

Environmental Education



Back to the Basics Re-engaging with Nature

National Association for Environmental Education (UK)

NAEE supports a wide range of professional educators to help them improve the quality of their teaching and their students' learning, in relation to environmental and sustainability issues.

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NAEE is a Charitable Incorporated Organisation [Charity No. 1166502] that is run by its members and volunteers who care passionately about environmental education and education for sustainable development. Our charitable object is to provide a public benefit by advancing environmental education within early years settings, primary and secondary schools, and institutions responsible for teacher education within the UK and elsewhere. Teachers are encouraged into the Executive; for more details contact info@naee.org.uk.

GROUP COLLABORATIONS: NAEE greatly values being able to collaborate with organisations that have the same or very similar missions/goals. Some of these groups include:

United Kingdom: Archaeology Scotland; Association for Science Education; Birmingham Botanical Gardens; British Council for Archaeology; Black Environment Network; Council for Learning Outside the Classroom; Geographical Association; London Environmental Educators' Forum; Martineau Gardens; Mount Pleasant School Farm; National Savers; Rotary International (Britain & Ireland); RSPB; TIDE~global learning; Women's Environmental Network; Youth Hostel Association; Cambridge Curiosity & Imagination.

Overseas: Australian Association for Environmental Education; Children and Nature Network USA; Forest and Bird New Zealand; Green Teacher; New Zealand Association for Environmental Education; Nature Club of Pakistan; North American Association for Environmental Education; Roots & Shoots Shanghai.

WRITE FOR ENVIRONMENTAL EDUCATION: If you are a teacher with experience in environmental or outdoor education, especially in pre-school, primary or secondary school, and would be interested in writing an article for this, our termly journal, contact info@naee.org.uk.

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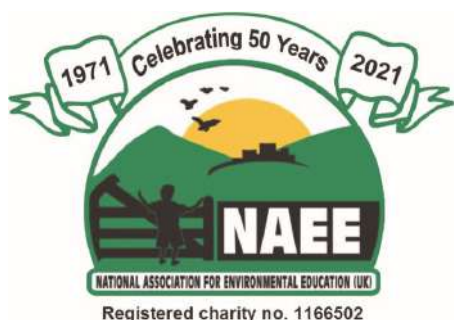
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Front cover image: pond dipping at Martineau Gardens, Birmingham; image Juliette Green.
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***Environmental Education* is the termly journal of the NAEE. Views expressed in the articles of this journal are those of the authors and do not necessarily represent those of NAEE.**



What began as the National Rural Studies Association has gone on to become a key network in the United Kingdom focused solely on environmental education and education for sustainable development.

Interestingly, the North American and Australian associations similarly turn 50 this year: a world-wide trend on awareness of the environment. We look forward to recognising the milestone with our supporters over the coming year.

Going back to basics

Henricus Peters

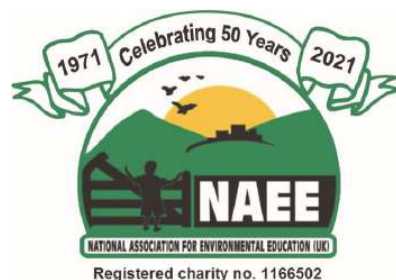



The edition you are about to read has a wide range of topics – young writers, NAEF Kenrick Project, global learning, toads, birds, skulls; even a safari park and Antarctica are mentioned. This gives a very real flavour of what 'environmental education' can look like – and we think NAEF as an organisation does

this, by promoting full discussion, research and action.

As we approach our NAEF 50th anniversary – we are thrilled to bring you our special branding with our logo at the heart of what we are about – we hope that the above topics will bring back memories of your, or perhaps your child's, environmental education experiences past and recent. As you read through this issue, we very much hope that the topics touched upon will generate echoes and memories for you of your experiences with similar topics and teachings.

For our 50th Anniversary edition, we would love to hear about these memories, whether they are linked to NAEF or not, and we hope you will take the time to write to us about these at info@naee.org.uk.



Thank you for reading *Environmental Education* and for your continued interest and active support of NAEF. 

Henricus Peters lives in Australia, is a teacher, carer, writer and editor. He is active with IUCN, Forest & Bird New Zealand, Wildlife Australia magazine, Green Teacher Canada. He is a member of the NAEF executive and Joint Editor of *Environmental Education* journal.

COMMENT


From the President:

Professor Justin Dillon



Another year, another World Environment Day. June 5 saw a range of activities from small scale to large scale. I was impressed by many of the projects collected by the North American Association for Environmental Education (NAAEE)

which celebrates its 50th anniversary this year. Do take a look at their World Environment Day blog¹ – there are exciting examples from across the world of environmental education. We celebrate our 50th anniversary soon

and the next issue will focus on that exciting event. However, in this 'back to basics' edition of the journal, we focus on some of the staple diet of environmental education. I hope that you enjoy this edition of *Environmental Education*. 

Justin Dillon is Professor of Science and Environmental Education and Director of the Centre for Research in STEM Education at the University of Exeter. He is a Trustee of the Council for Learning Outside the Classroom and of the Exeter Science Centre.

From the Chair

Nina Hatch




As a teacher the phrase 'back to basics' immediately brings to mind the basic tools of teaching.

For me that is writing in chalk on a blackboard accompanied by duplicated student sheets. Not photocopied or computer printed, and certainly not interactive whiteboards and zoom webinars. That was how I started teaching and in many parts of the world that is still the methods used today.

In environmental education it means pond dipping with fishing nets and trays, or pooters and plastic pots with magnifying tops plus hand lenses to collect and return specimens to their natural habitat. Plus handy identification charts.

While indoor school classroom teaching even before Covid restrictions forced teachers into almost totally computer-based learning, the world of environmental education remains much the same: observing, recording and interpreting what is around us in our environment. It should of course go further than this so that students start to question and investigate both what is around us but *why it is changing, possibly disappearing*.

As educators it is surely our responsibility to start from the basics and assist the next generations who will inherit our planet. 

Nina Hatch is Centre Director and Educational Lead at Mount Pleasant School Farm in Worcestershire mountpleasantchoolfarm.com. She is an NAEF Trustee and Chair of the Executive Committee.

COMMENT

Common toads and our common lives

Sheila Gundry, NAEF Fellow

As NAEF approaches its 50 year birthday and we look back at achievements over the years, David Attenborough releases his 'Witness Statement' in which he looks back over his long lifetime and charts the changes in our natural world. Whilst it is as inspiring as you would expect from Sir David, it is hard to stomach in places. One of the most powerful images is simply seeing David Attenborough with his head in his hands at the realisation of the devastation just in his lifetime.

In the UK most adults too can chart a change just in their lifetime: of wild areas where they used to play that are now built on, and wildlife they took for granted no longer there. Take the common toad, it actually is not very common any more. Many of us can remember frogs and toads as a child but when did you last see one? A lot of attention is paid to rare species, such as natterjack toads and sand lizards, and preventing their extinction. More recently there has been a shift from single-species conservation to recognising the importance of ecosystem services. Declines in common species which involve the loss to large numbers of individuals and biomass across extensive areas impact the trophic chain, habitat and ecosystem function, so we really do need to take note of declines in the common toad and other previously common species.

When we look at the sort of environmental education that is the most valuable, learning about common species outside our back door or in the school grounds is certainly up there. Furthermore it opens up environmental education to us all: it can be undertaken with a high level of expertise or simply curiosity and a desire to learn more.

We can track our lifetime with all the times we have learnt more about our environment (and therefore ourselves). I have vivid memories of the first dragonfly nymph I found: a primeval being rearing up – and the sudden recognition that there was a whole network of life living under the stones in our streams. Then, this spring, the smooth newts in my garden pond, just floating there in the sun 10 cm below the surface, seemed to sum up the suspended animation of lockdown.

In the 50 years since NAEF began, environmental education has become ever more important. There is still time to retain some of our key ecosystems and by understanding the value of wildlife, common and rare, we will take the actions necessary to conserve it. Because, as Sir David² says:

*"No one will protect what they don't care about;
and no one will care about what they have
never experienced".*



.....

Sheila Gundry has worked across sustainability education, as a teacher and subsequently as programmes manager. She has worked on biodiversity education at Malham Tarn Field Centre, on food and transport issues at Bath Environment Centre, and on waste and energy education at the environmental consultancy, Resource Futures. She is currently Operations Manager for the national charity Froglife and is a Fellow of the National Association for Environmental Education.

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PROFILE

NAEF Chair of Trustees

Professor William Scott



Why did you join NAEF?

If you're an educator with an interest in the environment, why wouldn't you join?

Tell us about your background

I'm a Cumbrian from the Eden Valley. I've a science degree, and I taught in

schools in Uganda and Hull. I was at the University of Bath for 30+ years where my final roles were as director of a research centre that focused on learning and the environment, and as editor of the academic journal, *Environmental Education Research*.

Why did you accept the role of Chair of Trustees at NAEF?

It's the usual reason, I fear: no one else wanted to do it. That was 6 years and 23 meetings ago when NAEF changed its constitution to the one the Charity Commission prefers. I've been re-elected every year since. It's a fantastic role. NAEF might be relatively small these days but it does excellent work and it's a privilege to be at the heart of it.

Who are your role models in the field of education?

Sean Carson is the person I most admire in environmental education. He was an adviser in Hertfordshire and a key player in NAEF through the 1970s; he edited the journal for many years. I admired his commitment, his enterprise, his scepticism of government promises, and his way with words. I also admire Judy Braus who is CEO of the North American Association for Environmental Education. Her positivity, drive, good humour, and ways with people are continually inspiring.

Who are your role models in the environmental field?

I know you're supposed to say someone like David Attenborough, Chris Packham, Birdgirl or Greta Thunberg, but I'm going to say the Wiltshire Wildlife Trust. Not only does it make a very significant contribution to wildlife and the natural world across the county where I live, but it understands that people are vital to this cause and have to be personally and socially involved if we're going to get out of the mess we've made of things.


What does NAEF do well?

The journal is the crown jewels of NAEF's work; to be 50 years old and still producing a termly journal that is written by and for educators is a huge achievement.

One thing we could do better at?

Working with other groups. Although we do do this successfully, and the willingness is there to do more, the capacity isn't. Please get in touch if you'd like to be involved.

Last thought?

I have to step down soon as the Chair of Trustees of this vibrant environmental education charity, so now's a really good time for someone to step forward... 

HUGH KENRICK DAYS

Summer update Hugh Kenrick Days Team

When the Department for Education gave the green light for educational visits to resume from 12 April 2021, three of our Kenrick bursary venues (Birmingham Botanical Gardens, Martineau Gardens and Mount Pleasant School Farm) were in a position to begin offering visits again. This means that we were able to reschedule many of the Hugh Kenrick Days that had originally been booked for Spring and Summer 2020 – at the time of writing, some of these visits have taken place and we are awaiting the reports. However, some schools were understandably rather wary and reluctant to take pupils off-site, plus there were issues with insurance for coaches, so it was not possible to reschedule all the visits.

