, this helps us to interpret the data we get back from the wild. We've been quite delayed by the pandemic in deploying the collars in the wild. The collars will enable us to see what the dogs did differently on hot days, as it would be impossible to monitor that many dogs that closely twenty-four/seven. It really is amazing what this new technology can do, and the work we do at the zoo is completely invaluable for the work in the wild because we wouldn't be able to interpret the data from the wild without it.

### How does the hot weather and the changing climate affect the dogs' behaviour?

African wild dogs are what's called crepuscular, which basically means they're really active at dawn and at dusk, that's when they hunt. In the middle of the day, when it's really hot, they don't do anything. If you go and see African wild dogs in the middle of the day, they're all sitting in a big pile in the shade.

When it's a hot day, what you find is they basically hunt less, they travel less far and their hunting periods are shorter. What we've observed is that when it's hot, when the dogs are denning (which is the three months when they have puppies in the den), then the puppies are less likely to survive until they're adults. Also, in our study site in Kenya, we found that the adults are also more likely to die when the weather's been hot over the three previous months, so that has population implications. We think what's happening is, because they've got less time to hunt, the dogs are getting less food and this can cause issues with their offspring as they are not getting as much food, and less food also leaves them more open to things like disease as well.

### What other challenges are the dogs are facing and why?

I study climate change, but climate change wouldn't really be so much of a problem if it wasn't for habitat loss. African wild dogs are confined to just 7% of their historic range, they've lost so much habitat. They used to live over most of sub-Saharan Africa and, if you look at a range map, now it's just a few patches. So that's definitely the number one issue – people converting wild areas into farmland for cattle or to build homes.

The other big ones are disease – wild dogs catch a lot of diseases from domestic dogs, things like canine distemper and rabies – and coming into conflict with people. Sometimes wild dogs eat people's sheep and goats, and obviously people don't like that very much because they rely on these animals to survive, so that can bring them into conflict with people.

The thing with habitat loss is, because the dogs are confined to these small areas, as the climate warms, the dogs haven't really got anywhere to move to, and that's why we're quite interested in how they respond to climate change. It's not like with some species, where they can move northwards, because as soon as the wild dogs move out of the areas they're in now, they'll be in places with lots of people, and they don't get on very well with people, so they can't really move out of the areas where they are now.

### Why is it important to protect wild dogs? And how do we go about improving their situation?

I personally think it's important to protect wild dogs. I think often, if you speak to researchers who study predators in particular, they'll say, 'oh, they're a keystone species and if you take them out of the ecosystem, then everything's going to collapse'. But the situation's a little bit different in Africa, because they've got so many big predators and usually, if you take one predator out, not that much is going to happen because another one will come and fill the gap.

While African wild dogs have been shown to have some ecosystem-level effects, I would never say, 'oh, if you remove wild dogs, the whole ecosystem is going to collapse', it's nothing like that. For me, I think it's really important to conserve wild dogs because they're a really, really unique species. They're the only species in the genus that is still alive today, they have amazing social systems and they're a really, really beautiful animal. I just think they are so wonderful, it would just... for me, this is a very emotional argument, but it would just be such a loss. I just think they're absolutely fantastic and I think it would be a real loss to the world if they were gone.





The really key thing you can do from home is to support conservation organisations that are helping wild dogs and helping communities that live with wild dogs, so that wild dogs can coexist with people so that if the people get their sheep and goats eaten, they'll be okay and they'll have financial support.

Also, anything you can do to cut your carbon footprint, anything you can do at home, like changing your diet to eat less meat or using your car a bit less, all these things are changes you can make to help address the climate crisis. It's also really important you make sure that politicians actually stick to their climate goals.

**If I really want to find out more about African wild dogs, are there any books or projects you can recommend?**

The best book to read on African wild dogs is *The African Wild Dog: Behaviour, Ecology and Conservation*, by Scott Creel.

