

# THE GREEN FUSE

A natural history magazine created by young naturalists for young naturalists



Issue 3  
Summer 2021

# Welcome

Welcome to the summer issue of The Green Fuse Magazine, a natural history magazine created by young naturalists, for young naturalists. We love getting new readers and thank you so much if you are one of them. All of us at The Green Fuse hugely appreciate the growth of support.

At the moment, we are a small team of contributors, but we wish for more inspired young people to join us and help create future issues of The Green Fuse.

We decided to create this magazine in the hope to share our love of the natural world. We hope to encourage children and adults alike to learn the importance of protecting nature so that we can all be a part in helping it survive.

For those of you that don't know, the name 'The Green Fuse' was inspired by Dylan Thomas's poem. The editorial team of The Green Fuse are home educated children in the UK, many of them 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 (12)  
Editor, Illustrator, Journalist, Graphic Designer

I am home educated and a keen naturalist. I have always loved nature and have recently become interested in meteorology. I particularly enjoy birdwatching and woodland walks.



Megan George (11)  
Co-editor, 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)  
Co-editor, Web Designer, Journalist

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)  
Co-editor, 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)  
Co-editor, Illustrator, Photographer, Journalist

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)  
Co-editor, Writer, 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.



Photograph by Rose Fulton

# An interview with Chris Packham



By The Green Fuse Editorial Team

**Chris, what is your first recollection of connecting with nature?**

I grew up in the suburbs of Southampton. We had a small garden, it was about half the size of a netball court and had a plain grass lawn, and my parents put a baby bath in the garden, filled it up with water and my dad put some frog spawn in it and they hatched into tadpoles. He added water boatmen and rat-tailed maggots and things like that, and I would crawl up to the pond with a dish and a spoon and start scooping mosquito larvae and all of these other small invertebrates into the dish, a white dish where I could see them more clearly.

I must have been about three, I suppose, three or four. I can remember being four and I can remember being five quite clearly, and by the time I got to five, I was obsessed with wildlife, mainly dinosaurs. Dinosaurs and bats were the thing I was really into when I was five years old. When I started school, T. Rex was the most important organism that ever lived, and I'm 59 now, long ago left school, and I still think it's probably the most important. Obviously, I love T. Rex.

So I was extremely young. I was lucky, my grandmother bought me some bird books for my first birthday and I've still got them. It was 1962 and I can still remember all of the pictures in the books, I used to sit and just flick from page to page to page and then go back to the beginning and go through them again. I love those two bird books that she bought me. I think they were quite instrumental in getting me into wildlife too. That was when I was sort of two or three, and by the time I was four or five, I was hooked. By then, my parents started taking me out, obviously, and I was finding a few more things... ants nests, also I still remember finding lots of butterflies in some wasteland near the house where I grew up. So that was a long time ago. That was in 1961, '62, the world was a very different place then. I hate to say it, but there was a lot more wildlife around, although not as much as when my great-grandfather was alive. Not as much as when my great-great-great-great-grandfather was alive, but there was a lot more wildlife at that time and I miss it. I miss the abundance of that wildlife.

**When you were growing up, who was your role model?**

I'm not entirely sure I had a role model when I was very young, but when I got to about thirteen or fourteen, my biology master at school, John Buckley, was instrumental in encouraging me to study things in a scientific way. So up until that point, I'd been going out and catching snakes and looking for birds' nests, catching butterflies, watching foxes. I started a diary and I started to write those things down.

But John Buckley said to me, he said, you've got to start mapping them and you've got to start counting all the eggs and then see how many hatched into chicks and see how many fledge out of the nest, and then we started analysing barn owl pellets and things like that, and he got me into the science.

I had great admiration for John, he was really diligent and he gave me loads of books to read about science and things, so for a long time he was a bit of a biology hero for me. Without his assistance, I wouldn't have progressed in the way that I did when I was young. So he was more of a mentor, I suppose, and someone I looked up to. He's still alive and we still correspond from time to time. He's still a great naturalist, has always been a very good naturalist, a great observer of wildlife. You know, somebody who looks with a very keen eye and meticulously works out what's going on.

So I learned a lot from my biology master John Buckley, but in terms of well known people, there weren't that many. There was a fellow, you'd have to look him up on YouTube now, his name was Johnny Morris and he used to present a children's wildlife programme called Animal Magic. What he used to do was, he used to give all the animals voices, so he would get them to talk to one another and he would improvise and make up conversations between them. So he might be at London Zoo and there'd be two chimpanzees sitting in an enclosure, and they'd be looking at one another, and he'd be imagining a conversation between them. There were some science bits in Animal Magic, but I didn't like the way he did the voices and made the animals talk. I was very snobbish about that when I was young and so I didn't watch much wildlife on TV. Occasionally, there were programmes for adults, but bear in mind, this was all before David Attenborough started doing his work. David didn't really start doing things until the 1970s, by which stage I was much older. So I think John Buckley, my biology master, will probably be my answer. He was the person I looked up to.

**What is the most amazing encounter with wildlife you've ever had?**

I saw a kestrel this morning when I was out on my bike and I hadn't seen a kestrel round here for a long time, because kestrel's have declined quite a lot in the last twenty years, they've really declined, so that was quite nice.



The buzzard on my feeding platform this morning, which is probably still there, that was really nice. For me, invariably, it's things that are close to my home, I like to see things that are part of my community, the foxes and badgers.

Last year Megs and I spent quite a lot of time watching our badgers, the ones that were on Springwatch and Autumn– and Winterwatch, the pale ones. I spent quite a lot of time up at the badger set after Springwatch, I was there filming them and every night I would go and put out peanuts for them and they would come up really, really close to me, so close in fact that, when I was putting the peanuts down to get them to come towards me and my camera, on one occasion, I was sort of stretching out with my mobile phone to film a little video to show people, and one of the cubs came underneath my arm and was brushing against my forearm with its nose just to get the peanuts, so that was amazing. I'd seen badgers like that when I was a teenager, but I hadn't seen them that close since. It was really fantastic to be able to go out there every single night and see those badgers. That was brilliant.

Another thing that happened last year was Megs and I were driving home through the forest and a goshawk flew into our car window and it sort of stunned itself. So we put it in a box and took it to the Hawk Conservancy Trust where they have a bird of prey hospital. They nursed it back to life, because it had a damaged foot which it didn't damage flying into the window. They think the goshawk damaged its foot when it was in the nest. Megs actually got to let it go, which I was very envious about, and it flew out into the woods and back to where it came from.

Knowing those badgers, going out to see them every night, that was a certainly a wildlife highlight for me, and they were very close to our home, which was fantastic.

#### What is the scariest encounter with wildlife you've ever had?

I don't know, I never find wildlife particularly scary. Humans are quite scary and do some really scary things. Quite a lot of humans I find very scary. Some of the things that we are doing as a species are pretty scary. Some of the people that are doing them are quite scary, too, because they have too much power. They're doing too much damage too quickly. And the rest of us can't keep up when it comes to putting things right. But I've been very lucky, I've been able to handle venomous snakes, I went swimming with great white sharks, I've been very close to bears, including polar bears, as well as lions and tigers.

My partner, Charlotte, has a sanctuary where we have rescued big cats, so we've always been lucky to get very close to those. But I'm always more interested than scared, I think that the key thing is for those types of animals, if they have the potential to harm you, you've got to overcome that risk by just showing them considerable respect. I think if you respect the animal, and you accept that there's always someone that knows more about it than you do, and you ask the right questions of the right people at the right time, then you shouldn't come to any harm and you'll only really come to harm if you make a mistake.

Unfortunately, lots of people get complacent and they get harmed. I make mistakes, but I'm still here to tell the story. I met a rhino once, it chased me round a garden and I was lucky enough to be able to run faster than the rhino, but I did run fast, very fast. And then an elephant nearly got me once, I managed to get into a vehicle just in time. And once a lion bit me in the leg really hard and made a big hole, which I had to put my finger in to stop it bleeding.



All of these things happened because I made a mistake, and I've learned from my mistakes, so hopefully I won't be getting bitten in the leg again, or being chased by an elephant and just getting in the vehicle in time because I was too busy looking at my camera and not looking to see if the elephant was sneaking up on me. They're very large animals and they're very heavy, but they can actually be quite sneaky and they can tread very gently and move very quickly, so be careful around elephants! So I would say the answer to your question is — humans.

### What are your views on rewilding in the UK?

Well, I think that we all know that we've lost an enormous amount of our wildlife and we also know that the UK is one of the most nature depleted countries in the world. So we've lost lots of our wildlife, plants, animals and fungi as well and many of our habitats have been damaged, and I've seen a lot of that damage in my lifetime. As I mentioned before, when I was your age, and younger, there was a lot more wildlife about.

So we've seen wildlife disappear and we understand why those species have declined in number or vanished altogether from large parts of the UK, we know exactly the reasons why. Qualified people have gone out, collected data, analysed it, they've looked at it very carefully and they've written up and published it.

Another group of people have been working really hard to figure out how to stop it, how to firstly stop the declines and then how to repair, restore and reinstate. We need to reintroduce species into those habitats, and we can do it, we've got a really good toolkit in terms of conservation. Now, the reason we don't have those species there is because we haven't been doing it vigorously enough, we haven't been doing it broadly enough or quickly enough. It's just been little projects here, there and everywhere which have made a local difference, but not a national difference, certainly not an international difference.