We also sent out a mailing to schools inviting them to apply for a bursary to visit one of the environmental education centres in the Summer Term 2021. Many of the applications referred to the pandemic, as expected, and the impacts that lockdowns have had on their pupils:

"... it appears that many of our pupils have developed poor eating habits during lockdown – this session [at Martineau Gardens] may inspire them to make better choices."

(English Martyrs' Catholic Primary School)

"In our school we have 24.3% of children who are Pupil Premium/Free School Meals, which can impact the children's wellbeing and the ability to afford educational visits that can enhance their learning, which is even more important given the amount of learning lost during the Coronavirus pandemic."

(Calshot Primary School)

"14% of children in Year 5 are Pupil Premium and Free School Meals. Alongside this, due to Covid 19, a number of families within the school have been furloughed or made redundant, therefore are not able to make contributions towards educational visits."

(St Mark's Catholic Primary School)

When deciding on schools who would be successful, the Hugh Kenrick Days Team scored the applications against the following success criteria:

- Environmental education outcomes for the visit clearly defined
- Follow-up work outlined, ideally with potential whole-school benefits
- Links to the curriculum (but not simply a list of curriculum links without reference to the environment)
- Mention of key words such as environment, climate change, biodiversity, sustainability, reference to the SDGs (UN Sustainability Goals)
- Details about the location and/or demographic of the school, e.g. % Free School Meals, Deprivation Index, % Pupil Premium, reference to a lack of access to greenspaces (if appropriate)

It was really heartening and inspirational to read about how some of the schools were making the most of their limited outdoor spaces:

"We are an inner city school on a main road with only a small area which we can use for growing plants, vegetables etc. It has a tiny pond and trees. We use it as much as we can with the children right from nursery exploring the outdoor environment. It is only big enough to take one class at a time and with that many it is quite busy! We focus on the environment with every year group so that by the time they leave they have a good understanding of climate change, sustainability and their role in protecting the world."

(Ladypool Primary School)

"Our school community is situated in the middle of a deprived housing estate and the school provides an oasis within this neglected urban environment."

(Welsh House Farm Community School)



Smelling herbs at Martineau Gardens. Image: Juliette Green

We were pleased to be able to offer bursaries to all the schools who applied for Summer Term 2021. RSPB Sandwell Valley are not starting school visits until the next academic year, so those visits will take place in 2021/22.

NAEE's Hugh Kenrick Days project offers bursaries for West Midlands schools to visit environmental centres for curriculum-focused activities. Since the project began in 2012, almost 6,000 students have benefitted.

Contact: kenrick@naee.org.uk

More information: naee.org.uk/apply-for-a-school-bursary



The real Wild Wood: using the outdoors to teach 'The Wind in the Willows'

Juliette Green

When the children at Kings Norton Primary School, Birmingham, returned from lockdown in March, Year 4 began a cross-curricular theme based on the book *The Wind in the Willows* by Kenneth Grahame. Over a period of four weeks, we carried out a range of activities based on the characters, settings and events of the story. The school has a fenced-off area of woodland – known as 'the coppice' – and this was used weekly by the pupils to play games and carry out activities linked to the book.



Kings Norton Primary School's 'coppice' area.
Image: Stephanie Flight

"I strongly believe that having regular access to an outdoor learning setting has greatly benefited my class. I have seen improvements with engagement and creativity in writing lessons and a more focused attitude to the topic itself. The children show enthusiasm and are talking more positively about English lessons and are able to link real-life experiences to their writing, e.g. using their five senses to describe settings.

I have found it increasing beneficial for lower achieving children who in previous topics I've found lacked confidence when sharing and planning ideas. I have found that these children are much more confident in sharing thoughts that link directly back to the outdoor lessons and are able to use this new confidence in other lessons too."

Hannah Zamorski, Year 4 Teacher

Due to the shorter-than-usual time frame for this theme (after missing the first two weeks of term due to lockdown), we listened to the BBC Radio version of the book, abridged in 10 episodes³. Each episode was linked to either a classroom or coppice lesson and the children also had access to copies of the book.

The main cross-curricular links covered were:

- English: reading extracts from the book and writing, e.g. diary entries for Mole and Toad
- Drama: hot seating characters and creating freeze frames of events⁴
- ICT: internet research⁵ and creating fact files about the animals in the book

- Science: teeth and eating – carnivores, herbivores and omnivores; learning about native British animals and threatened species (water voles)
- Maths: directions; code breaker activity⁶
- Geography: compass work; creating maps

The outdoor sessions took place on a Thursday morning, with each class having about an hour and a half in the coppice. The first session was during most children's first week back at school, so they used this time to explore and familiarise themselves with the coppice. The three main outdoor lessons are detailed below.

Coppice lesson 1: the animal characters

We began with a guided improvisation, where the children pretended to be Mole doing his spring cleaning and then emerging from his hole. This prompted a discussion about the differences between the characters in the book and the real animals, starting with the fact that moles spend most of their lives underground. I also pointed out to the children that Ratty – who is referred to as a 'water rat' in the story – is actually a water vole.

I then read an extract from the book where Ratty describes to Mole what he has in his picnic basket – mainly 'human' foods such as cold meats, pickled gherkins, cress sandwiches and ginger beer. We discussed what foods the children thought these animals would *really* eat and used the scientific terms carnivore, omnivore and herbivore (also checking their understanding of the words mammal and amphibian). The children were shocked to hear that Badger would probably eat *all* of the other characters in reality!



The story circle. One of the information cards can be seen hanging on the post.
Image: Heather O'Donoghue

Information cards had been hung on the trees in the coppice to show various plants and animals and what would eat them. Each child had a grid with the four main animals and used the information on the cards to match the foods to their consumers. The adults also had fact sheets to provide additional information about the animals if

the children asked for them. The session finished with a plenary where the children shared their findings and we played the game 'Wild Wood' (based on the game 'Fruit Salad'⁷).

The next day's classroom lesson focussed on the part of the story when Mole tries to find Badger's house and becomes lost in the Wild Wood. The children were able to use their experiences of being in our 'Wild Wood' and sensory vocabulary to enhance their writing.

Coppice lesson 2: story settings

We looked at a map of the settings shown at the start of the class copies of the book and the children identified the main places where events in the story are set. Each group was provided with a large sheet of cardboard and an A3 copy of the map and the children were tasked with creating their own 3D versions of the map. They were encouraged to use natural materials, collected responsibly from the coppice, and were also provided with 'junk' and some art materials.

The only criterion specified was that each map must include the three main settings for the story – Riverbank, Wild Wood and Toad Hall – plus any other features they wanted to include. The maps were photographed to be stuck into their theme books and labelled in a later lesson. We discussed the concept of 'leave only footprints, take only photographs' and the children ensured that they returned any natural materials and collected up non-natural objects when finished.



Story setting map created by the children. Image: Carole Jenks

Coppice lesson 3: recreating events

The final outdoor session of the theme began with hot chocolate in the coppice story circle before the children went on to create freeze frames of events from the story. They decided how many people would be in their group and were allocated cards from the story that included that number of characters. We also raided the costume cupboards and many of the children chose clothing or props for their characters; however, they were also encouraged to use facial expressions and body language to make the characters' actions clear.

Each freeze frame was photographed and the children were then given free time in the coppice. Many asked to keep their costumes and props, and were keen to continue their role play for the rest of the session – some even carried on whilst on the playground during break/lunchtime! This showed how much the children engaged with the story and the characters, and reminded us that KS2 pupils still enjoy role play and dress-up!


Later that day, the freeze frame photographs were displayed on the whiteboard and children from the opposite class had a go at working out the events from the pictures.



Freeze frame prompt cards. Image: Jennifer Connington

"Outdoor learning with 'Wind in the Willows' was a great sensory tool to inspire the children through physical activities. It helped to develop their vocabulary and created more discussion points. Children had the learning opportunity they don't consider a lesson, as it is learning through play and experience. In the current situation, the children have missed out on lots of opportunities for socialising with each other after such a long time. Sometimes I think we forget that, even after primary school, children need these experiences for fun and exercise. In a world where technology plays an enormous part in entertainment, it's important that children have these outside opportunities."

Susana Vanegas-Owen, Year 4 Teacher

The coppice at Kings Norton Primary School is becoming a much-loved and well-used part of the school grounds. As well as the woodland, there is a tyre area with a mud kitchen and benches. Most year groups now visit the area on a weekly basis for curricular-linked and wellbeing activities. The wider school community also engage with the coppice – bark chippings and logs for the story circle were donated by a parent who is a tree surgeon; staff, parents and pupils volunteer at 'Coppice Days' held at weekends (hopefully these will be able to start again soon); and the PTA have raised money to maintain and improve the coppice. 



The tyre play area with equipment provided by the PTA. Image: Stephanie Flight

Juliette Green is a primary teacher, environmental educator, writer, member of the NAEE Executive and Joint Editor of this journal.

Enhancing marine biological career prospects during a global pandemic

Caroline Millan

The annual Young Marine Biologist (YMB) Summit was initiated by the Marine Biological Association (MBA) in 2014 to engage young people in marine science and conservation. It was developed in response to feedback from young members (under 18s), who wanted a way to network and engage with others. Through providing inspirational presentations and workshops, the summit shows young people the wide range of opportunities and career pathways available to them and enables them to meet professionals within the industry.



YMB Summit speaker line up. Image: Lois Flounders

We usually alternate the Summit's venue between the MBA Laboratory in Plymouth and another national location to enhance reach. However, the 2020 summit was the first to be held online due to the COVID-19 pandemic. The shift in delivery proved challenging in terms of the technical preparation yet there were many opportunities that arose from moving the event online. We were able to welcome talks by marine biology advocates from around the globe and promote the summit to an international audience for the first time since its launch.

After contacting organisations, schools and science representatives and an extensive social media campaign, we had over 400 individuals register for the summit through the Eventbrite platform. We delivered the live event via a Zoom webinar, which enabled full control of speakers and participants, supported safeguarding, whilst providing many useful additional features which enhanced the event. Attendees interacted with the sessions and workshops via the Poll Q&A functions in Zoom. Any questions were then either answered live within the appropriate session or answered directly by a team of scientists and students behind the scenes.

The event celebrated the start of the United Nations Decade of Ocean Science for Sustainable Development with a keynote introduction by UNESCO's Francesca Santoro. This theme created a thread throughout the weekend, with sessions covering a range of topics from the smallest plankton all the way to the Megalodon!