It's also good to follow organisations that work with African wild dogs, organisations like ZSL, Wildlife Act and The African Wildlife Foundation to name but a few. Botswana Predator Conservation do loads of work in the Okavango Delta in Botswana. Keeping in touch with and supporting those organisations is a great thing to do.

# Ferrets

By Joe Reardon

A ferret is a member of the mustelid family of mammals, along with otters, badgers, mink, martens, polecats, weasels, and stoats. Ferrets grow up to 14–17 inches long (35–45cm).

The scientific name for a ferret is *Mustela putorius furo* which translates to stinky little thief! This sounds like an insult but they do have a distinct musky odour, they are quite small and like to steal things so perhaps the name fits.

Ferrets are domesticated polecats and have been kept by people for over two and a half thousand years in Europe and the Middle East. There are some feral populations of ferrets in the UK made up of escaped pets. Having a pet ferret is a good way to learn about other mustelids, including the ferret's close relative the polecat.

The polecat is a similar size to the ferret, the main difference between them is that polecats have bigger teeth and black nose and black pads on their paws and black claws unlike the ferret's which are pink.

Ferrets were first domesticated in Europe over 2500 years ago and were used for hunting and pest control, pictures of them survive from ancient Greece and ancient Egypt and they look like they are pets in the pictures. In medieval Europe and during the renaissance only royalty, those high up in the church or wealthy people who made over 12 shillings a year were allowed to keep them! Ferrets were real status symbols.

By the 1800s rodent control using ferrets was a business – which is apt because the collective known for ferrets is a business of ferrets! In the USA and Europe professional rat catchers known as ferret meisters were employed to deal with rodents. They often transported their ferrets in wheelbarrows and used special traps to catch the rodents.

Today ferrets are still used as working animals, particularly in rural areas, but since the 1980s they have become increasingly popular as pets. This has led to some colours or coats being more highly prized than others.

## Ferret and Polecat Facts:

1. Ferrets normally live between 6 and 12 years which is longer than a wild polecat which lives for around 6 years.
2. Just like polecats, male ferrets are bigger than females.
3. Ferrets are naturally crepuscular which means they are active at dusk and dawn. This is a bit different to polecats which tend to be nocturnal.
4. Ferrets are obligate carnivores which means they can only eat meat. Polecats are also obligate carnivores and are skilled hunters in the wild.
5. Ferrets like living in small groups sometimes with other animal companions like cats or dogs, but polecats tend to be solitary.
6. Ferrets and polecats have very flexible back bones that can bend or even stretch up to 30% longer than their average length to fit into tight spaces and tunnels.
7. They can run in underground tunnels as quick as they can aboveground.
8. Both are keen climbers.
9. Ferrets and polecats can naturally swim, just like some of the other mustelids such as otters.
10. In the 1960's Boeing used ferrets to string wire throughout their planes.

# Collective Chaos!



Cornucopia

Clew

Escargatoire

Gaggle

Can you match up the correct collective terms for these animals?

Match the picture with the collective noun above and link the the words below.

Cobras  
Mongoose  
Pandas  
Owls  
Porcupines  
Toads  
Turtles  
Gerbils

Prickle  
Knot  
Pack  
Quiver  
Parliament  
Embarrassment  
Horde  
Bale

Here are six collective terms for animal species, three are true and three are false, can you tell which are true and which are false?

1. A tickle of lice
2. A clan of hyenas
3. An array of hedgehogs
4. A blubber of seals
5. A clowder of cats
6. A dip of swallows

Puzzles and illustrations by George Fulton



### Answers: Collective Chaos!

Geese–gaggle, Cobras–quiver, Mongooses–pack, Pandas–embarrassment, Owls–parliament, Porcupines–prickle, Toads–knot, Turtles–bale, Gerbils–horde

### True or False:

- |                          |       |
|--------------------------|-------|
| 1. A tickle of lice      | False |
| 2. A clan of hyenas      | True  |
| 3. An array of hedgehogs | True  |
| 4. A blubber of seals    | False |
| 5. A clowder of cats     | True  |
| 6. A dip of swallows     | False |



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