

Chalk Talk: Hampshire's Prehistoric Ecosystem

Intro: Welcome to Hampshire HistBites. Join us as we delve into the past and go on a journey to discover some of the county's best and occasionally unknown history. We'll be speaking to experts as well as enthusiasts, asking them to reveal some of our hidden heritage, as well as share with you a few fascinating untold stories.

Kyle: Welcome, everyone, to another episode of the podcast. Today, I am joined by Susan Simmonds, an education and engagement officer for the Hampshire and Isle of Wight Wildlife Trust. Susan has worked in environmental science and conservation for more than 20 years now and joins us to talk more about the natural history of Winchester and specifically the chalk stream ecosystem.

So welcome, Susan. I wonder if you could start by letting us know a little bit more about your role specifically, and the role of the Hampshire Wildlife Trust here in Winchester.

Susan: Thank you. Wow. It's funny when you say over 20 years, that sounds like a very long time actually, doesn't it? So I work as an engagement officer for Hampshire and Isle of Wight Wildlife Trust and usually I'm out and about, leading guided walks, running events, taking groups out onto our nature reserves, and running lots of training courses for adults.

But obviously this last year has been very, very different. So I've been doing all of that online and surprisingly we've still managed to deliver quite a lot. So we've run a lot of training courses. We've even set up online wildlife gardening clubs and all sorts of things.

Kyle: So, with those restrictions, what kind of things are you looking to get across to the groups that you're taking? What do those classes look like at the moment?

Susan: At the moment there are lots of ID courses, identification courses. So I've been managing to do wild flower identification online and giving people the tools to go out and look themselves and have a go at identifying the things that they might be seeing on their local walks. We've done things like water vole survey training. And I've also managed to deliver quite a few school group activities online. So I've managed to get a digital microscope hooked up to the laptop. So I'm able to pop down to my local river to take a sample and then bring those creatures up onto my desk and actually show them to the children through the microscope. So that's been quite a revelation.

Kyle: Good. That's great. Considering so many children are now stuck at home and missing that aspect of education, it's great that you can bring it to their rooms, so that's fantastic. Let's talk more specifically about chalk then. The South of England and Hampshire is famous for its chalk rock, but what is all the fuss about? Why is chalk such an important geological feature?

Susan: Well, I think chalk is quite fascinating. It's basically a type of limestone. So it's made up of marine organisms. They were laid down when this area was covered in warm seas. I think 60 to a 100 million years ago. Following that though is tectonic activity, so we've got

some uplifting and now we've got these beautiful chalk downlands around us here and we've got the chalk rivers that run through this area.

The chalk rivers are so important, really, because chalk is a natural aquifer, it's like a huge sponge. It holds water and this water is then fed into the rivers through spring. So we've got this lovely, clear, clean, mineral-rich water, and it stays at a fairly constant temperature all year round. So it provides a habitat for a range of different species.

Kyle: So specifically here in Winchester, there are some very visible examples of the chalk environment. The River Itchen, of course, and St. Catherine's Hill are among the most eye-catching perhaps. Tell us a little bit more, if you will, about the chalk ecosystem and how it's been harnessed here in Winchester over the centuries and where we can go to see examples of its management or past use?

Susan: We've run Heritage Open Days at St. Cross Meadows in the past. So that's probably a good example because that's on the Itchen and obviously you can see St. Catherine's Hill from there as well. That was an Iron Age hill fort, and that's one of our nature reserves that we manage, and we also manage St. Cross Meadows on behalf of the hospice of St. Cross that are down below them. And they're really interesting because from around the 1600s, they would have been managed as water meadows. And if you go there today, you can still see evidence of the ditches and the ridges which shows you how that would have been managed.

Basically what they were doing was taking the water from the chalk river because of that temperature, they were able to spread the water across the meadows and that took the frost off the grass. So it increased the temperature of the meadow during the winter and therefore the grass grew up to a month earlier. So that meant that the farmers could get their sheep on really, really early, much earlier than anywhere else. And they could get their lambs to market before other farmers. But it was particularly important because we had the sort of sheep corn system at that time. So wheat and barley were being grown on the lower slopes on the chalk down, but they needed the sheep to put the manure onto those crops overnight. And they needed something to feed those sheep during the winter. So water meadows provided the answer because they could get those sheep on much, much earlier in the year and they could also provide hay so they could take a hay crop, maybe even two hay crops, and that would keep the sheep over the winter. So it was a great system that lasted for a couple of hundred years.