The concept of 'Changing Oceans' was one theme explored on day one, with inspiring speakers leading workshops on topics including ocean acidification, artificial reefs and microplastics. On day two of the summit, we held an interactive 'Sea life Showdown' session. This saw eight passionate marine advocates give snapshot presentations about their chosen species, in the hope of winning the attendees' votes. Organisms including the legendary limpet and the extraordinary horseshoe crab

were each featured in the spotlight before being subject to the voting – with the bonnet-head shark (presented by Jaida Elcock) finally declared the winner! We also held a series of 'Sharing Science' workshops that focused on a variety of ways science could be communicated, including storytelling, film-making and dance. The attendees were shown some fantastic examples of how such complex concepts can be understood by anyone if presented in a creative way. Both days closed with a 'Careers Panel' session, which assembled inspiring marine science professionals in a live Q&A with participants. Attendees were able to ask questions about their careers and specific aspects of their personal journeys.



Geographical range of attendees from the 2020 Summit.

Image: Lois Flounders

After the summit, we collated feedback and participant information from Zoom polls and analytics, Eventbrite registration and a follow-up questionnaire emailed to all attendees. We found there was a disparity between the number of people who registered (over 400 individuals) and those who attended which we had previously anticipated. However, with more than 268 participants throughout the event, attendance was far higher than past summits, which usually attract around 50 participants. Participants from 35 countries and 5 continents attended, compared to a primarily UK based audience seen at previous events, the increased geographical range of engagement was clear. At least 83.7% of the participants were attending the YMB Summit for the first time, indicating a far greater reach than achieved with live events. There was also a large variation in the participants' ages, with 47% of those who attended being between 14-18 (the target age group), 18% below the age of 14 and the remaining 35% were above the age of 18. This type of event evidently appeals to a wider audience than which it was initially aimed at, so for future summits more will be done to make it more inclusive and accessible to people of all ages. Indications from feedback received suggested that some participants took part in the summit from home alongside multiple family members, representing a valuable multigenerational experience.

Participants described the summit as *“educational, fun and inspiring”* and also stated that it gave them some ideas for their future career. Feedback was received from parents of several attendees with neurological conditions and learning difficulties that have excluded them from participating in previous events in person. They described their children being *“captivated by the conference”* and feeling *“confident to ask questions and enjoyed doing this in the format provided”*.

We actively encouraged speakers to mention their own learning difficulties if they felt comfortable doing so and some participants reported a huge sense of encouragement seeing 'people like them' doing marine science.



The 'Save Our Seas Foundation' supports a variety of projects in the fields of conservation, research and education across the globe. The 2021 YMB Summit is going to be sponsored by the charity.

The 2020 virtual YMB Summit highlighted many benefits of running a virtual event as opposed to a live event, in terms of reaching new audiences, and attracting a large, diverse audience and speaker line-up. The MBA has already decided to run the 2021 summit in a similar format, to make it accessible for young marine biologists all over the globe.

We plan to make improvements to the upcoming online summit in order to be more inclusive. We aim to have a longer promotion period and to be more accommodating for different time zones and also multiple languages to encourage more participants from around the globe to attend. The next summit will be sponsored by the Save Our Seas Foundation and will again have a wide variety of marine advocates, following the theme of 'Ocean Predators'.

Caroline Millan is a third-year placement student studying BSc Marine Biology at the University of Plymouth. She is undertaking half of her placement as a Communications Assistant at the Marine Biological Association and the remainder volunteering as a Beach Ranger for Polzeath Marine Group.

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More information: mba.ac.uk/ymb#b5



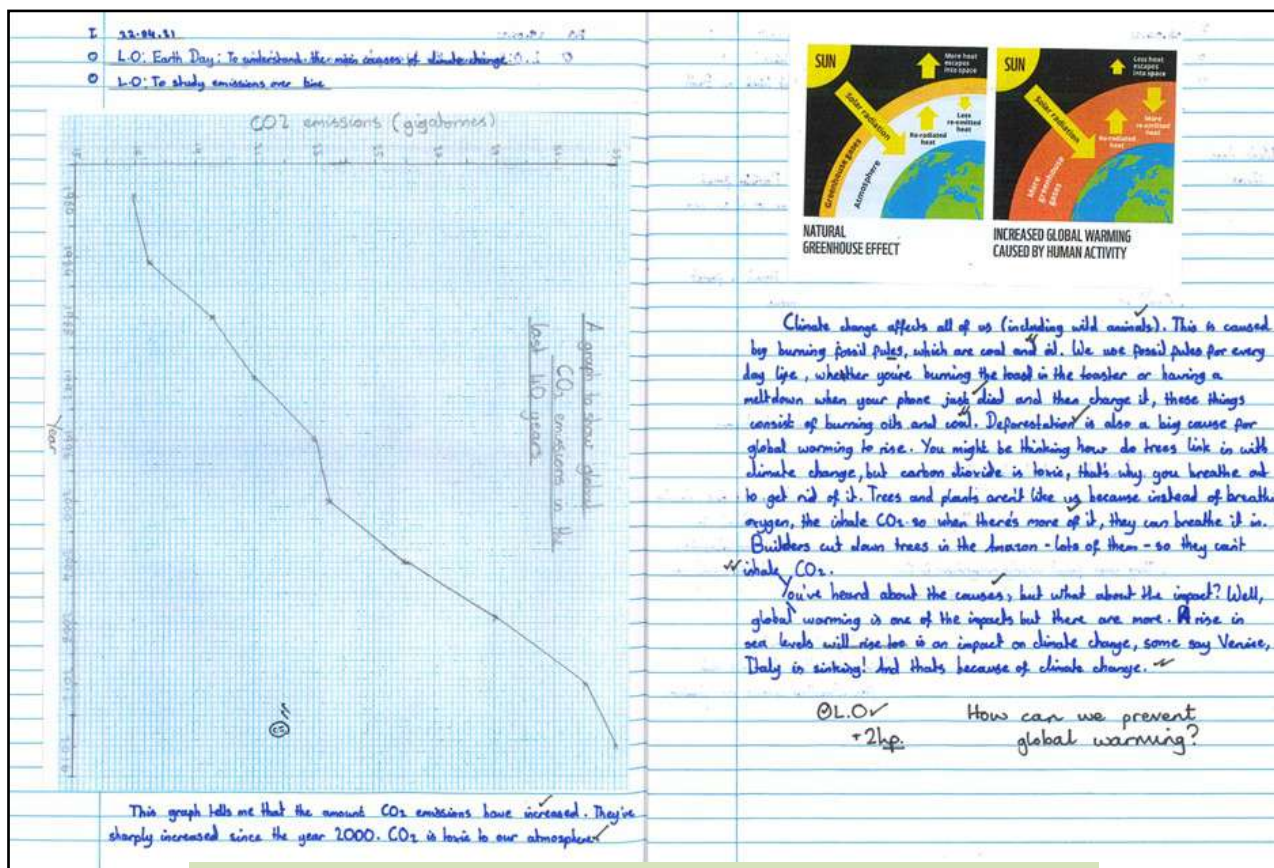
SCHOOLS EARTH DAY

Promoting environmental awareness: a whole school approach

Callum Woolman

It's a bright sunny day, quite warm actually; it's playtime without coats. All of which is taken away from us the following week with temperature ten degrees cooler. I am asked why is this happening most days and it allows me to introduce the topic of climate which then leads to the conversation about climate change. The natural curiosity and inquisitive mind of a child is the perfect time to let them know their actions can make the world of a difference for their futures.

Throughout the science programme of study there is opportunity for pupils to learn about this, but upon closer inspection it typically comes under the 'Living Things and Their Habitats' topic. This suggests a creative approach is needed in order to make effective links with other subjects. Earth Day was approaching and we thought this could be an amazing opportunity for the children, from Nursery to Year 6, to take their time to appreciate the world they live in. This provided the



Year 6 pupil: use of secondary sources to investigate carbon emission changes over time.

children with ample opportunities to explore the current state of our planet and what we can do going forward.

I proposed this idea to the staff during our weekly meeting along with a wide range of resources found online. This ranged from the official Earth Day website to the Times Education Supplement where teachers submitted their tried and tested ideas. Teachers found time on the Thursday afternoon by replacing one of their science lessons in the week with an Earth Day activity and the opportunity was greatly welcomed.

We planted the seed of Earth Day through our school newsletter, building up the excitement, having a non-uniform day where they had to wear one piece of green – having a £1 donation to go towards our school's 'Green Fund'.

As the day was approaching children started to get excited, asking me, "Sir! It's Earth Day tomorrow! What are we doing?" It was this excitement that enabled the children to think closely about our home planet, particularly with parents at home. It was the perfect time for the social constructivist approach to be embedded, especially with the wide range of group activities within the classrooms across the school.

Year 5 took a strong STEM approach within their Earth Day activity, working in groups to design a product which could provide a service without the use of fossil fuels. This ranged from a 'Waterball Car' (a car designed to run on rain water) to a 'Charger Cycle' (an electric bicycle designed to charge itself whilst riding).




Year 2 class: end result of creating their own recycled paper.

The dialogic approach allowed pupils to bounce their ideas off each other, leading to conversations relating to science topics previously learnt, providing a rich method to retain their substantive knowledge.

Where Year 5 focused on global warming, Year 2 took a stance on recycling, creating their own recycled paper. This creativity inspired conversations about why it is important to recycle and how we can actually do it from our own home. This took a practical approach to provide an insight to how materials that we just pop into the recycling bin may ultimately take shape.

Year 4 took their Earth Day outside, exploring the inner-city environment on a 'Pollution Patrol Walk'. This involved working in groups, identifying various pollutants through their senses and coming up with examples of how to combat them. Children first noticed the trees but upon further questioning, "Would you see this amount of trees in a park or forest?" they quickly realised that these trees provided little room for wildlife to thrive. Solutions for identified pollutants ranged from free electric cars for people who worked within the inner-city (based on conversations about the new Clean Air Zone charge in Birmingham) to electric-based aeroplanes.

Effective cross-curricular links were found within Year 3 and Year 6 where children conducted research, using secondary sources, about our home planet and relaying them through the medium of a mini-movie using iPads. Year 6 practiced their objectivity when conducting searches to map their own line graph of the changes in carbon emissions over the past forty years, painting a statistical picture of global warmth.

From discussions with children and staff, Earth Day was an effective method to promote the love of the environment, not only developing the children's cultural capital but also their science capital. This was evident from children asking what they can do moving forward and, after discussions with our leadership team, the Geography Lead and I will be starting our school's first Eco Council (based on the 'Eco Schools' framework) so our children can be at the forefront of making a positive, environmental difference. 

.....
Callum Woolman is STEM Leader at St Catherine of Siena Catholic Primary School, Birmingham and PhD Psychology student at the University of Derby (ORCID ID: orcid.org/0000-0001-8712-5807).