Rewilding is one of those tools, it's a technique which allows us to recover our landscapes and make sure that there are places where the species can live in the appropriate habitats. For rewilding to work, it needs to be quite big, it's no good doing it in small areas. We've been trying that with our nature reserves, and that hasn't worked in terms of protecting our animals nationally. It works locally, you can go to a nature reserve and there'll be lots living there and it would be really great, but over the fence in the adjacent farmland or in the adjacent city, in urban areas, there's nothing there. So rewilding is one of those tools and I think it's really very important that we use as many of these tools as quickly as possible, so I'm a great fan of rewilding, I think it can offer opportunities not just for wildlife, but for people too. We see in parts of the world where they are rewilding that there are business opportunities for people to profit from that they can harvest — timber, fruits, sometimes even some of the animals that are there, if they need culling, for instance.

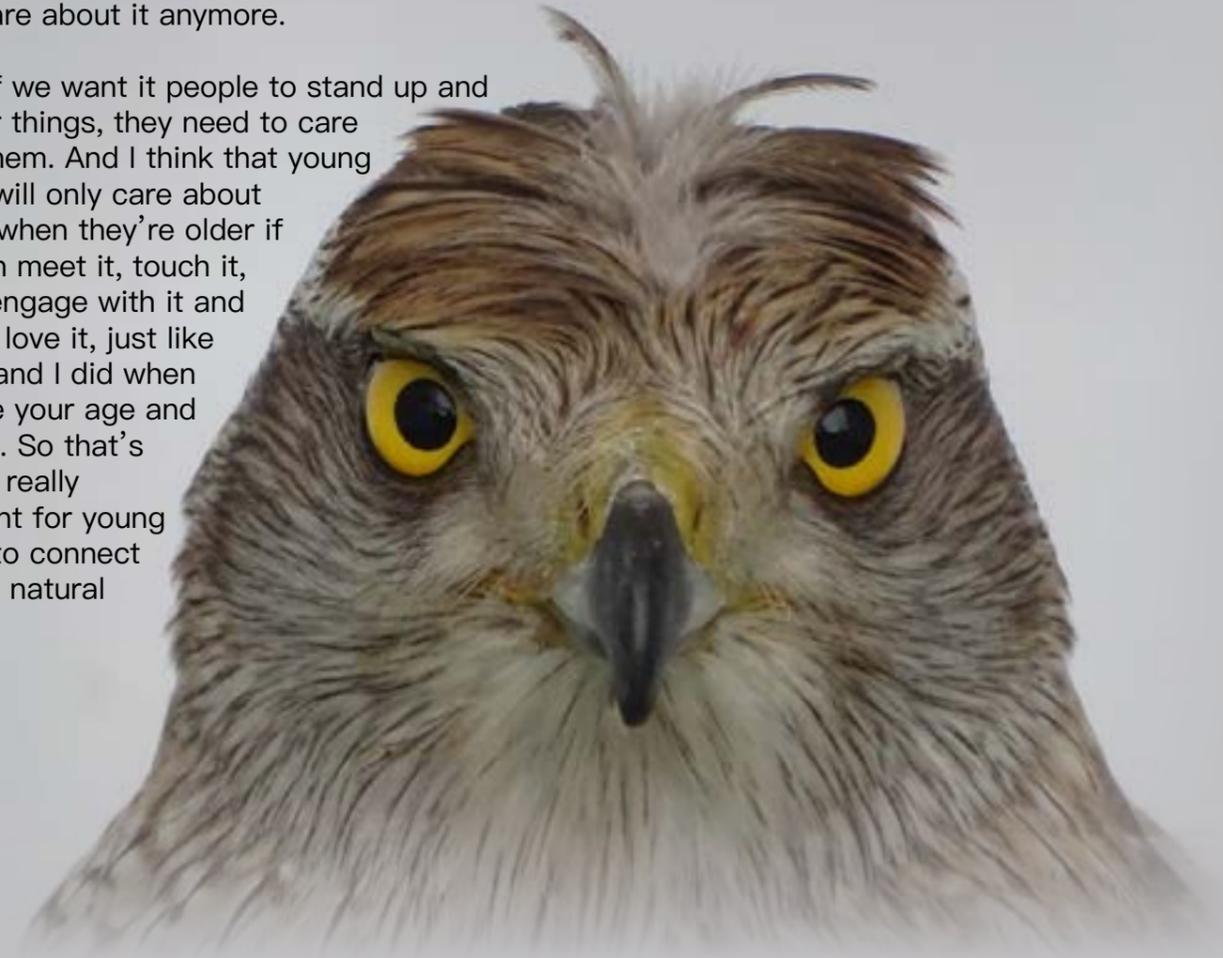
Businesses and organizations can encourage people to come and visit and they can make them meals and provide beds to sleep in — rewilding can support a whole economy. I think that in many places across the UK, where our land use isn't good at the moment and there's not much wildlife living there, we can find a better model for the environment and a better model for our economic system, and that would include rewilding. So yes, I'm a big fan.

### Why is it important for young people to connect with the natural world?

Well, to be quite honest with you, George, as I've already said, there was a lot more wildlife around when I was your age. I've spent more than half of my life trying to look after it and I failed. And I've got to be very honest with you, my generation hasn't done a very good job of looking after the world. And nor did my dad's, or my grandfather's, to be quite honest with you. But the difference between my dad and my grandfather and myself is that they didn't know any better, they didn't have the science to tell them that they were overfishing, that they were producing too much CO2, that they were cutting down too many trees. They didn't know, so it would be mildly unfair to blame them. But of course, during the time that I've been trying to be a conservationist, we have known better, we've known that all of those things are hugely destructive. So I feel more than a little guilty that my generation of conservationists has failed to stop the rot. And unfortunately, the world that you and everyone else of your age is going to inherit, will be not as rich as the one that I had, and that doesn't seem very fair, so I'm going to work as hard as I possibly can to make up for any lost ground. But I'm also very keen that young people who are energetic, who are full of ideas and ambitions and have good ideas, new ideas, and are not afraid to take risks and make a difference — even if it sometimes comes with a cost — I'm very keen that they have as much say as they possibly can. Of course, they will only speak out if they genuinely care about something.

You know, I used to watch football, I used to quite like football, but football now has become too much of a business for me. It's not about sport anymore, it's more about money, so I'm not really interested in football anymore. So if they said tomorrow, "we're scrapping football, we're just going to stop it", I would just say "do you know what, they're stopping football?". I wouldn't go and campaign about it, I wouldn't go to the local stadium and stand outside with a banner and say "we've got to keep football going, football is brilliant". I wouldn't even go on social media and say, "oh dear, they're stopping football, that's disastrous", because I don't care about it anymore.

I think if we want it people to stand up and fight for things, they need to care about them. And I think that young people will only care about wildlife when they're older if they can meet it, touch it, feel it, engage with it and learn to love it, just like Megan and I did when we were your age and younger. So that's why it's really important for young people to connect with the natural world.



As much as I would like young people to connect with the natural world, I also think that you really need them to, because when you get older, you're going to be asking them for their help to do what you want to do, which will be the same as what I've wanted to do, which is to look after things, only there's less things to look after so there's going to be even more urgency for you to get them on board.

Perhaps now more than ever, it's really important that we old people give young people a chance to exercise their voice, and that's why Megan and I like your magazine, because you're doing it for yourselves. You're saying what you think about the world and you're putting your energies into it and we think it's fantastic you're doing that. We think it's really important that you're able to share your magazine with as many other young people as possible who take on board the same passion for wildlife as you have.

So, we're really keen to help out as many young people as we possibly can because we think that young people do have good ideas and we'd like our generation to trust you more. I think a lot of the problems that I had was that when I was a young conservationist, not an old one like now, when I was a young conservationist, other conservationists didn't trust us. They didn't. They thought that our ideas were too out there, too ambitious, too unrealistic, and they didn't let us do what we needed to do at the time, they didn't want to let go. But that's not me — I want to let go! I like people with ideas and energy and I want them to be able to charge off and do the right thing!

So that's why it's really important that young people engage with wildlife.

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

Well, there's one piece of equipment that I think is really important and it's not a telescope or binoculars or camera or magnifying glass or even a notebook, you don't need any of those if you're asleep. So I always say to young naturalists, what you need is an alarm clock, so that you can set it and then you can get up.

You know, if you're not up, you're not doing anything, and if you're not doing anything, you're not making any progress. I think that the more time you're up doing stuff, making progress, the better. I hate to say it, but it's true, the best time to see wildlife is first thing in the morning because it's invariably more active because they've been asleep overnight and then they wake up and they're hungry or they're busy, so they've got to sing, they've got to find mates, they've got to find food, they've got to protect their territory. So that is the time to see wildlife basically. So yes, get an alarm clock, that's what you need, they're really cheap on the internet. Get one, put a little battery in it, set it the night before. If you haven't got a poodle to jump on your head first thing in the morning, then you need an alarm clock to get up and get on with stuff. Even if you don't go out, you're getting on with stuff. Getting on with stuff is the story of my life. I'm always getting on with stuff!

Getting up at five... imagine you get up at five, or you get up at nine, that is four hours difference. That's four extra hours of a day, imagine what you could do with four extra hours of a day. Imagine that added up over a week, a month, a year, a lifetime! Sleep is a waste of time, so my one of my mottos is: sleep when you're dead, eat just before.



Photograph by George Fulton

# Earth–Born Stars

UK Glow–worms (*Lampyris Noctiluca*)

By Megan George

Glow–worms are actually not worms, in fact they are beetles, described by William Wordsworth as “earth–born stars” in his poem *The Pilgrim’s Dream*.