Kyle: So when did this system end? Because obviously now, when you walk along the Itchen or even up St. Catherine's Hill, and from the top of St. Catherine's Hill, you can see the ridges and ditches that you are talking about. Best time of the year, I understand, is autumn time when everything's died back a little bit and you can see the remains of those, it almost looks like kind of earthworks from above. When did this end? Because now it's just pasture, now it's just flood land, wetland, very rich ecosystem, but obviously, we've left behind that part of the agricultural system.

Susan: I believe, certainly at Winnall Moors in Winchester, which is another one of our nature reserves and that was managed in the same way. I believe that was managed right up until the 1930s, as water meadows, but I think generally it was perhaps slightly earlier than that, you know, when there were alternatives to food and so on and fertilizers and things came

in, so it sort of became disused, I guess. But as you say, you can still see the evidence certainly from up on St. Catherine's Hill.

Kyle: Early 19th century, then, there would have been arable hay and cultivation of that land still in crops?

Susan: I would have thought so, yes, certainly on the lower slopes.

Kyle: Which leads me to believe then, that the stubbled fields that John Keats writes about in his famous Winchester poem, *To Autumn*, they would have been present then in that part of the water meadows when he was writing.

Susan: Yes, I imagine so.

Kyle: Because I read that poem quite often and I struggled to pick out so many of the features that he talks about, but that would make perfect sense if hay was being grown 200 years ago, and it's of course it's no longer being grown. So if we were going to go down to the water meadows or to the Itchen, in fact, to interact with some of the local chalk flora and fauna, what can we expect to see when we get there?

Susan: If we look at some of the plants that are growing in the chalk river, for example, so the watercress is something that you will find down there and a lovely plant: freshwater Crowfoot, so *Ranunculus* is the Latin, and that is really strongly associated with chalk rivers. And in fact, you can see some of these things growing even now. They really do rely on these mineral rich, slightly alkaline waters. The other thing is the lovely, clean gravels, those are really, really important. And because these rivers are fed through the springs, through the groundwater, it's a very, very steady flow. So all of those plants thrive in those conditions and some of the animals, in fact. The classic brown trout, for example, is so important here and the habitat suits it perfectly. It comes out at the springs at around about 11 degrees, but that's the same all year round. At those quite low temperatures, the water holds more oxygen and that's ideal for the fish to spawn. They need those really clean gravels, with that well oxygenated water constantly flowing over them.

Kyle: What other health indicators do we see? What do you see when you go down to the river in a professional capacity?

Susan: If I'm looking at a river, I'm certainly looking in to see what sort of plants are growing in the middle there in the channel, and I'm also looking along the edge because the bank side flora is really, really crucial. And if there's a lovely diversity of plants along the bank and if it hasn't been mown very short, then that's really great habitat for various river fly species and also for some of our small mammals like water voles. And then if you have those river fly species lower down in the food chain, which you're feeding the fish, then you're more likely to have things like otters, higher up the food chain as well. So that's a good indication of a very healthy habitat.

Kyle: So if you're in or around the Winchester area, you can obviously walk along the river, southbound through the water meadows, Hospital of St. Cross, round St. Catherine's, St. Cross Meadows that's pasture, wild flowers etc., but what does St. Catherine's Hill look like in management terms?

Susan: So St. Catherine's Hill I love because it's chalk downland, and chalk downland is obviously slightly different from the wetter meadows. It's very, very shallow, thin soils, pretty much bare chalk in places, and for that reason, it's amazing for wildflowers because it has so few nutrients that the more competitive species can't take hold. So you get this array of very distinctive chalk downland flora. So some really special plants, lots of orchids, for example, so it's a beautiful place to visit. And the downlands were traditionally managed with sheep grazing. So that's generally how we would manage our downlands using ancient breeds if possible. These sites are all open for people to go up and explore and have a look. Some of the wetter areas, the wetter meadows, we tend to manage those quite often with cattle. So you'll find some of our British white cattle grazing down on the meadows at St. Cross and at Winnall Moors as well.

Kyle: What about the North side of the city? I know you do a lot of work at Winnall Moors.