Quotes from pupils and staff

Nursery: "You can recycle plastic so it doesn't hurt the animals."

Reception: "We need to save water by turning the tap off when we wash our hands and brush teeth."

Year 3: "Earth Day was brilliant, it got people to care more about the earth so in the future, the planet won't be polluted."

Year 4: "I enjoyed going outside and investigating different pollutants and feeling the fresh air on my face."

Year 5 teacher: "The children thoroughly enjoyed inventing 'green machines' to help reduce our carbon footprint."

Year 6: "I was shocked when I found out that if we do not do anything in the next ten years, the world will be unrepairable."

Year 6 teacher: "Earth Day was a brilliant opportunity for our pupils to learn about a vital subject!"

This is Rubbish: from celebratory salad to linking global poverty and food waste

Poppy Flint



THIS IS RUBBISH

'This is Rubbish' (TiR) is a community interest company focused on large scale, pre-consumer food waste. It is a crucial climate change issue and a useful subject for looking at both the environmental and social impacts of modern life.

Recently, TiR's education and outreach work has moved on from an environment and climate focus to engaging in the more complex issues of climate justice and equality. Like many issue focused organisations we aim to tackle this problem through two overlapping strands of education and outreach, and campaigning.

Our latest project is both an educational programme and a campaign and has revealed some of the tensions between environmental education and campaigning. While education seeks to show many sides of the issue to promote critical thinking and raise questions, campaigning is designed to persuade.

As an organisation, how can we effectively do both?

Background to TiR's education and outreach

In the past, TiR has conducted educational programmes, such as the interactive Edible Education performance the 'School Feast' for KS2, and run after-school clubs with youth centres for vulnerable young people, asylum seekers and refugees. Our walk-about Cirque de Surplus has been encountered by the public at large arts festivals and community garden apple days, with 50+ taking part in celebratory giant salad tosses.

TiR's original Edible Education programme was designed following the principles of a values based approach that drew on research in 'The Common Cause Handbook'⁸. We consistently aimed to engage values associated with care for the planet and people, rather than pushing the idea that wasting less food saves money therefore by default promoting valuing money. There is enough else that does this. This method aimed to help people form a long-term attachment to the environmental and social value of produce and the global benefits of ending food waste, rather than personal, short-term wins. This approach has been evidenced to have a positive impact on how people respond to other similar scenarios, rather than being 'single issue focused'.

Projects are also created with education for sustainability theory in mind and focus on giving people a sense that they can actually DO something FOR the environment.

Given the systemic nature of supply chain food waste, this goal has felt challenging to achieve while being aligned to the organisation's mandate. How do you empower young people to make change without implying that the problems of global food waste rests on the shoulders of the individual? We believe all organisations with a cause need to be asking this question. Creating a highly informative campaign that aims to explain just how the system has come to be broken seems a logical way to solve this problem, but combining education and campaigning (on a small budget) reveals interesting tensions between the two.



Celebrating salad with a participatory giant salad toss made with surplus vegetables. Image: Poppy Flint

TiR's latest project

Recently, TiR has turned its focus to revealing the links between global food waste and food poverty in order to make a case for bold policy changes. The goal of this project is reframing food waste and food poverty as both rooted in inequalities rather than one as a solution to the other.

The link between inequality and food poverty is fairly clear but to link inequality and food waste required peeling back the layers.

To do this, we have developed three animated videos on the subject which are aimed for aged 15+ but should also provide food for thought for people who consider themselves quite knowledgeable about food waste and/or global justice.

This new project combines complex educational content about global supply chains, neo-liberal economics and inequality with clear campaign messages about the need for mandatory food waste audits and a National Food Service⁹.

The tension arises because, from a campaigner's perspective, a common rule of thumb is never to mention the alternative interpretations of the issues your organisation is trying to address. In trying to communicate a clear message, you don't want to confuse the viewer or reinforce an alternative stance. For example, food retailers might argue, and it is commonly assumed, that because businesses naturally strive for maximum efficiency, reduction in food waste is inevitable in the free market. Including and debunking this claim in an educational video about the subject would be crucial to encourage

critical thinking. It demonstrates that there are multiple, often conflicting perspectives at play in social and environmental topics. As a campaign, referring to this argument at all might muddy the waters.

Campaigning is about telling people a truth they can, often quite literally, sign up to. Education is about giving the information in a way that enables people to form their own questions and ideas. Our campaign video, for example, will wrap up with the options to share and sign up to our Food Waste Charter. This isn't the sort of empowering, collaborative, creative education FOR sustainability those with the educator hats aspire.



Still image from This is Rubbish's Reframing Food Waste animations.

Reflection

This new project has unearthed a number of questions.

A theoretical concern is: "was there a limitation to the way we applied the Common Cause framework, which is fundamentally about communication, to an education project?". It doesn't seem wrong to focus only on the social and environmental consequences of food waste and leave money out of the picture. The simple answer might be that it depends on the audience, style of delivery and content which was more environmental than social focused. But "does it strike the balance of being educational and campaigning?" and "does giving a clear campaign message stop it from being 'good' education?"


Our more immediate question is "how do we achieve both the educational and campaign goals of this project?" We hope getting this right will address the previous questions.

As the issues being raised become less black and white, which happens when human aspects of equality and justice are brought into the picture, the approach of selecting what goes in the frame pushes aside the nuances. By ignoring the fact that there probably isn't one

solution where everyone and everything wins, we are not enabling people to draw their own conclusions. Education about an issue has greater value when a learner can apply new insight / understanding to other subjects, in the case of farming there are parallels with clothes production.

To continue the money saving example, you can be told that reducing waste to save money doesn't necessarily lead to any environmental benefits (due to a theory called the Rebound Effect) and believe it. What we now strive for is that 'ah ha' moment when a learner realises why, maybe recognising a time they've fallen foul of this behaviour change trick, and can think more critically when money saving and economies of scale are promoted as environmental benefits in the future.

By trying to address these questions and being alert to dual demands of campaigning and education we believe we can create a richer, more powerful project, but conceded that many more people will engage with the campaign than the full educational experience.

TiR is now seeking further funding to produce a series of resources and workshop plans for different audiences (KS4, 6th form, community food redistribution groups, grassroots social and environmental groups and NGOs) that will structure an exploration of the animations' content. Once piloted and case studies produced they will be available for free online for teachers and organisations to facilitate. 

Poppy Flint is a non-executive director of anti food waste organisation 'This is Rubbish' and established their education programme 'Edible Education' in 2015. Poppy has been weaving creative activities into her work as an environmental and sustainability educator for over 10 years, running workshops and in-school sessions for many organisations including the Country Trust, OrganicLea and Thames21. She is part of arts collective Trivium and currently developing 'Treasure of the Trees', an interactive environmental arts project.

Poppy loves being a visiting session worker engaging students of all ages but also believes education for sustainability needs to be intrinsic to a school's curriculum and culture.

She has previously been the coordinator of the SEED Sustainable Schools Alliance and currently convenes a group of teachers and educators who are raising the profile of education as part of the climate emergency solution in their local borough of Waltham Forest.

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MEDIA

ArchaeoAnimals podcast

Tristan Boyle

ArchaeoAnimals is a monthly podcast on the Archaeology Podcast Network, hosted by archaeologists Simona Falanga and Alex Fitzpatrick (with occasional input by the podcast's producer Tristan Boyle). The show focuses on zooarchaeology, or the study of animal remains in the archaeological record. Through zooarchaeological discussions, Simona and Alex explore the various interactions and relationships between humans and animals in the past, as well as how we are able to analyse these concepts through archaeological investigations.

Past topics include the origins of domestication, the ways in which humans have incorporated animals in their rituals and belief systems, and even 'cryptozooarchaeology' – the zooarchaeology of mythical and imaginary creatures!

Podcasting is a great tool in communicating to a large audience, through platforms like iTunes and PlayerFM. Although research in this form of archaeology public outreach is still in its infancy, it represents a generation

of scientists and professionals who want to share their passion with the whole world. By being part of a wider podcast network, ArchaeoAnimals benefits from the shared resources and experience of producer Tristan, who has been podcasting for over a decade and is a keen advocate of podcasting about the past. *“There are so many opportunities to create content,”* says Tristan, *“it means that more diverse voices are getting heard by larger audiences, introducing people to new ideas and information”*

In terms of episode themes, Simona explains: *“We like to either focus on a single species with honourable mentions to their wild ancestor if applicable or multiple species grouped together by function e.g. livestock, companion.”* Each episode usually starts with a brief introduction of the chosen species, their history and biology; then discussion focuses on the archaeological evidence for said species, discussing how to identify them on archaeological sites based on morphology and/or context. Bringing up caveats such as how to tell them apart for a morphologically similar species, e.g. sheep vs goat. There is then an examination of the species’ interactions with humans, what the presence of their remains tells us about past populations, as well as their generic uses, such as work, animal products, companionship and ritual, or all of the aforementioned. The third segment of the show usually covers two case studies derived from specific archaeological sites or research projects. Whenever possible, there will be guest interviews during this segment where first-hand accounts of projects are illustrated by the professional zooarchaeologists working on them. Though both hosts are based in Britain, they like to geographically diversify the content as much as possible in order to provide a wider picture of what zooarchaeology is like worldwide.

“Recording a show for the first time was a surreal experience,” says Simona, *“I have been a podcast enthusiast for many years and never would I have ever thought I’d be in the position of co-hosting one. It took a few episodes to get into the swing of things, but once I had overcome the initial awkwardness, recording has become my favourite part of the show. We like to keep things informal and always have a good laugh while producing educational content.”*



Herring gull skull (left) and brown rat skull. Image: Tristan Boyle

A major component of the show – as well as one of the major challenges – is discussing morphological differences between various animal bones and skeletons. After all, how do you tackle something so inherently *visual* in an *audio* medium? During the show Simona and Alex provide their audience with in-depth descriptions of bones,


explaining the fundamental differences and similarities between types of bones. As a benefit of releasing a podcast which is sent out with information that podcast apps can read, ArchaeoAnimals includes images in the show notes to help listeners further understand how zooarchaeologists identify various characteristics found on skeletal remains, while listening to the show.

In addition to talking about archaeological examples of morphology, Alex and Simona also discuss the progression to the present; highlighting the ways in which

domestication has affected many animals that we find on our dinner plates to this day as well as some of our closest friends and pets. It’s not only about providing interesting information but also to raise awareness of current issues, such as the selective breeding of domesticates aimed at exaggerating certain physical traits, sometimes at the expense of their health.