The glow–worm’s light is produced by bioluminescence, a chemical reaction when the compound luciferin and an enzyme luciferase are exposed to oxygen.

It’s actually the females that glow brightly in order to attract a mate. She is flightless and won’t travel more than a few meters, tending to stay in the same spot waiting for a male.

She will climb up on stems of grass or stones to get a high spot and waggle her tail to shine her light.

Only the males have wings and use them to fly in search of the glowing female. The males’ eyes are so big they cover most of their head and this gives them a good chance of spotting the glow.

The adults don’t eat at all as they have no mouth parts and only live for a few weeks. The female will stop glowing once mated and dies after laying anywhere between 20 to 150 eggs.

The eggs hatch into larvae in early September and live as larvae for two or three years before pupating into an adult.

The larvae can be found under logs and fallen trees which is why it’s important to add log plies to your wildlife garden!

Glow–worm larvae are grey–brown in colour and have yellowish marks on the edge of each of their twelve body segments. The females look very similar to the larvae but without the yellow markings.

The larvae have large jaws and a toxic bite that paralyses and dissolves their prey, which consists mainly of snails and slugs. They can take down snails 200 times their own body weight and a meal that big can last them up to a month. They even ‘piggy back’ on the snail’s shell while waiting for the venom to take effect. After their sticky, messy meals, they clean themselves up using special tentacles stored in their tail.

Did you know that glow–worms were used in World War One?

They were collected in jars and their light allowed soldiers to read maps and documents at night without being seen by enemy planes.

So why not go for a walk after dark in mid–June to late July to see if you can spot some earth–born stars. Good luck!



# An interview with Erica McAlister

By The Green Fuse Editorial Team



Firstly, please could you explain to our readers what Diptera and Siphonaptera are?

When we talk about animals and plants, we use what used to be called their Latin names. We now refer to them as scientific names because we don't just use Latin, we use Greek and Japanese and many other languages for their names.

Diptera is two words smashed together, so it's 'di-' meaning two, and '-ptera' meaning wings. So you get Diptera, the insects with two wings – the flies!

Now Siphonaptera, a siphon is a straw. We still have the '-ptera' which means wings but there is an 'a' in front of it. If we put an 'a' in front of it, we mean the opposite. So, it's a siphon-drinking non-flying insect – which is a flea!

So I deal with the all the bite-y, jump-y, fly-y, pierce-y, stabby, sucking insects! That's my job!

What does your role as a curator at the Natural History Museum involve and what's your favourite part of the job?

My main priority is to look after the collection of flies and fleas. I have to look after the specimens, one or two million– it's hard to count them all! I will make sure they have got proper names attached to them and they're properly housed, also make sure they aren't mouldy or damp.

Then I host many visitors to the collection, we get researchers from across the world coming in to look at the specimens.

We photograph the specimens. Some of them, I pull their legs off (they're dead it's alright!) and we'll look at their DNA and find all sorts of novel ways of describing them.

Then also I'm very lucky, in non-Covid times I am allowed to travel the world to find new species, and right now on my desk I have new species of house flies that I've collected in Dominica... I also have some little bat flies that I collected there too, they look like little drunken spiders. We went out and recorded bats at night and we picked the flies off them. These are some of the things I am working on at the moment. It's quite nice that I am dealing with specimens new to science.

Other things I do are outreach, we're trying to work out how to communicate our science properly with everyone else. For example, we have a fly's head that has been 3d printed. If I go to a school, the pupils are able to feel this head, feel all the different parts, the eyes, antennae, and things like that. This is great for people who have a visual impairment. So I have a scientific component, a huge outreach component, and I write books. I have written several books, I have just done a children's book (coming out next March) for 7- to 9-year-olds that is full of fun facts about insects, including a beetle that farts its way across a pond as its method of travel, and all these fun facts that appeal to the average 9-year-old as well as people a lot older. (Erica raises her hand and smiles cheekily...) I love the idea that a beetle has figured out it can travel by farting!

What inspired you to study flies?

Because they are AMAZING!! We live in the UK, we watch big wildlife documentaries about elephants and giraffes, but what we have in the UK are just some amazing animals – here, in everyone's garden, we really have a wildlife safari!

I have always loved insects, you can see all the predator species and all the interesting things they get up to. And of those, the flies get everywhere and do the most, they get their little feet into every situation – from a decomposing corpse, to the top of a mountain, to a cave. They're even found swimming in the sea! Flies are just fabulous creatures.

Why are flies so important?

There's a lot of them, for each one of us there are about seventeen million flies. They are really important pollinators and they get rid of your poo. Now imagine a world full of your poo. That's not pleasant, is it? We need the flies to get rid of it. They also get rid of other species we don't like, other pest species that get on our crops and things like that.

Really cold areas? Flies live there. Really hot areas? Flies live there. Flies get everywhere! They are the largest purely terrestrial animal in the Antarctic, they can survive the cold so they can still be pollinators there. The first animal in space was a fly, in 1947 we sent a fly up in a rocket. Which is quite funny if you think about it, flying organisms up into space! Some of them can feed on petroleum, some of them can live off shoe polish, some are found in the sea. You name it, they're there! That's why they are so brilliant, it's like they're the nosiest creature on the planet – if they find a new place, they have to go and investigate it.

Why do you think people are so prejudiced against flies and other invertebrates?

Because a lot of the species that people don't like are closely associated with humans. So most people will have come across a fly such as a mosquito when a mosquito is trying to get their blood. Now this is just a mother mosquito, she needs the blood for her babies, so she's desperate to make sure she has the best environment for her offspring, that's why she is attacking you. And she will spread disease, she can transmit malaria, so a lot of people, their only contact with flies is when something really bad is happening. If you leave out a bowl of cat food, within an hour there will be little fly eggs on it, so they can get onto our food really quickly, that's why we just see the 'disgusting' bit. But that's only maybe ten, twenty... a hundred species and there's another 165,000 species that we have described so far! Just go and have a look at the bee flies in your garden right now.



### What do you think we should do to get people to appreciate flies more?

Look at them, my number one thing is just to look, because if you go into your garden and see the hoverflies buzzing around and the bee flies with big fluffy bottoms, I think you can start to appreciate how pretty they are. Look at them, photograph them, discuss them, and in doing so you are helping to understand their ecology. Every record you make, every note you take, that helps science and that gives more information about how valuable these species are.

### Which fly is fascinating you the most at the moment?

Aaargh! I hate being asked that question! It's like picking your favourite child!! Right now? Obviously today I saw my first bee fly of the year, so my neighbours watched me dance around my garden at nine o'clock this morning and then they watched me talk to the bee flies because I had one sit on my finger. So I don't know if I am going to be locked up for acting weird, or people are going to accept that these creatures are truly wonderful. Bee flies — honestly, you will squeal when you see one, they are just brilliant — fluffy, flying narwhals!

### Do any flies live in trees?

Loads, in fact in the Brazilian rainforest there's one that is about 8cm long, it's absolutely enormous. It lives as an adult for a couple of weeks, but its larvae are about the size of a 11 year-old's thumb! They are so big but they are all vegetarian. Apparently, you can hear these fly larvae eating two meters away from the tree!

We do get lots of species of flies that live in trees in the UK. One of my favourites lives in a hole in the tree, such as a bore hole or a rot hole, and those are some of the rat-tailed maggots. Most maggots breathe out of their bottoms and this one has got a really, really long spiracle, a long straw that comes out of its bottom. It lives in a really disgusting environment so it sticks its bum in the air to enable it to breathe fresh air. You can go and have a look at those in trees near where you live.

### I understand you don't like favourites, but which flies do you think have the coolest adaptations?

Good question! A fly that has hearing aids in its shoulders, there's a fly whose larvae can freeze themselves and go to sleep for thirteen years — that's pretty cool! There are flies that are venomous — I love a venomous fly! — and the fact that it can paralyse its prey is extraordinary. It has even been seen to take down some birds! A little fly — paralyzing a bird — it's extraordinary, that is nature at its hardest!

### Which invertebrates do you think make the best pets?

I've had some Madagascan hissing cockroaches, but they were handled so much they weren't frightened and stopped hissing, so they were like Madagascan "unhissing" cockroaches. They just gave up, they thought "oh, she's just an entomologist".

I have a little garden, even though I'm in London, and I can just go and sit outside and that makes me happy. So I just focus in on a hoverfly or something like that, a bluebottle, anything, and I can watch them until, after a couple of hours, I get screamed at for not doing any work. That's my kind of therapy.

### If any of our readers want to become an entomologist, what do you recommend they do in terms of experience and training?

Get as much actual experience as possible — going out into the countryside, out into your gardens and looking at what species are there. There are over 20,000 species of insect in the UK so there are a lot of things that need studying, so it's getting familiar with that. I wouldn't recommend trying to learn all of those species, I would pick a particular group. Nowadays we are so lucky as there is so much information online and so many societies to help us, and they can help with training as well if you want to learn how to identify different species. Although I followed a very traditional route of going through university, I didn't know what I was going to do. When I was your age, I didn't know that you could get paid to do what I'm doing. That was amazing, being paid to go around the world to look at flies!! Best job in the world!!



How I managed to do it was that I love these insects — my passion and my need to keep finding out more and more is what enabled me to get here. That means working hard, also you have to be prepared for a lot of knocks — I got so many rejection letters — you just add those to your list and eventually they become a positive and you get the best job. So basically, talk to people, experience it yourself, work hard and then fingers crossed.