Susan: Winnall Moors is a nature reserve, which is open to the public, you can certainly go into Winnall Moors and there's a lovely stretch of river that you can see. And I'd say to people a brilliant time to go out and have a look at chalk stream would be late May/early June time, when you might be lucky enough to catch the mayfly hatch. And that's something that a lot of people like to see. The mayflies, the largest species, the Ephemera Danica, quite often will all hatch at once on a warm, still summer evening, and it's quite a spectacular scene. They live in the water as a nymph for a couple of years, and then they hatch out firstly as a sub-adult. They just have to rest on a leaf for a few hours, shed their skin a further time to turn into the full adult and then they simply live for a day at most and they lay eggs and then they die. And that's the scene that you see all of them rising up out of the water. So that's a really nice time to visit a chalk river.

Kyle: And generally, are we seeing more mayflies? Are we seeing less? The stresses and strains placed upon that particular part of the river? Is it in a healthy condition at the moment?

Susan: I have certainly seen some really good mayfly hatches in recent years on the Test and on the Itchen, but that's not to say that those rivers are not suffering in places. I think a lot of our rivers are under pressure, at the moment, from various things. Possibly over abstraction because we're all using lots and lots of water. Runoff is a problem. Certainly when we have a lot of rain and flooding. And if you are adding a lot of silt nutrients into these rivers, then that is a real problem for some of those species that we've just talked about. The silt can clog up the gills of some of those invertebrates, and it can destroy the spawning grounds for the fish, the brown trout, the Atlantic salmon. So those are problems that we really need to address. I think farmers need more support to be able to address some of those runoff problems. So unfortunately, rivers are facing a real challenge at the moment.

Kyle: These problems are likely going to get slightly worse just because humans keep building, humans keep eating and they keep drinking. Not because the farmers are mean farmers or anyone's pernicious, but what can we do to try and mitigate these issues? What are you doing as a Wildlife Trust?

Susan: So we're very keen to see incentives for farmers to support them to be able to address some of the problems with their runoff, but other things that we've done as a Wildlife Trust, if you have a look at Winnall Moors, we've done some really nice restoration work there. The riverbed was over-deep and was very sluggish in places and very full of silt. So we actually

managed to raise that level and provide that lovely gravel bed that's needed for those fish and invertebrates. And we've reconnected the river with the flood plain. So the flood plain then can do the job that it's meant to do. It can soak up the flood water before it heads down into the city centre. So I think land managers can certainly have a look at how they can manage their river systems and perhaps restore some of those riverbanks. I think that's really important. If we think about climate change, now that could be a huge problem because if the temperature of these chalk streams increases, then that will have a detrimental effect on some of these species that we've talked about.

What we can do is protect our nature reserves because they can actually act as carbon sinks. And I think that's really important. I've been reading recently about how valuable grasslands actually are. So, the chalk downland for example, which hasn't been ploughed, it's been permanent grassland for a very long time. The soil below that downland holds a huge amount of carbon because all the different species have got really extensive root systems and they put carbon down into that soil. And there's evidence coming out to suggest actually that the soil underneath a permanent grassland has got more carbon than the soil underneath a woodland. So it's really interesting. We really need to look at looking after our grasslands.

Kyle: Can we extend that grassland into areas where it isn't currently, obviously the South Downs, it's a National Park, so it's got an element of protection. We can extend that along the riverside, along, you know, previously used agricultural land or housing land that's not used anymore. Is that something that we're looking to do in the future perhaps?

Susan: I think that would be fantastic. And again, if there are more incentives for farmers to restore old grassland, that would be really amazing. We've actually tried to do this on one of our nature reserves, Barton Meadows, also in Winchester, that was agricultural land and we've converted that to a wildflower meadow. So it's in about the third year, I think, and that's really successful. We've got animals grazing in there now, and we've got a wildflower meadow, so it certainly is possible to create wildflower meadow on what was previously agricultural land.

Kyle: What about some of the more attention-grabbing mammals? Otters, I understand are making a return to the river system, is that right?

Susan: Yes they are. And you're right, people love to see the otters and even water voles are quite small and cute. I guess it's hard for some people to get excited about the invertebrates that they can't really see within the water, but there are a lot of small mammals in the area. Otters, I believe you can see them fairly regularly on the webcam that City Mill have set up, so the otters are certainly moving through. It's really nice to see them increasing because obviously their numbers did drop due to pesticides many years ago. So they've come back really nicely. And I think if you have otters, it does show that you've got a really healthy habitat, really healthy ecosystem. I was just going to mention water voles because they are struggling a little bit because of the North American mink. So that's another issue that we are facing on the river at the moment.