Badger skull (top) and fox skull. Image: Tristan Boyle

ArchaeoAnimals provides unique perspectives on zooarchaeology due to the varied backgrounds of the show’s hosts. Simona Falanga is a commercial archaeologist with a background in languages and international relations. Co-hosting a podcast on zooarchaeology represented the perfect opportunity to unite her life-long passions for archaeology and animals. Her main research interest, besides zooarchaeology, is experimental archaeology – replicating objects and tasks utilising period technology in order to test archaeological hypotheses. Alex Fitzpatrick, on the other hand, is a zooarchaeologist and current PhD candidate at the University of Bradford, who specialises in Later Prehistoric Britain and ritual archaeology. As a podcast that represents the expertise of early career women, ArchaeoAnimals is breaking boundaries in archaeological media, showcasing diverse voices that reflect the underrepresented within the discipline. 



ArchaeoAnimals co-hosts Alex Fitzpatrick (left) and Simona Falanga. Images: archaeologypodcastnetwork.com

Tristan Boyle is an independent archaeology media researcher and co-founder of the Archaeology Podcast Network, where he has his own show ‘Modern Myth’ and helps produce ArchaeoAnimals.

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Resources to support soil science education

Sarah Garry

Soils underpin our ecosystems, our climate and human culture. Some of the biggest issues affecting our world and its inhabitants have soil at their heart.

Healthy soil supports biodiversity: biodiverse soils can host millions of organisms in each teaspoon. Sustaining life in soil is essential to ensure soil health, which supports our ability to grow food and farm effectively. When managed well, soil can store significant amounts of rainfall, preventing flooding and dirty run-off which can affect the health and safety of communities.

To fully appreciate and understand the natural world, we all need a better understanding of the vital services soils deliver. Soil is much more than dirt and our ultimate survival depends on healthy soils producing sustainable yields, maintaining and, where possible, enhancing soils to prevent degradation, which can lead to devastating impacts for communities throughout the world.



BBC TV presenter Lizzie Daly, highlighting the importance of soil. Image: Earth Minutes

Grounded

Our new video [#Grounded](#) highlights the importance of soil and aims to increase knowledge of soil's importance, particularly amongst young people. The four-minute video available on our website includes BBC wildlife presenter Lizzie Daly, alongside Riverford Organics and a soil scientist, to encourage young people in particular to understand the links between soil, their food and bio-diversity¹⁰. Our website lists three tangible things which can be done to protect local soil:

- Remove patio slabs and crazy paving to help soils absorb water in heavy rainfall. This will slow the flow into drains, and particularly help to prevent flash floods, which will be crucial in cities as climate change leads to increased intense rainfall.
- Plant cover crops instead of leaving soil bare. Cover crops or 'green manure' are popular with allotment holders and farmers, and add carbon and nutrients to the soil naturally, reducing the need for artificial fertilisers.
- Don't use peat-based compost as the intensive mining of peat bogs has a detrimental impact on the climate and local ecosystems. If you have the space, start your own compost heap, rather than buying compost or disposing of your food and garden waste in your green-waste bin.

Primary and secondary resources

We have a range of resources available on our website to support teachers and educators in delivering soil science education¹¹. Our website includes a range of downloadable posters which feature fascinating facts to engage young people. Did you know that one teaspoon of healthy soil holds more creatures than there are people on the whole Earth?! The amazing facts in the posters will support the teaching of soils across the primary and secondary curriculum.

Worms and other creatures are crucial for keeping soils in good condition. If you are looking for practical activities to undertake, our Great Worm Hunt¹² is suitable for primary and secondary children across key stages and the fun activity could be adapted to combine maths, English, geography and science.

To support the delivery of soil science education, we offer our Field Equipment and Innovation Grants¹³ which are open to applications from primary, secondary and tertiary education institutions in the UK. Up to £1,000 is available to support innovative ways to include soil teaching in lessons or to purchase equipment to aid the understanding of soil science.

Resources for adults and professionals

We deliver monthly webinars, Zoom into Soil, one-hour sessions which are freely available to all. These webinars are delivered by academics in conjunction with those implementing the science practically to provide a holistic overview of science's use in practice. Our sessions have included erosion, no-till farming and the functions of soil, including in forensic science. These sessions, along with content from our member conferences are available via our YouTube channel¹⁴.

Our two scientific journals¹⁵, *The European Journal of Soil Science* and *Soil Use and Management* publish the latest international research in soil-related topics, presenting diverse research on topics including carbon dioxide emissions, soil degradation and organic matter.



Society President Elect, Dr Jacqueline Hannam, sharing the importance of soil with members of the public. Image: Sopbox Science

Outreach activities

'Our Living Soil' is an arts outreach programme which we will be delivering from late-2021 to late 2022 to support the World Congress of Soil Science, which we will deliver from 31 July – 5 August 2022 in Glasgow. The arts programme is designed to encourage those with no previous interest or knowledge to attend events and find out more about the importance of soil.

We anticipate that there will be in excess of 20 events as part of the 'Our Living Soil' programme from exhibitions in the UK and overseas, an oral histories programme, a podcast radio play and workshops for children in Glasgow. These activities will be our first major engagement with the general public and further information on our planned activities will be available later in the year via our website¹⁶.

For a number of years we have also supported Open Farm Sunday, attending farms across the country to highlight the importance of soil to a diverse range of visitors. Although this year we won't be attending in person due to Covid-19 we will be highlighting soil's importance in agriculture via Twitter¹⁷.

Understanding soil

There is a growing appetite amongst non-soil scientists to understand how soil 'fits in' to the problems affecting our natural world. This has included the Netflix documentary featuring Woody Harrelson, *Kiss the Ground*, which introduced the 'no-till' method to a generation of young people who are passionate about halting climate change and living more sustainable lives. The method, which focuses on reducing the amount of disturbance to the soil, is attributed to increasing yields and efficiencies, increasing soil health and reducing the amount of CO₂ released into the atmosphere.

The popular TED Talks series features a number of short talks on soil and National Geographic have published several articles on soil's importance.

On a personal level we all use soil, whether we realise it or not, on a daily basis. Whether it's the food we eat, playing football on a school playing field, enjoying the local park gardens or gardening for pleasure.

Soil degradation has a huge impact on our personal lives and disrupts our understanding of the environment, even in urban areas. However, as soil begins to gain recognition as an important factor in understanding biodiversity, climate change and our interactions with others, it is important to note that there is no requirement to deliver teaching in soils at primary level. Soil teaching in England is delivered in the context of other subjects and at GCSE level. Only the Scottish Environmental Science and CCEA Agricultural and Land Use qualifications offer specific teaching on soil.

With 1,500 gigatonnes of carbon in the world's soil, three times more than in vegetation and forests, educating our young people to understand its importance, particularly in the fight against climate change, must be a priority.

Looking to the future

As we look to the future, we will continue to work to highlight the importance of soil and in August 2022 will host the World Congress of SoilScience¹⁸, where the scientific programme will be accompanied by a number of complementary arts events, such as Soil Voices and Soil Stories, to raise awareness of soil's importance in our everyday lives. 

Sarah Garry is Executive Officer of the British Society of Soil Science (BSSS), an international membership organisation and charity committed to the study of soil in its widest aspects.

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PLANT EDUCATION

The wild is closer than you think

Kajal D. Patel

With nearly 85% of the UK population living in urban city dwellings, it can become increasingly difficult for young people to understand the role and value of nature. When we think of wildlife, most of us think of wild animals such as tigers and leopards, but wildlife includes plants and animals that live around us, not just those in tropical rainforests or savannahs across the world.



The Baobab tree (*Adansonia digitata*) is known in Africa as the 'Tree of Life' as every part of it, from the roots to the leaves, has myriad traditional applications. Until recently, Baobab was relatively unknown in Europe as a food ingredient but the past few years have seen it hugely increase in popularity. It is also used in cosmetics products. Image: [Pixabay](#)

Wildlife is outside our doorsteps – our native plant biodiversity in the United Kingdom includes nettles, dock leaves, yarrow and much more. But wildlife is also inside our homes, in the forms of creams, oils, herbal medicines, teas, furniture, make-up items, drinks and food products. Living in the city, buying goods in a

packaged and processed form distances us from the plants, the processes and the people involved in making the hundreds of products that are used every day.

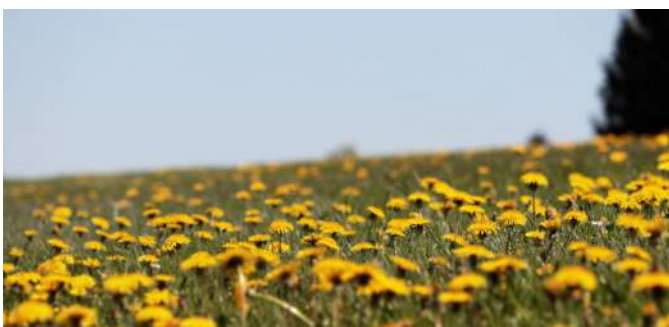
Educating young people about the wild plants that contribute to their daily life enables and empowers them to act in a mindful and conscious way. When we understand the many mechanisms and forces that are behind the food we eat and the things we use, we have a deeper sense of gratitude and are more likely to want to sustain and preserve it.



Elderberry (*Sambucus nigra*), widely used in food, herbal teas and medicines for its antioxidant and nutritional properties. Image: [Pixabay](#)

FairWild Foundation is a non-profit organisation which has developed a certification system that specifically focuses on raising the sustainability and ethical standards of wild sourced plants from around the world. While FairWild primarily works directly with companies, encouraging them to adopt sustainable harvest and fair trade practices, they also aim to encourage and educate the public about the use of wild plant ingredients in finished products as these are often left unrecognised or unappreciated. Every single person uses wild plants in some way. As consumers, we have some power to influence and encourage companies to have more sustainable practices when it comes to wild plant species. We have the ability to question the brands we use by asking them about the wild ingredients they use, where they come from and how they factor in sustainability.

One of the most beneficial ways to allow pupils to connect to nature is of course for them to be immersed in the natural environment through farm visits, nature tours, orienteering and walks. However, awareness can also be created in the classroom about how the natural world contributes to the pupils' livelihoods, their comfort and much more. One way of doing this is by encouraging students to read the labels of everyday items they use and find which ingredients may have come from the wild. Some of the key ingredients to look out for have been highlighted by TRAFFIC, a non-governmental organisation that works on wildlife trade issues worldwide. Explore the 'Wild Dozen' on our [#IFoundWild](#)¹⁹ page.



A field of dandelion (*Taraxacum officinale*). The plant has several culinary uses, and is also used in herbal medicinal products. Image: [Pixabay](#)

Up to 90% of medicinal and aromatic plants in trade may be wild collected and for most of these plants their conservation status is unknown. Growing awareness in our communities, schools and homes means that we can encourage more companies to harvest sustainably and be accountable for the wild plants they use and sell in their products. This will help preserve wild plants for generations to come, ensuring that the often vulnerable people collecting and harvesting these plants have their livelihoods for generations to come, and will also ensure the protection of the ecosystems and species which are reliant on wild plants.