#### What is your most memorable experience whilst looking for flies?

This is another terrible one, I do remember trying to Hoover a potato plant off a cliff in Peru, that was quite extreme. I do remember trying to collect mosquitos off a bull in a cowshed in Indonesia, and the bull wanted to become a friend of mine and I was a little bit scared as it was three times my size. Again, I had a vacuum cleaner trying to Hoover mosquitoes off it. I have fallen down holes, been stung, stuck and bitten, attacked, chased — you know, usual stuff!

I remember, though, in South Africa when I saw my first tangle-veined flies, when I caught my first one of those, I literally ran around like an idiot screaming for pure joy. So that was great, but then the next day I had to collect flies off penguins, who everyone thinks are really cute, but do you know how smelly penguins are? The smell of their faeces! Honestly, I thought I was going to throw up. There is wonderfulness and then horribleness the next minute. I can still remember the smell of penguin poo now.

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

Carry on, enjoy it! You all seem to be enjoying it and that is my number one piece of advice. I have never stopped loving nature, I hope that is obvious. Carry on doing what you are doing so well.

#### Have you ever had a species new to science named after you?

Someone's naming a fly after me, so that's nice. You know you are not allowed to name them after yourself. David Attenborough has loads named after him because people think he is amazing, and he is amazing.

#### What is your best fact?

Just one? Here goes — the flies that live on bats give birth to live maggots!! They get pregnant and give birth to live young and we never think of insects being pregnant and giving birth to live young like that. These bat flies are quite extraordinary. I quite like that fact.

Oh yes, then there's a fly, when she gets pregnant — and she's like a normal fly — when she finds a bat, she sticks her head in the side of the bat (which is quite extreme at the best of times), she then rips her legs off and her wings off (which is quite a bad mother in other ways), then she grows her bottom sooo big that it basically covers her entire body, so she is just one massive giant bottom! And because her breathing holes in her bottom look like eyes, it just looks like you have a smiley face stuck on the side of a bat. And it's basically a pregnant mother engorged, it's the bizarrest thing ever. OK, that might win best fact!!



# How to Find a Badger

(Meles Meles)

By Megan George

The Eurasian badger is the largest member of the mustelid family which also includes weasels, otters and stoats, to name but a few. They are Britain's largest land carnivore, nocturnal and easily identified by their striking black and white striped heads.

To find a badger, you need to find out where it lives, how it eats, what tracks and signs it may leave and also to understand some of its behaviour.

One very good indication that a badger lives nearby is the presence of badger poo. Badgers poo in neatly dug holes known as latrines and use the same area night after night, digging fresh holes as needed. The latrines serve as territorial markers between different groups of badgers.

Badgers tend to walk the same route each day, so look out for well worn paths. If you are unsure if the paths are made by badgers or larger grazing animals such as sheep or cows, check the appearance of the path to see if it is broken earth or smoother and grassy. The hard hooves of larger animals will break through the grass and soil but the badger's softer paws will usually only flatten the grass.

Check in soft mud for badger footprints. Badgers have five toes, long claws and a large pad.

Badgers often push under fences on their nightly explorations and you can check any holes at the base of fences or gates for hair that might have got caught. Badgers' hair is usually grey with black tips.

If you are lucky enough to find a badger home, known as a sett, you will typically be looking at a group of horizontal D-shaped holes with spoil heaps in front (from the dug out material) and well worn paths between the holes. Badger setts are often found near the edges of woodland or under hedgerows.

Sometimes in the spoil heaps you may find skulls or bones that the badgers have removed if any of their relatives die underground. A badger skull is easily recognised by the ridge at the top that helps anchor the large muscles responsible for the strong bite of the jaw. The jaw will normally be still attached to the top of the skull.

Once you find a sett or regularly used path, it's important not to disturb the badgers. An ideal way to see them without disturbing them would be to set up a motion-activated trail camera, that's how I got these photos of badgers. You could also try using a hide or camouflage yourself at a safe distance at dusk and you may be lucky. These photos from my trail camera were taken in the middle of the night or very early morning.

You may be surprised at the places badgers roam in the dead of night, when you're fast asleep. I was certainly amazed at some of the locations that my trail cam picked them up when I wasn't expecting them! Hopefully this guide will help you to recognise if you also have a badger in your local area and give you a look into their world.



Photographs by Megan George

# Birds in the Ancient World

By Libby Greenhill

The classical world was a period of time which included both the Ancient Greek and Roman eras. In these cultures, birds were extremely symbolic, this was for a number of reasons in which I will explain in this article.

## Religious significance and connection to the divine

Did you know that when the President of the United States is inaugurated, this comes from an ancient Roman practice involving birds? **Augury** was a fascinating part of the Roman world that involved the study of the flight of birds. They would look at how they flew in the sky and even how chickens ate their food! They would use this information for major political events, such as elections (eg deciding if the election should take place or whether it should be postponed). An important story when **Augury** was used is the story of Romulus and Remus (see Box A). When deciding who would be king of their new city, they each chose a hill and the one that attracted the most birds would rule the city.

You might already know that the eagle is associated with power, and the owl with wisdom, but do you know who they are associated with and why? The most important of all the gods, **Zeus**, had the eagle as his symbol of royalty, power and the idea of being at the top of the food chain. Being the king of the gods, these all fit perfectly with him. The eagle is also used by him, for example in the story of Prometheus (see Box B). The Romans, who called **Zeus** by the name **Jupiter**, also used the eagle and even their army **standard** bearers would have an eagle to represent their power.

The classical world used the peacock too. We know what a regal bird the peacock is, but did you know that it is linked to the queen of the gods? The peacock showed how regal Hera was, but it also showed her undying vengeance against her husband, Zeus. A myth about Hera and the peacock is the story of Io and Argus (see Box C). After Argus's death, **Hera (Juno to the Romans)** places his one hundred eyes on the bird, turning it into an all-seeing creature, so that she can always keep an eye on her unfaithful husband, **Zeus**.

Do you remember the story of Noah's ark and how they used the dove to bring proof of dry land? Well, this bird of peace is also found in the classical world. **Aphrodite/Venus**, the goddess of love, has the dove as her symbol, as she is meant to represent peacefulness and compassion to others.

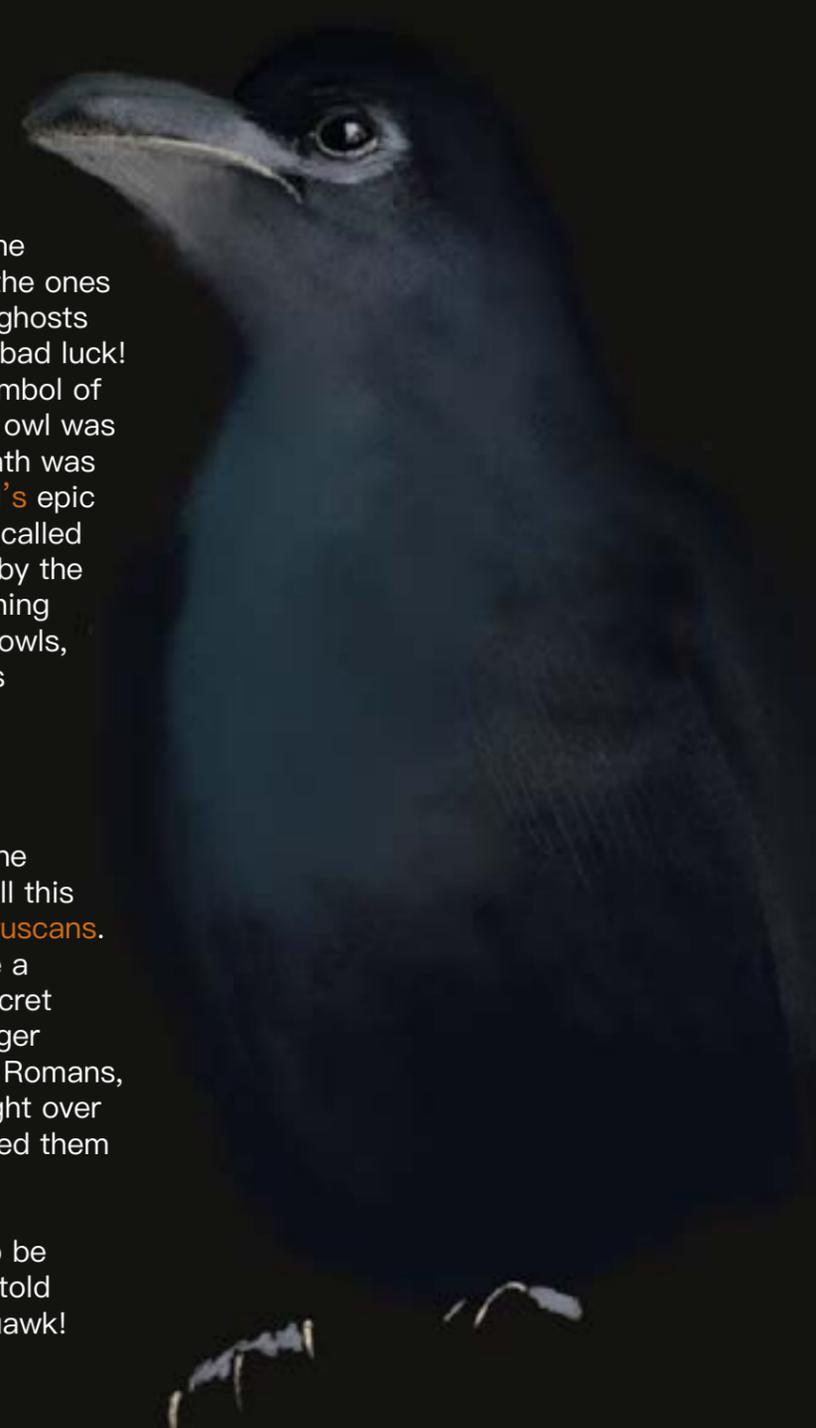
We all know that the owl symbolises wisdom, which is why the bird is linked to the Greek goddess of wisdom, **Athena**. But in the Roman world, there were superstitions attached to the owl and it was something to be feared. I will explain this in the next section. And what about birds that are scavengers and cause a nuisance? You might have heard of the **harpies** from Greek myth. **Zeus** would use them to punish people. An example of their use is when a king called Phineas was punished by them eating all his food every time he was about to eat.