Kyle: You're seeing mink in the Winchester area along the Itchen River system and throughout Hampshire, are you?

Susan: Yes, they do occasionally come through and it's a real pain because the female mink is small enough to fit inside the water vole's burrow. So the water vole has really no escape and

the mink can decimate a population of water voles and in fact, other small mammals along a long stretch of river. So they are a real problem and our water voles are declining.

Kyle: And so how do we manage that? Is it a matter of managing the mink population or increasing the water vole population or a bit of both?

Susan: Well, it's a bit of both, I would say. We try our best to control the mink population. And there have been water vole re-introductions across Hampshire. But obviously you really need to know that you're not going to re-introduce the water voles into an area that's full of mink. You obviously need to survey the area quite carefully before you re-introduce them. But it's a tricky situation for the water voles unfortunately.

Kyle: So where can people go to interact with the Wildlife Trust at the moment or in the future? If people were interested in learning a bit more perhaps about the chalk systems or seeing it for themselves or attending an event or a talk, how would they do that?

Susan: So I suppose the first place to look is on our website. So you can find out where all of our reserves are, our nature reserves, there are about 50 across Hampshire, so you can find any that are local to you, that you can perhaps walk to. You can also find our events that will mostly be online at the moment, courses, and talks and things like that. So all of that will be on the website. You'll notice that we've got a strategy, the Wilder 2030 Strategy at the moment, and we're really keen to involve as many people as possible in engaging with wildlife and nature. We've got the Team Wilder Initiative where we've got lots of local communities forming small groups to help in their local environment. So if people are interested in any of that, then I'd be very happy for people to get in touch with me.

We really would love to see one in four people engaging with nature and wildlife. We would also love to see a third of land and sea where nature is recovering, where it's wilder. So we've got those two main aims. There are many ways in which people can get involved. And one of the ways is forming a local group where people are looking at their local area and saying, 'What can we do here? Could we rewild this area? Could we manage these roadside verges slightly better so that the wildflowers can grow?' Lots of different things like that. And we're able to offer help and advice to those people.

Kyle: Right, so when's the best time to see a lot of these things that you've just discussed happening, the mayflies and the wildflowers and the meadows. When should people be definitely heading down to these locations and checking this stuff out?

Susan: It slightly varies, obviously, depending on the weather. I would say start looking in May, keep visiting through May and June, and you will hopefully be lucky enough to see the orchids and maybe see a mayfly hatch as well, which would be great.

Kyle: And in the meantime, the talks and you said, you've got this microscope hooked up. What does this look like? What does a COVID responsible Wildlife Trust seminar look like at the moment?

Susan: Well, it really varies. We've got some offices in study centres, but I'm just here at home. Luckily, I've got a lovely chalk stream just opposite on the other side of the road. So I can get in there with my wellies on and take a sample, bring it back up here and I can talk to people through my laptop and show them what I'm looking at on my desk, which is really

great. So for the meantime, this is what we'll be doing and then as soon as we can, I'll be back outside showing people the real world.

Kyle: And when things do eventually open up again, and you get people down to the riverside is that you, wellies on, in the water sifting for invertebrates and different species?

Susan: It can be, yeah. So we do some guided walks where we just walk the paths and chat to people, explain what they're seeing, but we do do some stream dipping sessions also for adults, you know, not just for children. And people can come along with their wellies and they can get in and we teach them how to do a kick sample. They're usually always amazed at how much you actually do find in a chalk river, because just looking at it, you think there's not much in there, but it is amazing how much you put into the tray to look at. So we'll hopefully be doing that again sometime soon.

Kyle: Well, we look forward to the chance to finally get down to the river and get exploring. But until then please interact with the Wildlife Trust in whatever way you can, visit the website, as Susan said. Thank you very much, Susan, for joining us today.

Susan: Thank you for having me.

Outro: We hope you enjoyed listening to today's episode. If you would like to find out a little bit more about what we've been talking about, then please visit the website, www.winchesterheritageopendays.org, click on Hampshire HistBites, and there you'll find today's show notes as well as some links to more information.

Thank you.