Activities to connect pupils with wild plants

There are many fun educational activities which can be used to build and develop awareness about the wild plants which relate to our everyday lives. One way of doing this is by asking pupils to select one wild plant species that is used in a FairWild product in the UK. Pupils then create their own projects about this wild plant focusing on the key points (the 5 P's):

Plant: Why is the plant used in this particular product? What is the history of the plant? Which region does the plant originate from and where has it been introduced? What are the benefits and potential problems with introducing wild plants to different parts of the world?

Place: Where does the plant come from? What habitat or environment is it grown in?


People: Who is responsible for collection of the plants? Are livelihoods dependent on the collection of this plant? What sort of communities harvest wild species? What are the social repercussions of this?

Process: How many steps or processes are involved in making the product?

Principles: What are the social and environmental issues connected with the plant? What are the FairWild principles and how do they contribute to the sustainability of the plant?



Bear's Garlic (*Allium ursinum*) harvested in Hungary. Image: © Kirsten Palme / TRAFFIC

Information on the FairWild Standard, certified species, products and sites around the world can be found on our website (see below). Follow us on social media and visit the website to be kept up to date on plans for the annual FairWild Week²⁰. It would be great to see schools participating in this online celebration of wild plants and all they bring to our lives – get in touch to share your ideas! 



Herbal teas are increasing in popularity – did you know many of the ingredients used come from the wild? Image: [Pixabay](#)

Kajal Darshan Patel is an independent researcher currently volunteering with the FairWild Foundation – a non-profit initiative with the mission to secure a fair and sustainable future for wild plant resources and people.

More information: fairwild.org

Seabird monitoring: witnesses in the wild

Laure Cugnière, Fiona M. Jones & Ignacio (Nacho) Juarez



Gentoo and Seals. Image: Fiona M. Jones.

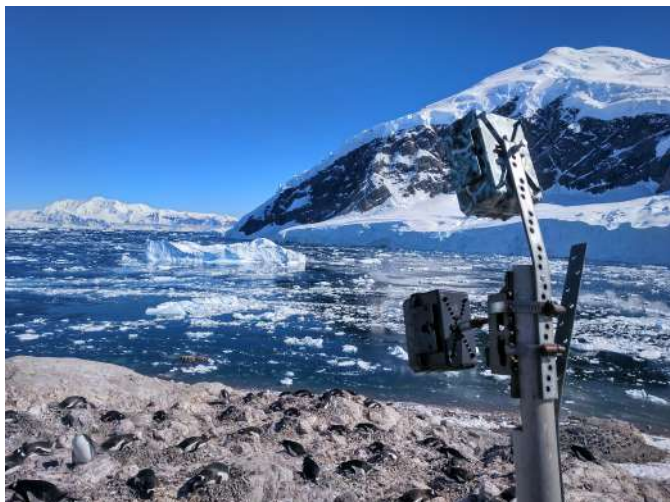
The issue

The polar regions are immensely special, but are rapidly changing due to direct human disturbances, like fishing activity and habitat degradation. Penguins and other seabirds are key environmental health indicators as well as the most threatened group of birds globally. Near the top of the food chain, and often covering large geographical areas over their lifetime, changes in their populations are likely to reflect changes to the wider environment. But to understand the threats faced by seabirds, we need data on a huge scale. Yet, making sense of the huge data flow generated would be impractical for researchers on their own. So how do you monitor seabirds at a large enough scale to make a difference?

Our vision

We are the Polar Ecology and Conservation research group at the University of Oxford, who work on developing projects to address the challenges related to the monitoring of seabirds, and in turn, the polar regions. Penguin Watch²¹ was launched in 2009 to test a new technique that combined remote time-lapse camera technology with citizen science as a way of monitoring penguin populations. Following our success, we broadened our research to the northern polar region and other seabird species, in 2014, with Seabird Watch²². While the threats to seabirds are severe and increasing, our ability to provide near-real time data to policymakers and potentially reverse these threats has never been greater (hence the need for fieldwork).

Step 1: Penguinologists in the field



Penguin Watch (remote) witnesses. Image: Ignacio (Nacho) Juarez.

Conducting fieldwork in remote locations like Antarctica is extremely challenging. We are only able to visit once a year and the risk of something going wrong is higher than most places. The use of a remote camera network means that the data continues to be collected when we are away.

To further improve our capacity to reliably travel in the region, we collaborate with several Antarctic tour operators (primarily Quark Expeditions and Cheeseman's Ecology Safaris). With their help, we can travel faster and more consistently to sites from year to year. As part of these collaborations, we also work to engage their passengers about our research and the polar regions. Once back from the field, the support of the public is critical for our research (hence the need for citizen science).

Step 2: Citizen science



Citizen science: King Penguins in Salisbury Plain, South Georgia.
Image: Penguin Watch

Since the launch of our project, we have gained over 50,000 volunteers and have classified, thanks to them, well over a million images (it is actually over 8 million images, but each image is seen multiple times until a consensus is reached). During April alone this year, we saw more images counted than in the previous two years combined! Our projects are particularly popular in the classroom but also with young adults from nearly 60 different countries.

When volunteers log-on to our project, on the Zooniverse platform, they are shown a random time-lapse image and asked to 'tag' any individuals they see as either an 'Adult', 'Chick', 'Egg' or 'Other'. 'Other' could refer to another species of seabird, a human, or even a ship – this helps us understand the penguins' relationship with their environment.

Each image is automatically shown to four volunteers. If any one of those identify anything in the image, it is shown to a further six volunteers. This means that if there is an individual on the image that only one person has marked, it is likely to be an error and it can be removed. This data analysis process has proven rapid and accurate and does not require a 'trial run' for people to be able to help. This also means that anyone can help – even a 5-year-old is able to take part!

Citizen science is a brilliant two-way thing – we get the benefit of data, and people find taking part in our project an enriching and educational experience and love the feeling of ‘helping science’. And who does not love seeing wild penguin images?

How we want it to be



King Penguin colony in Salisbury Plain, South Georgia.
Image: Ignacio (Nacho) Juarez.

- We want to involve and inspire the public about seabirds, the little visited polar regions and our planet through engagement and education.
- We want to harness new technologies to make conservation science solutions easily accessible and efficient.
- We aim to share our monitoring and data analysis techniques – which facilitate monitoring on a large scale at high resolution – with other researchers to boost seabird conservation globally.
- We want our research to have a real-world impact by helping conserve seabirds in the polar regions using the most robust and tested data available.
- **Ultimately, we want our polar regions to be healthy and resilient.**

Summary of our research: tinyurl.com/67vw4f73
(produced in partnership with Oxford Sparks by Scriberia animation team).

Laure Cugnère, Fiona M. Jones and Ignacio (Nacho) Juarez are part of the Penguin Watch team at the University of Oxford.

More information: penguinwatch.org

MARINE

Cetacean research and rescue Leesa Pratt & Jools Farrell

In 1985, sixty-two False Killer Whales [a species of dolphin: *Pseudorca crassidens*] stranded at Crowdy Head on the north coast of New South Wales. The whales were being thrown around and bashed to death on the rocks by the surf, with rescuers struggling in the appalling conditions. Taking matters into his own hands, a local visionary decided to take one of the whales on the back of a truck to the sheltered fishing port on the other side of the headland about a kilometre away, where he would nurse it back to health. This was so successful that the order was given to transport all the surviving animals across to the port. That decision helped save a further 33 whales at that incident. No longer would stranded animals be doomed to die!

Following this event, ORRCA (Organisation for the Rescue and Research of Cetaceans in Australia) was formed in the November of 1985 by a group of volunteers who wanted to make a difference in these unpredictable events.

35 years on, ORRCA is a growing, multi state, volunteer team whose primary focus continues to be the rescue, preservation, conservation and welfare of whales, dolphins, seals and dugongs in Australian waters.

Uniquely, ORRCA is the only volunteer marine mammal rescue group licensed by the National Parks and Wildlife Service (NPWS) to do the work we do. Our member network enables us to attend rescue incidents ranging from single to multi animal incidents across popular and sometimes very remote and vast stretches of coastline around Australia.

Across the winter months, ORRCA often sees a spike in seal numbers hauling out. This coincides with the Minke, Humpback and Southern Right whale northerly migration. In recent years, we have also seen an increase

in the number of whale entanglements which has increased the number of calls into our ORRCA Rescue Hotline. The coordinated management of the many incidents over this period can be immense and we are grateful to have such a dedicated and experienced team of volunteers ready to help the marine mammals that frequent our waters and our coastlines.



A cetacean rescue training workshop. Image: ORRCA

Just another rescue training day...


Whilst hosting an ORRCA Rescue Training Workshop back in February 2019 at Kurnell in south Sydney, the ORRCA Rescue Hotline received an incident call stating there was a baby Orca stranded in Kurnell. As it turned out, it was a Risso's Dolphin calf which had stranded and was still alive! The ORRCA training team and 15 of its newest rescue members, plus 9 NPWS staff who had

also just been trained by ORRCA, were directly put into action! A convoy of vehicles travelled the 5 minutes down the 4WD beach to assess the situation and start the rehabilitation process.

A multi-agency, team effort...

The ORRCA rescue members with the help of NPWS staff and local Surf Life Saving Club members searched the area for the young dolphin's mother. Together they did everything they could, in trying and deteriorating conditions, to support this very young animal. Unfortunately, as it was milk dependent, the decision was made in conjunction with senior vets from the Taronga Wildlife Hospital and Dolphin Marine Conservation Park that unfortunately this little calf was unable to be saved.

The takeout...

No one could have foreseen this event happening on an ORRCA rescue training day, let alone within 5 minutes from the workshop... The feedback and takeout from the newest recruits was that this practical hands on experience reinforced all the skills learnt throughout the valuable day-long training workshop. It truly was an initiation into the wonderful work the ORRCA team has provided our coastal communities for the last 35 years... and will continue to long into the future! 

.....
Leesa Pratt is President and **Jools Farrell** Vice President of ORCCA Inc.

Contact: orrca@orrca.org.au

More information: orrca.org.au

CONSERVATION EDUCATION

Broadening horizons in conservation education

Nikki Burton Mallott

The remit of a conservation educator is to connect audiences with the natural world and encourage the uptake of positive environmental behaviors. At Knowsley Safari, we are looking to achieve this more broadly in our community.