## Superstition

Did you know that many superstitions we have now come from the Romans? They were the ones who came up with the idea of ghosts haunting and black cats being bad luck! They even saw the owl as a symbol of doom. They believed that if an owl was perched on a roof hooting, death was just around the corner. In **Virgil's** epic poem *The Aeneid*, a character called Dido's death is foreshadowed by the hooting of an owl. One other thing they believed when it came to owls, was that if you placed an owl's feather near someone whilst they were sleeping, it could prompt them to reveal secrets.

Have you ever pulled a wishbone after eating roast chicken? Well this superstition is linked to the **Etruscans**. They believed that if you broke a wishbone, you could send a secret wish to the person with the larger piece, this developed from the Romans, as too many people used to fight over a single wishbone, so they pulled them into two.

Chickens were also believed to be **soothsayers** because they foretold the laying of an egg with a squawk!



### Pets in the Roman world

We all know how beautiful exotic birds like parrots and flamingos are, but did you know that in the classical world they were used to represent the wealth of their owners? Ovid wrote about his girlfriend's pet parrot and how, when it died, she wanted to give it an extravagant funeral. Ovid wrote about how beautiful the bird was and how the way it could repeat words in the human language made it almost divine. This tells us about how the Romans bonded very well with their bird pets, just as we do today. They also showed off at dinner parties with birds, but this wasn't quite the same as having pets – they would serve things like peacock and flamingo tongues just to prove to their guests how rich they were. This was a very good way of showing off, as to get such things you had to have them shipped over from far-off countries.

I hope this article has inspired you to look deeper into the Classical world and all the animals within it!

### Gods and Goddesses

Zeus/Jupiter	The god of Thunder and the King of the gods.
Hera/Juno	The goddess of women and childbirth, the wife of Zeus/Jupiter and the Queen of the gods.
Mars	The god of war, the son of Hera/Juno and Zeus/Jupiter.
Aphrodite/Venus	The goddess of love and beauty.
Athena/Minerva	The goddess of wisdom and battle, daughter of Zeus/Jupiter and Metis the Oceanid.
Hermes	The son of Zeus and the messenger of the gods.

### Word Meanings:

Divination	The telling of the future.
Inauguration	An event in the United States for welcoming a new president.
Standards	Banners the Romans used in battle to show the power that they had.
Harpies	Half-bird half-woman creatures that often brought famine to humans if they upset them.
Virgil	A Roman poet who wrote an epic poem about one of the founders of Rome called Aeneas.
Ovid	A Roman poet.
Etruscans	A member of the ancient people of Etruria in Italy.
Soothsayers	A fortune-teller.
Augury	The telling of the future using birds and the weather.

### Romulus and Remus – Box A

Romulus and Remus were the twin brothers who, according to myth, were the founders of Rome. Their mother was the daughter of a good king named Numitor, their father was the god of war, Mars. As babies, Romulus and Remus were sent off to be drowned by Numitor's evil brother but they were rescued by a wolf and suckled by her. When they were older, they found out that their grandfather was a king and decided to found their own city to rule. Using augury, they decided that Romulus should be king, having more birds over his hill, but Remus wasn't happy and because of this mocked Romulus by jumping over the walls he was making. For this, Romulus killed his brother.

### Prometheus and the Eagle – Box B

Prometheus was one of only two Titans that helped the gods in the war between the gods and the Titans. Prometheus was also famous for creating mankind, but he grew attached to his creations and, when they started to freeze, he wanted them to be warm, so he went to Zeus to ask him to give them fire. But Zeus refused, saying that fire was not for the mortals and that it would give them too much power. But Prometheus was desperate, so much so that he disobeyed direct orders from the king of the gods himself. Prometheus stole some fire and gave it to the humans, and when Zeus found out, he punished Prometheus. He bound Prometheus to a huge rock and every day he got a giant eagle to tear out his liver.

### Io and Argus – Box C

Zeus had one of his affairs. This time it was with a girl named Io, whom he was spending a lot of time with. Hera was growing suspicious, so she came down to see what he was up to this time. When Zeus realised she was coming, he tried to hide Io by turning her into a cow. Hera was too smart for Zeus, though, and she took Io away and set her 100-eyed monster Argus to guard her. Zeus was upset and sent Hermes to kill Argus. Once dead, Hera, filled with anger, sent a gadfly to constantly sting Io, and she put each of Argus' eyes on a peacock, turning it into an all-seeing bird so that she could forever keep an eye on Zeus.

# An interview with Christopher Lloyd

By George Fulton, Libby Greenhill, Tom Fox-Dean and Megan George



## Can you tell us about your book Humanimal?

The point of the book Humanimal is to try and demonstrate to people how many of the characteristics of being human are just the same as they are in many other animals. A lot of the time, particularly in the modern day, we're very addicted to splitting things out into little fragments of knowledge. If you go to school, everything's divided up into different subjects, when you study science or geography or whatever, it's split up into little pieces, and actually, the real world isn't like that! It's taken me a long time to realise this, but the older and older I get, the more I see how everything is connected together. By chopping everything up into little bits, we can't see the beauty of the connections. If you think about your brain, and if you ask a brain surgeon, "how does my brain work?", they're not going to say "well, it's all chopped up into little bits and into different subjects". You don't have geography here and a bit of history here, maths here and a bit of French here and a bit of music down on the bottom right, you know, but that's the way we chop things up in schools. And that's how we chop things up in bookshops and that's how we chop things up in encyclopaedias, even.

So Humanimal is an attempt to try and get away from that by mashing together two ideas, humans and animals — humans are animals and animals include humans — and rather than thinking that we are separate and apart from nature and other living things, the whole idea of the book is to say we are very much a product of nature and that many of the things you associate with being special to humans can be found in other animals, too. So let's explore those stories, let's not call ourselves humans and call non-humans animals, let's all connect together and call ourselves humanimal, you know, so a giraffe is humanimal and I'm humanimal, and then we can look for the links between things.

Many of the problems in the world today are to do with the fact that we like to make divisions between things — different countries, different tribes, different races. Whereas if we think about the things we have in common, that might be a better way of looking at the world, so I'm hoping the title "Humanimal" has a bit more meaning and people will think about those connections a bit more.

There's a very famous writer, if you haven't read anything by him, I strongly recommend him as he was a great inspiration to me. He was called George Orwell and he wrote a very famous book you may have heard of called Animal Farm. He also wrote a really interesting book called 1984 which was about predicting what the future will be like. It's quite a dystopian book, quite a gloomy book about how the world might turn out unless we're careful. Orwell wrote it in 1948 and he flipped the last two years to 1984 because that's what he imagined the world might become like all those years in the future.

I mention him because he also wrote a lot of essays and short stories about his observations of the world. One of them I was introduced to by my English teacher at school, it's called Politics and the English Language. It's quite difficult to read but it's really interesting because what he says is that you can change the way people think about the world, not by preaching to them or telling them to do things differently, but just by changing the language they use — if we start changing our language, that has an effect on people's behaviour, and I was thinking about that as I thought about Humanimal: if we just use a different title, then people start to think differently about themselves and their relationship with the world, just by changing the word. So don't always think we have to change people's behaviour, and that will change the world. Sometimes we just need to change the language we use, that can have a big impact too.

## If you could witness any of the animals you talk about in Humanimal in their natural environment, which one would it be and why?

I would really love to spend time with an orangutan. The videos and the pictures I've seen, it's just like looking in the mirror, you just feel so connected. We are genetically very closely related to orangutans, they seem to have so much personality and so much character. When I read about Jane Goodall, you may have heard of her, she spent a long time just living with chimpanzees, I'm a bit jealous, really! It would be amazing to be able to be with them in an environment where they feel completely comfortable with your presence and don't feel as if you're a threat in any way — just to get to know their culture and their habits and to spend time with them together. To be able to do that with an animal that is normally in the wild would be a very special thing.

# Humanimal Book Review

By Libby Greenhill

Having already been a fan of Christopher Lloyd's 'Wall Books' and his 'Absolutely Everything' book, I was really excited to read his book, 'Humanimal'. I actually first read this book a couple of years ago, when I first got it, but I happily reread it in order to write this review. I was interested to find that, even though the format looks simple, the book was equally engaging for me at an older age.

The book 'Humanimal' is all about the incredible similarities between animals and humans. From communication to emotions, it's all there. Have you ever heard of the Japanese pufferfish and its beautiful artwork? If not, you can find all about it in the book. There's even one creature that votes at elections!

'Humanimal' has so many fascinating facts in it, but if that wasn't enough for you, Mark Ruffle has done amazing illustrations that bring the book to life. So get 'Humanimal' and read about the amazing and human-like ways some animals are living their lives.

To read the rest of the interview with Christopher Lloyd, please visit our website at: [www.thegreenfusemagazine.com](http://www.thegreenfusemagazine.com)

# Encounters With Nature

Have you ever had an encounter with nature that you would like to share with us? (turn to page 40 to find out more)

## Finding Ziggy

By George Fulton

I donned wellies and began to trudge through the mud armed with collecting bottles and forceps, wind whistling through the wire fence as I ungracefully hauled myself over the gate. I spotted some rocks holding up the bird feeder, they looked promising. I lifted up the first rock after brushing it free of discarded seed husks, under the rock were two pulsating worms, the stench of decay hit me full in the face. Under the next rock I struck gold. There she was, a female European earwig (*Forficula auricularia*), bulbous abdomen with two pointed cerci raised in defence, then from under her moved four yellowish-orange legs. There she was, crouching, for that moment we just started into each others eyes, mine blue and wide in awe, and hers brown, compound, with facets shimmering. Then I spotted what was next to her, a centipede, at least six centimetres long, coiled up, its orange toxicognaths gleaming in the sun. This might be why she only has three legs, I must save her. I clasped her abdomen in the forceps, placed her in the collecting bottle, christened her Ziggy, and carried her tenderly homewards planning the home I would build her.

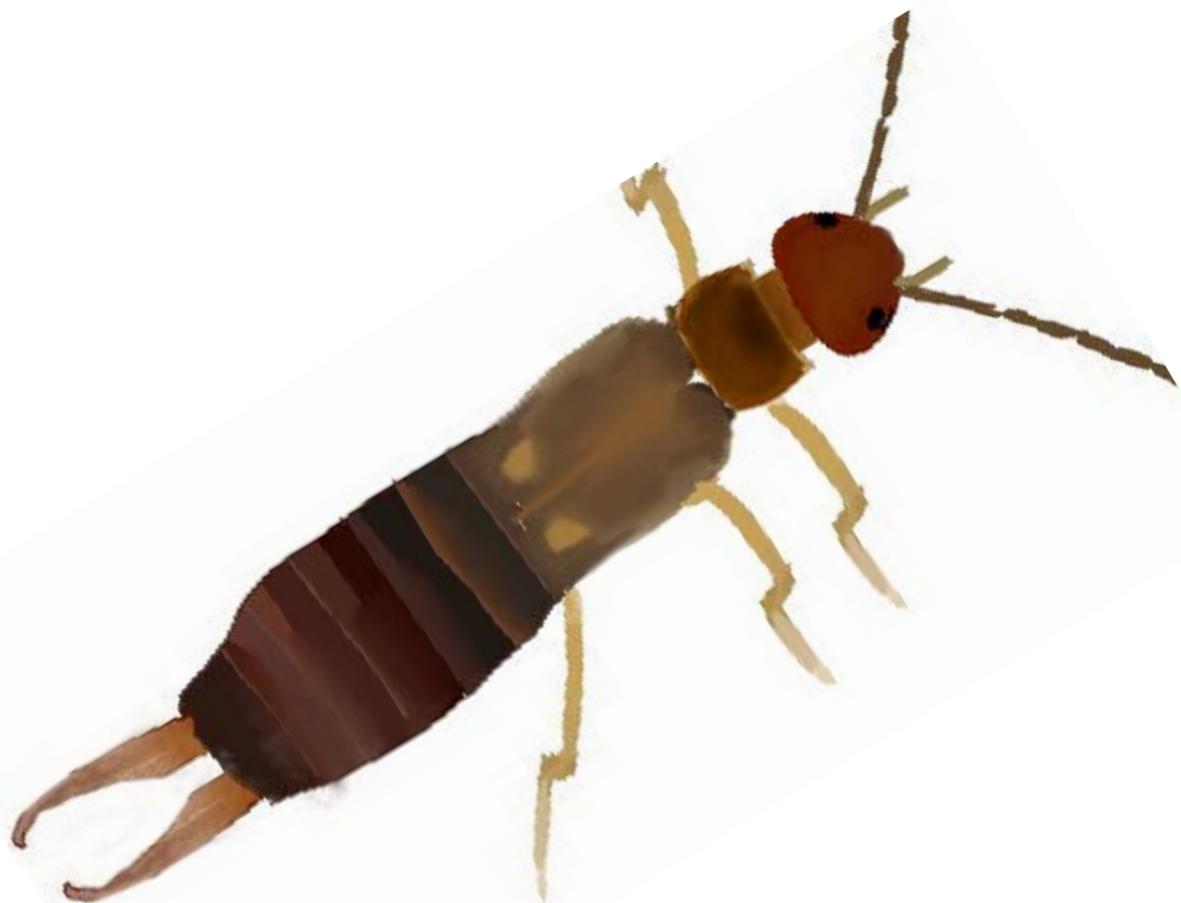


Illustration by George Fulton

# Walking Through The Seasons

By Rose Fulton

Every day for the past year, I have walked the same route, at the same time, with the same incentive: you never regret a walk. I started walking on a regular basis at the beginning of the first lockdown when I was eleven years old, and I am still going a year later at twelve (nearly thirteen).

My first walk was bursting with new life and the joy of spring. The daffodils had just come into their prime and were sitting in happy clumps around the garden with their slender stems and their proud, yellow blooms. The brightly green new conifer leaves were sitting at the ends of their branches, soft and tacky to the touch.

As spring melted into summer, the rosebay willowherb shot upwards before erupting into a pink and purple mass. Fond memories of using rosebay willowherb as wizard wands resurfaced in time with their bloom. Though still above my brother's head, it could no longer outgrow me.

Autumn came emblazoned with warm oranges and rusty reds. Wearing warmer clothes, I walked on through the biting winds and lashing rain. Airplanes were replaced by crows as the lockdown continued, which sparked an idea for a story.

My stride lengthened as winter came, leaving the crisp air of autumn behind. Walking became harder as the track froze over and it was odd seeing footprints other than mine pressed into the snow. I suppose the promise of fresh snow was as hard to resist for the wildlife as it was for me.

By the time spring came around again, I had changed. I was fitter for a start. I had thought up a story (*The Corvid's Shadow*). I had walked through the seasons. I had found inspiration for a natural history magazine (*The Green Fuse Magazine*). I had connected with nature. I had watched the decomposition cycle of fox droppings (apparently it takes one hundred days for it to completely disappear!). I had grown more confident. I am still walking, watching the green spread from tree to tree and growing an affinity with the natural world.



# Pollinators and Rewilding your Garden

By George Rover

We all know that pollinators are vital to help plants grow by carrying pollen from the flower of one plant to the flower of another. Something else we all know is that without pollinators, the planet would not survive for long.

Did you know many animals contribute to pollination? It is not only insects but also birds, mammals and reptiles.<sup>1</sup> In Europe, bees are thought to be crucial pollinators along with butterflies, moths, hoverflies and other invertebrates.<sup>2</sup>

## But what do pollinators actually do and how do they do it?

Pollen, from a flower's anthers (the male part of a flower), is collected by the pollinator when the pollinator goes into the flower to collect nectar and is then carried, by the pollinator, to the next flower where the pollen sticks to the stigma (the female part of the flower). Later in the year, that fertilised flower then yields nuts, fruit, vegetables or simply a seed head.

## So what can we do to help pollinators?

What we often see as 'weeds' are actually a necessary food source for many early pollinators. These are often nectar-rich and hardy. Something we could all do to help pollinators would be to let some of the 'weeds' grow, at least until some of the other plants begin to flower. In this way we could rewild parts of our garden.

## What is rewilding?

Chris Packham describes rewilding as "taking areas of land and trying to bring them back into a more natural ecosystem."<sup>3</sup> In the context of rewilding your garden, this doesn't mean reintroducing species that we have lost from the UK, such as bison, lynx or wolves, but cultivating nurturing environments for small things such as insects, birds and flowers.

I decided to do a little test of my own and find out how much the biodiversity on our lawn differs from the biodiversity in the part of the garden we have just left alone. After spending an hour observing in the different areas, in the cut grass I found only 8 species of plants, animals and insects. These were: *Lasius Niger* (black garden ants), grass (there were a few species of grass so I will leave it as grass in general), *Rumex obtusifolius* (dock leaf), *Taraxacum* (dandelions), a small black beetle I believe could be a rove beetle, Chironomidae (midges), there was a small black fly which I cannot quite identify and there was a tiny black spider about 2mm long. In the part of the garden we had left alone, I found 48 species! These included a blue-tailed damselfly, a few different species of bee, a small black wasp, horsetail, brambles, tall grass and nettles.

This wild part of the garden was much more biodiverse, despite the fact we had only left it alone rather than consciously planting wildflowers and actually trying to rewild it.



## So what can we do to rewild our gardens?

Well, something relatively simple we could all do to assist with the rewilding of the UK is to remove the turf from a small patch of your garden and plant some wildflowers. Sunflowers are a great flower for both pollinators and birds, and they can even be grown in a pot!

The Royal Horticultural Society (RHS) has a list of recommended plants for pollinators. They also suggest that you allow your lawn to flower by cutting it less often. The RHS highlight the importance of leaving water for the pollinators and not using pesticides. Nesting spaces are very important too.