Two approaches have been explored:

1. An integrated approach to nature, health and wellbeing
2. Framing conservation through the medium of art

The rationale is rooted in the concept that the conservation conversation should not take place in a vacuum: caring for our planet should not be a silo from the rest of modern life, but rather should be integrated as a habit, a standard and a social norm. As educators, it is especially important to recognize and understand that environmental messaging in its purest form will not engage everyone, and therefore using other hooks and techniques to reach audiences should be positively explored. This is particularly important for the zoological sector. We look to our colleagues in the museum world where they have already made their mark, Museums Association (2017)²³ publishing an entire strategy for the integration of health and wider social value into its members' programming. Zoological collections can and should have social impact and diversify beyond their conventional remit of conserving species. Knowsley Safari has developed programs with new approaches – the outcomes of which are outlined here.

An integrated approach to nature, health and wellbeing

Pelletier & Sharp (2008)²⁴ in a review of effective behaviour change models suggested there to be more success when messages serve intrinsic goals, such as health and wellbeing, as opposed to extrinsic goals (e.g. saving money, comfort). The United Nations 2030 Agenda for Sustainable Development also recognises the need for integration *"ending poverty and other deprivations must go hand in hand with strategies which improve health and education... All whilst tackling climate change and working to promote our oceans and forests"* (UN, 2015)²⁵. Merging the conversations of health and the environment is therefore worth exploration.

Within the UK and in the Knowsley locality, poor mental and physical health are widespread. One in four people will experience a mental health problem (MIND, 2021)²⁶ and 68% of adults are classed as overweight (Lifestyles Team and NHS Digital, 2020)²⁷. The Covid-19 pandemic only exacerbating this health crisis.

Moreover, the impacts of nature on health (and personal development) are becoming more well documented. Barton & Pretty (2010)²⁸ reviewed 10 studies on exercising in nature and found they all demonstrated participants had increased mood and self-esteem. White *et al* (2019)²⁹ found that spending two hours a week in nature had positive effects on overall health and wellbeing and O'Brien & Murray (2007)³⁰ demonstrated the multifaceted impact of forest school on children with benefits including improved confidence and social skills. Such evidence has led to a rise in the UK (and globally) of social prescribing: nonclinical treatments which take a more holistic approach to health (Ewbank, 2020)³¹. Instead of medication, patients are prescribed an exercise class or time in a botanical garden. There is, however, little involvement yet of the zoological sector in this arena despite the inclusion of sister venues such as parks, woodlands and beaches.



'Move Like Me': animal-inspired PE. Image: Knowsley Safari

‘Move Like Me’

‘Move Like Me’ is a one-hour animal inspired physical education lesson. Sessions were available to book for a 4-week period during October 2019, for ages 5 to 11 at schools within 15 miles of the safari. 1926 children from 13 schools took part across 66 workshops.

The workshop was delivered in the school hall or outside, with no equipment and the children in their sports kit. Each session lasting around 45 minutes including a warm-up and cool down.

Guided by the educators, the children imitated different actions of animals including considering speed, use of body parts and style of movement. Scenarios were also created such as the sudden appearance of a predator and the need to escape to cover.



Children pretending to be predators in ‘Move Like Me’.
Image: Knowsley Safari

All teachers were provided with a feedback form at the end of the lesson. Comments were positive:

“The children loved it. Really good balance between exercising and knowledge of the animals.”

– Park View Academy

“The children have (since) been pretending to be animals in the playground.”

– St Leo’s Primary

Teacher survey responses showed that 89% of teachers strongly agreed with the statement “Do you think the sessions were good for the overall wellbeing of the children?” and 61% strongly agreed they had had a positive effect on the children’s perception of exercise.

‘Art in the Park’



Image: Patricia McDonald

Working in collaboration with Kirkby Gallery, ‘Art in the Park’ saw a group of artists create work inspired by the animals, environment, and conservation outputs of the safari. Each artist then recorded their artistic journey. These were put together in a series of films for schools who could watch the creative process and too be inspired by the natural world.

Johanna Robinson is a local author who wrote two short stories and a poem based on

the themes she took from the safari: *Behind the Scenes* and *Refuge and Perspective*. Patricia McDonald is a multi-disciplinary artist who produced prints of wolves, sea lions and giraffes.

Framing the creative process, educators from the safari also delivered virtual content to give context to the sessions exploring the biology, habitats and conservation status of the animals on which the artists focused.

Over 1800 school children viewed the sessions. Some of which also submitted their own artworks inspired by the sessions.

All teachers agreed or strongly agreed that:

- The children learnt about nature
- The children learnt about art
- The children had an insight into the art world not normally possible
- The children has an insight into the safari park not normally possible

Suggesting that the value and link to the art curriculum was as strong as to the science.

Conclusions

The results and feedback from both programmes indicated a positive start for the diversification of the safari’s education programming.

The local reputation of Knowsley Safari combined with the novelty aspect contributed to both initiatives getting started.

A second ‘Move Like Me’ programme was launched in March 2020. The ‘Expedition Exercise’ version seeks to deepen participant knowledge of the effects of habitat loss along with the original objective of improving perception and enjoyment of exercise. This is currently paused due to Covid-19 but is expected to be restarted in November 2021.

Knowsley Safari and Kirkby Gallery are in ongoing discussions about next steps, with an in-person exhibition of the art works produced from the project being explored.

To expand more widely, careful communication needs to be considered in order that the programmes do not jar with the reputation and core remit of the zoo and that we continue to demonstrate how nature is integral to each programme.

Our programmes do suggest though that it is beneficial for zoo educators to ‘think outside the box’ when programming. Re-framing our offering and broadening the horizons of our audiences gives us a stronger voice in the conservation conversation which, alongside evolving the remit of zoos, also strengthens the odds in favour of nature connectedness and a sustainable future. 🌍

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Nikki Burton Mallott has 10 years’ experience in Conservation Education. Currently in post as Head of Learning and Discovery at Knowsley Safari near Liverpool. Nikki is Co-Vice Chair of the BIAZA CE committee and a community governor at 2 local primary schools and 1 local secondary. She holds qualifications from the University of Cambridge, Edinburgh and Liverpool.

More information: knowsleysafariexperience.co.uk/education

The Earth Museum: an experiment in global citizen learning

Janet Owen

The Earth Museum is an experimental not-for-profit enterprise with a vision to create a virtual learning resource which can be used in every home, classroom, museum and place, sharing and connecting the world's cultural and natural heritage with people and places; empowering us to understand each other and look after the planet better.

We make digital interactive maps with heritage treasures and their associated stories linking back to the communities and geographies for which they have meaning in the present. Through elaborating on connections between stories and places, we aim to inspire learning about global citizenship in support of the United Nations Sustainable Development Goals (SDGs).

For example, we have been working with Gosport and Fareham Multi-Academy Trust³² to develop a learning resource about World War 1³³ that inspires young students to reflect on the truly global nature of this conflict and its impact on personal lives. The idea is that it can be combined with local WW1 history sessions to provide a global context; and used in the classroom to support educational activities for history, geography, social action and cross-curricular teaching. In doing so, it helps support learning around UN SDGs 16: *Peace, Justice & Strong Institutions* and 10: *Reduced Inequalities*.



Belize coral reef. Image: Fragments of Hope fragmentsofhope.org

We have also worked in partnership with the excellent Fragments of Hope³⁴ charity which works to protect and conserve the Belize Coral Reef System World Heritage Site. By mapping video footage taken at various locations and linking with new and existing learning materials made by Fragments of Hope and The Earth Museum, we have created a resource³⁵ that provides a case study on the impact of climate change on environment.

This helps support a number of UN SDGs, including 13: *Climate Action* and 12: *Responsible Consumption & Production*.

Our work is not just targeted at schools. We also seek to engage the naturally curious in a virtual exploration of our world through the lens of its natural and cultural heritage. Our 'World of Stories', 'World of Treasures' and 'Themed Tours'³⁶ present an eclectic mix of heritage-inspired place-based content, all shaped by our values centred on solidarity, respect, belonging and sustainability. We always seek volunteers to contribute stories and create maps.



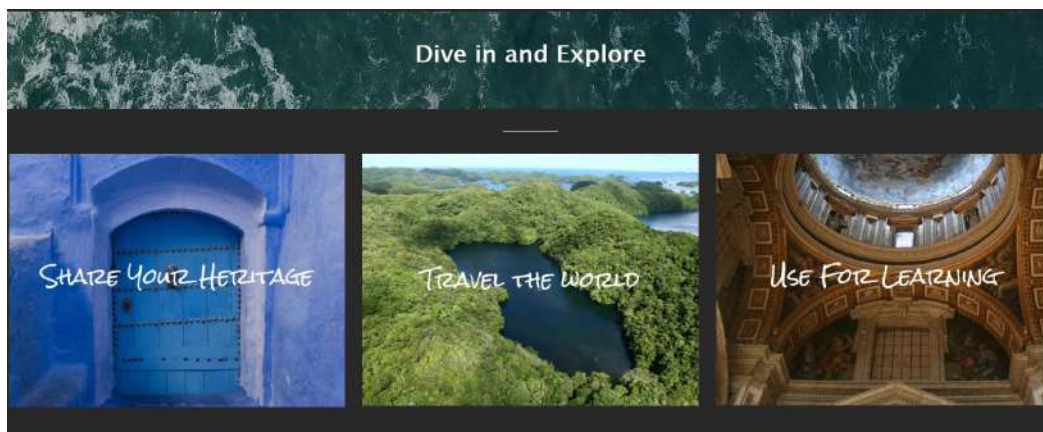
Rapa Nui Easter Island. Image: Rapanui Pioneer Society

Presently we are fundraising for a project to develop a new climate action learning resource, working with a number of partners, including the University of Winchester, Gosport and Fareham Multi-Academy Trust and the Rapanui Pioneer Society³⁷. We value learning above all, and constantly strive to further develop our platform so it even better meets target audience needs.

Janet Owen is Founder and Executive Director of The Earth Museum, a project inspired by her 30 years working in the museum and cultural heritage environment; and through research into the collecting journeys of Alfred Russel Wallace and Charles Darwin, among others.

Contact: enquiries@theearthmuseum.co.uk

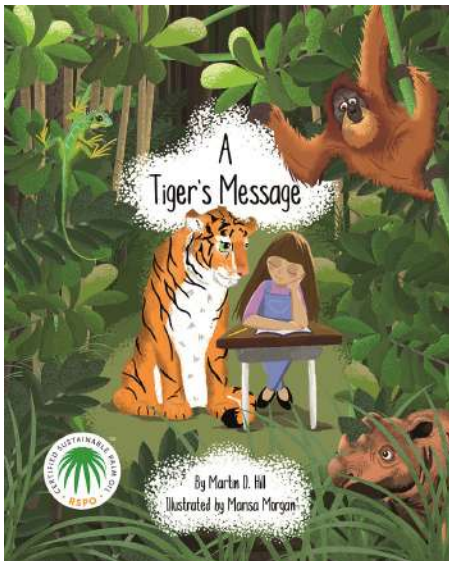
More information: theearthmuseum.co.uk



BOOK REVIEWS

A Tiger's Message

Martin D Hill & Marisa Morgan (illustrator)



A Tiger's Message is a beautifully colourful book that helps children learn about the wildlife of tropical rainforests, the threats that they face, and what people can do to help. At first glance, it appears to be a picture book aimed at Key Stage 1 children, but the information and concepts contained within

make it also suitable to read and discuss with pupils in Key Stage 2. While it's not a 'big book', the large size and big, clear images make it ideal for sharing with a class; or children would enjoy leafing through the pages themselves.