## Why not try doing a BioBlitz in your garden!

A BioBlitz is when you do a biological survey for an intense period of time. You need to measure out a space about a metre by a metre and record the species you see within that area. You can compare parts of your garden with each other but also compare your garden to your local park or countryside.

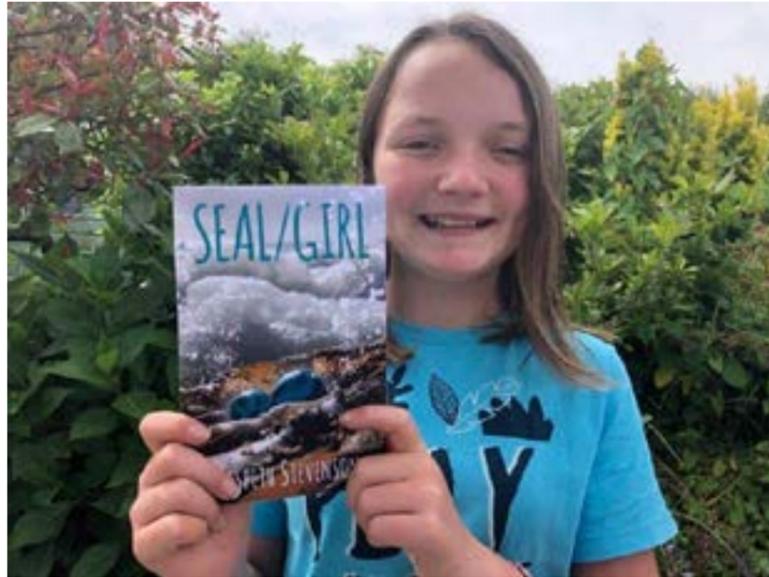
1 <https://projectdragonfly.miamioh.edu/great-pollinator-project/the-pollinators/>  
2 <https://www.iucn.org/regions/europe/our-work/biodiversity-conservation/pollinators-europe>  
3 <https://www.youtube.com/watch?v=eP7SrrfloyU>

# Seal/Girl Book Review

By Florence Fox-Dean

## Competition:

To win a copy of the book, send us your best artwork depicting a seal which we hope to feature in the next issue.



Seal/Girl by Elspeth Stevenson is a story set in Cornwall on the coast. The book is about a boy called Gorran who loves nature and likes to walk the coast path. He has a friend called Tick who is full of himself and never backs down from a challenge but at the same time is so, so kind, and an older friend, Grace, who is like a big sister to Gorran and is volunteering at the local marine rescue centre. One day on a coastal walk, Gorran finds himself falling down a disused mineshaft. Gorran finds a seal/girl and the friends have a quest together to protect a hidden world from an environmental disaster.

My favourite bit of the book is where Grace, Gorran and Tick and the seal/girl, go on an adventure to take the seal girl home.

I would give this book 5 stars and recommend it to everyone, especially those interested in nature and who like adventure stories.

You can find lots of creative resources to do with the book here:  
<https://elspethstevenson.co.uk>



Photograph by Rose Fulton

# Readers' Page

Zac Putt (age 9) has decided to enter the Big Draw challenge! Look how beautiful it is, well done him!



"I drew this bird because it is the UK's biggest raptor, with a wing span of up to 2.5 metres. There are only 106 breeding pairs in the UK and they live in the north west of Scotland. I would feel thrilled and excited if I could see a white-tailed eagle one day."



This beautiful nature art was created by home educated children from York. Well done on creating these, you did a very good job!



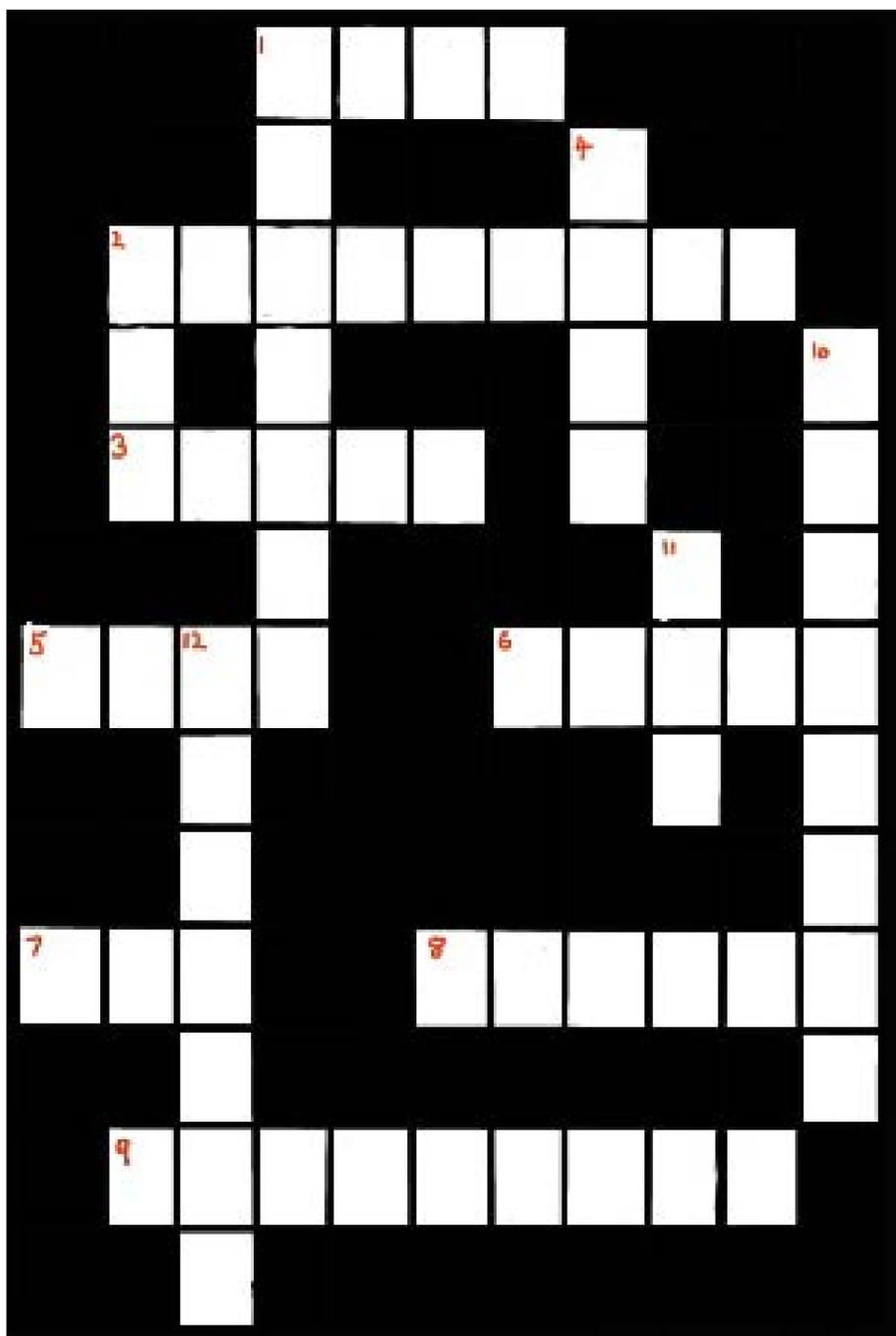
# Something Fishy Crossword

## Across

- 1 Soprano, tenor \_\_\_\_\_
- 2 a crab a rudd
- 3 Classical guitarist, first name begins with 'J'
- 5 The only native European catfish, said once to have dined on a small boy and his poodle.
- 6 A real scorcher
- 7 Cleopatra's killer
- 8 Type of wrasse
- 9 This shiny little guy eats the internal organs of its sea cucumber host

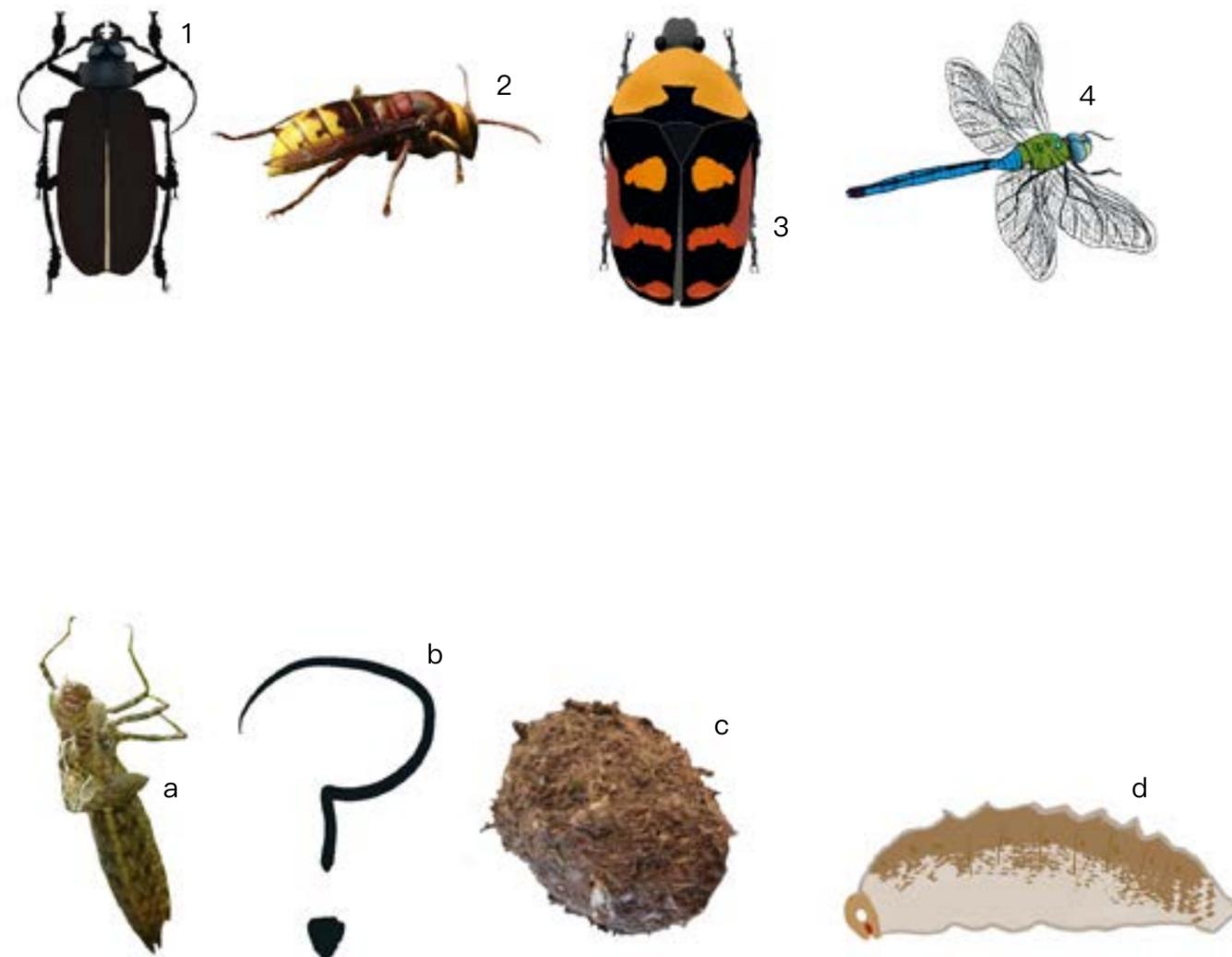
## Down

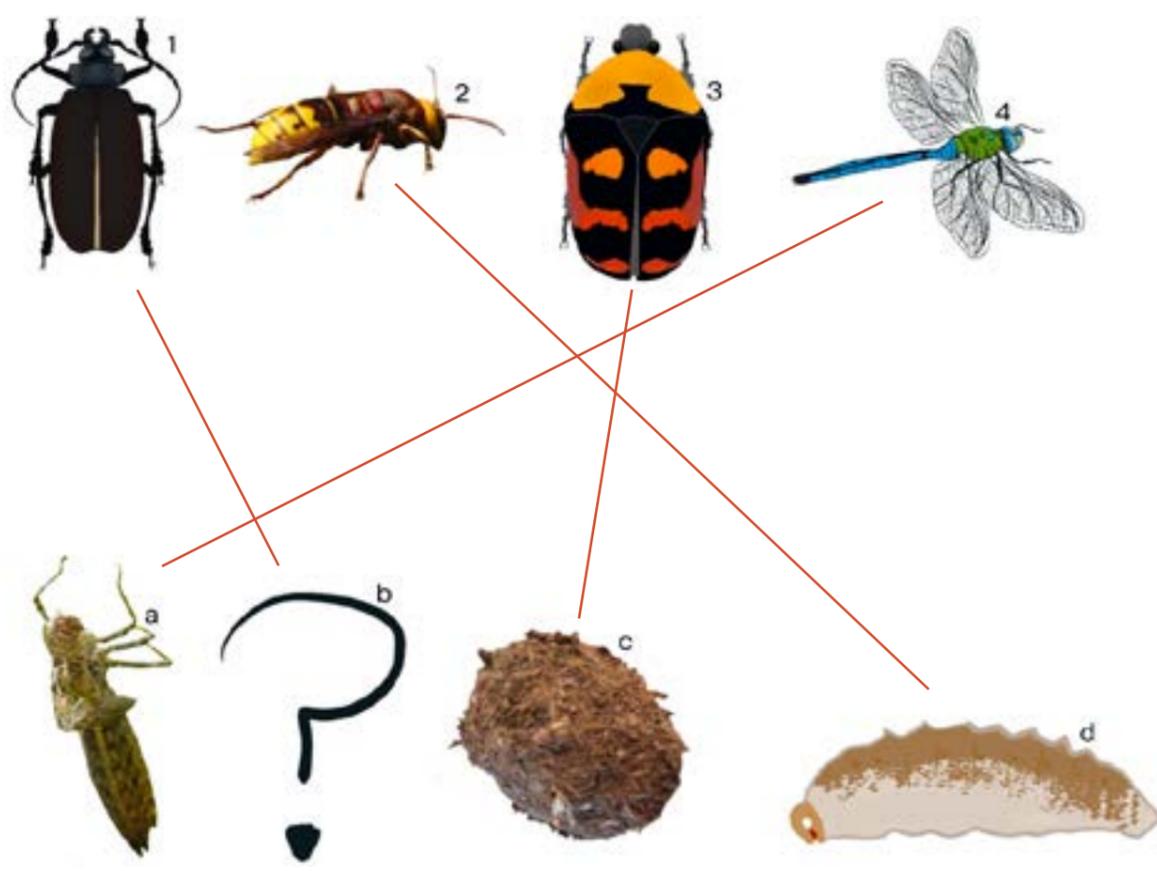
- 1 Sensitive moustache-like feelers used to find food on the sea or river bed
- 2 Palindromic baby protection device
- 4 Large ocean surface fish related to the tunny. All species of this fish are critically endangered and all are overfished.
- 10 Scottish politician
- 11 Not good backwards
- 12 Pram ley - a hitch hiker with a circular mouth



# Whose Young?

Connect the parents to their young and check your answers at the back!





# Encounters With Nature Challenge

We are hoping to get more young people experiencing nature and all of its beauty. So we have a challenge for you, can you go out in nature and write about what you see? You could spice it up with sensory language, similes, metaphors and personification. Please write no more than 200 words. If you send what you write in, it will be considered for publication. Good luck!

If you want to enter any of the competitions or challenges please email [thegreenfusemagazine@gmail.com](mailto:thegreenfusemagazine@gmail.com)

## Whose Young Answers:

1b

1 is the adult of the one and only Titan beetle, they are approximately 6.6 inches (16.7 cm) in length and can have a 30cm wingspan, some argue that it is the largest beetle in the world. However, nobody knows what the larvae look like as they have never been found (hence the question mark). The boreholes made by the larvae suggest that they are at least 2 inches (5cm) thick and probably over a foot (30.48cm) long.

2d

2 is a hornet, *Vespa crabro*, and d is a hornet larva.

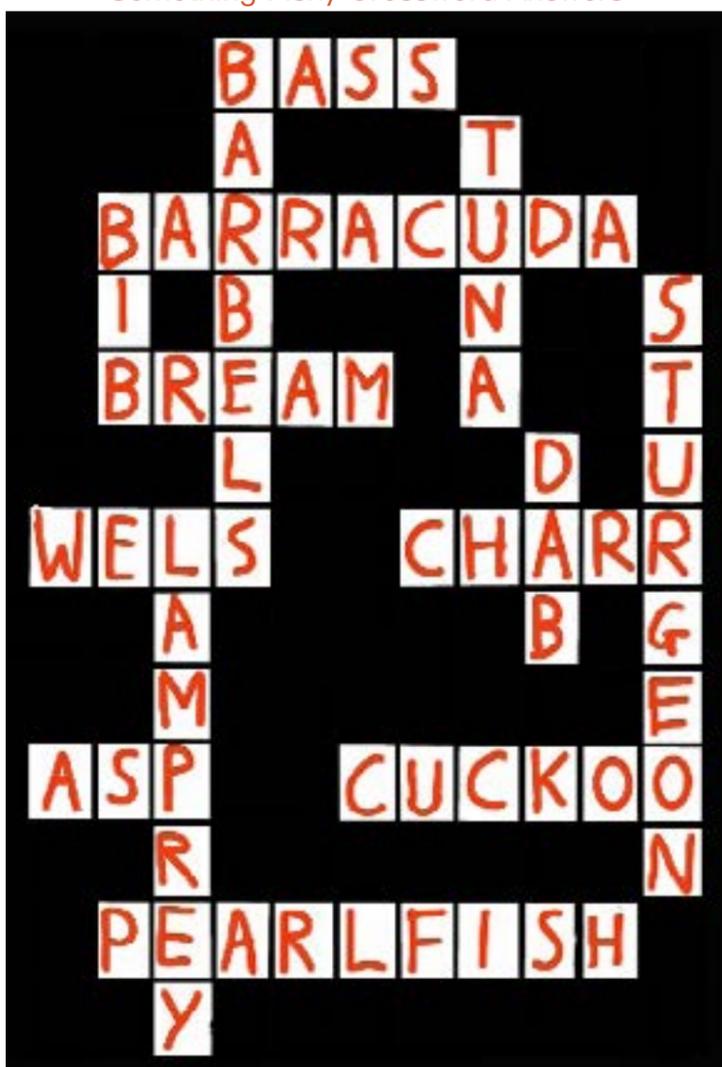
3c

This is a *Pachnoda iskuulka* adult and pupal chamber/cell, *Pachnoda iskuulka* is a rare new species of flower beetle discovered in 2019.

4a

Emperor dragonfly and nymph/naiad skin, the skin has been moulted when the adult emerged.

## Something Fishy Crossword Answers



Photograph by Rose Fulton



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