The book begins with a visit by Indy the Sumatran tiger and her keeper to Emma's school – an opening that prompted quite a lot of discussion of the practicalities (and impossibilities) of this when I read the book to a group of children! The first of several facts is given – that there are now only between 350 and 400 Sumatran tigers left (*"There are more children in this school than there are Sumatran tigers in the wild"*).

Emma finds herself transported to the dense rainforest of Sumatra. The illustrator, Marisa Morgan, helps to draw the reader into this environment by adding increasing amounts of green to each page. Emma sees a fleeting flash of orange between the leaves and then hears a deep purr... Now, I thought that tigers couldn't purr – don't they 'chuff' when happy? – but the author is a big cat expert, so I'll take his word for it! Emma follows the purring tiger deeper into the forest. However, the purr soon turns into a loud roar – the noise of machines. The green of the pages changes abruptly to grey, as the illustrations show bulldozers, men with chainsaws, fallen trunks and rows of broken tree stumps. The most affecting image is of an orangutan clinging forlornly to a broken branch, which the children I was reading with found incredibly moving.

Emma snaps out of her daydream and explains to the class that humans are destroying the rainforest, leaving nowhere for the wildlife to live. The following pages contain information about why rainforests are also important to humans, by providing oxygen, absorbing carbon dioxide and containing plants with medicinal properties. Emma's teacher then tells the children about palm oil – what it's used in and the impacts that its growth has on tropical rainforests. It was really good to see that the message isn't just to completely avoid palm oil, but that we can choose products that use *"sustainable, wildlife friendly palm oils"*. (The book cover shows the logo of the Roundtable on Sustainable Palm Oil.)

This book contains a positive message about what children in the UK can do to help wildlife in far-distant Sumatra, whilst not shying away from the cold, hard facts. For example, there are two pages towards the end that show photographs, rather than illustrations, of deforestation in Sumatra and central Kalimantan (the Indonesian part of the island of Borneo).

Remember, as Emma tells her mother at the end of the story: *"the rainforests belong to all of us, animals and humans too."*

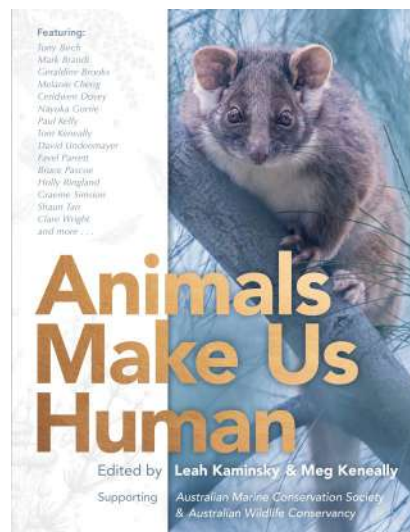
Hill, M.D., illustrated by Morgan, M. (2019). *A Tiger's Message*. Bexleyheath: Indy Publishing. ISBN: 978-0-9928285-3-0.

Paperback, 30 pages. £6.99. Available from indypublishing.co.uk

Reviewed by Juliette Green

Animals make us human

Leah Kaminsky & Meg Keneally



Do you know what Sir David Attenborough, Greta Thunberg, the Dalai Lama and Beyoncé all have in common? (The answer is at the end of this review!)

This delightful and important book was born out of devastating circumstances. First the Australian bushfires of 2019–20, as the country's unique creatures are re-examined, their very re-

al vulnerability highlighted. Then, more authors and artists joined a growing list of contributors as the pandemic took hold and we began to realise the vital importance of nature all around us – as sources of not just wildlife spotting, but also therapeutic connections – especially in our very backyards!

In *Animals Make Us Human*, through words and images, many of Australia's favourite writers and photographers share their personal moments of wonder and revelation from encounters in the natural world: seeing a wild platypus at play, an echidna dawdling across a bush track, or the inexplicable leap of a thresher shark; watching bats take flight at dusk, or birds making a home in the backyard; or following possums, gliders and owls into the dark.

A case in point is the write up by Jen Martin to search for the unique 'toadlet' named after her father - her then-5 year old son describing the adventure as *"the best thing I've ever done"*. They found the toadlet, but only one of them, in the pitch dark, and only from its call!

Hopeful, uplifting and deeply moving, this collection is also an urgent call to action; a powerful reminder that we only have one world in which to co-exist and thrive with our fellow creatures. What's perhaps unusual here is the length: the chapters are really short 'vignettes'. Not taking any short cuts, they are vivid and emotional in their wonderful storytelling.

By highlighting the beauty and fragility of our unique fauna, *Animals Make Us Human* encourages readers to consider our fauna in a new light. As to the book's title – and I'm sure titles are hard to get right at the best of times – my suggestion might be 'Animals Make Us Better Humans', as in the act of helping or connecting with these creatures brings out good aspects of human qualities. Regardless, this book is both enthralling and entertaining; all the time we learn about not just the animal in question, but also something about the writers.

The volume is a fundraiser for our wildlife, from land, sea and sky with proceeds going to the Australian Marine Conservation Society and Australian Wildlife Conservancy.

Finally, the answer to the question is... David Attenborough, Greta Thunberg, the Dalai Lama and Beyoncé all have animal species named after them.

Kaminsky, L. & Keneally, M. (2020). *Animals Make Us Human*. Penguin Life. ISBN: 9781760899813. Paperback, 256 pages. megkeneally.com/book/animals-make-us-human

Reviewed by Henricus Peters

Rewild Yourself: 23 spellbinding ways to make nature more visible

Simon Barnes



There is a lot to like about this book, and if everyone did even half of what Simon Barnes recommends, their lives would be more fulfilled, and the rest of us would benefit as well.

As is the fashion, each chapter is introduced with a brief quote. Joyce, Shakespeare, Kipling, and Tolkien all feature, but it's CS Lewis and JK Rowling who dominate. This is no accident as it aligns with the 'spellbinding' in the title, and the magic theme that

runs through the book and the chapter titles. Barnes's point is that nature is there ready to be revealed if only we're able to look. He says that there are lots of tricks to this: "Once you know the spells, the wild world starts to appear before you... Now you don't see it. Now you do."

There is, of course, absolutely nothing magical about any of this as Barnes eventually acknowledges; it's mostly a question of readiness and willingness, and

technique and equipment. I only mention this as I found all the magic eventually a bit irritating. Some (most, perhaps) will likely find it most appropriate. The publisher, however, seems to be on my side. They highlight this piece of Barnes text (taken from the Introduction) in a blurb:

"... in *Rewild Yourself*, Simon Barnes provides 23 wonderful tips to bring wild creatures you thought forever beyond your scope right into the middle of your own world. With a few new techniques, a little new equipment and above all a new way of thinking, birds hidden in the treetops will shed the cloak of anonymity, butterflies you never noticed will bring joy to every summer day and creatures of the darkness will enter the light of your consciousness."

Just so.

The 23 chapter titles might also seem odd but they eventually make sense, having, just like a magician, successfully disguised the contents from the reader. 'The Magic Tree' is about the Buddleia bush and butterflies. 'A Spell for Making Birds and Beasts Come Closer' is about using binoculars, 'How to Penetrate the Darkness' is about moth traps, 'Regaining your Lost Sense' is about recognising birds from their songs, 'A Vision Seldom Seen' is about using our peripheral vision, 'How to Look Beyond the Edge of the Earth' is about looking out to sea at birds (and more), 'Travelling the Hidden Roads' is about finding animal tracks – you get the picture. It could have been much clearer – but much less mysterious and magical.

Despite all these trifling reservations, I think this is a great book. I learned something useful in every chapter. But there's much more to it than mere knowledge and usefulness; something more profound. This book is about helping us remember that we're part of the natural world – a wild world – and that we can get closer to and reconnect with it, one butterfly, bird and bee at a time. But the book wants us to do more than merely (re)connect. As Barnes says, doing what he suggests will mean that: "You become wilder in your mind and in your heart", and as you do this you understand that you are part of this wild world. After that, as Barnes notes in his chapter on naming, comes affection, a feeling of responsibility, a desire to cherish, and a determination to DO something yourself.

I could write a lot more about this wise, practical, humane, witty, and brilliant book, but I'll stop here. Instead, I'm going to read it again, and take up some of the suggestions this time. I know it will be good for me – and those who know me.

Barnes, S., illustrated by Lee Wright, C. (2020). *Rewild Yourself: 23 Spellbinding Ways to Make Nature More Visible*. London: Simon & Schuster UK. ISBN: 978-1-4711-7542-8. Paperback, 198 pages. £8.99.

Reviewed by Professor William Scott

WEBWATCH

Nature and ecology organisations

British Ecological Society is the world's oldest ecological society. "We are working towards a world in which people and nature thrive." Their website includes identification guides and courses. britishecologicalsociety.org

Campaign to Protect Rural England: "Focusing mainly on waste management, transport and energy, CPRE is a charity that works to protect the UK's countryside." * cpre.org.uk

Centre for Alternative Technology: "CAT is an education and visitor centre demonstrating practical solutions for sustainability." ** cat.org.uk

Energy Saving Trust "advocates green energy solutions in the UK. Primarily focused on educating people on how to reduce the energy they are using, this leading organisation is a great place to learn what you can do to help the fight against climate change." * energysavingtrust.org.uk

Ethical Consumer “strives to promote sustainability in business practices by having a greener approach for their products. The website gives a rating to more than 40,000 products which give consumers the ability to see how green they are before buying.” * ethicalconsumer.org

Field Studies Council is an educational charity that has outdoor education centres across the UK, offering courses, educational visits and residential experiences. “We want to create a world where everyone feels connected to the environment so they can enjoy the benefits it gives and make choices that help protect it.” field-studies-council.org

Friends of the Earth: “Through various campaigns such as reducing air pollution, saving the British bee and other important environmental issues, the Friends of the Earth organisation hopes to play its part in helping the environment.” * friendsoftheearth.uk

Green Alliance: “Formed in 1979, Green Alliance is both a charity and a leading independent think-tank that strives to continually push for improved environmental laws and policies in the UK.” * green-alliance.org.uk

Greenpeace “is an independent non-profit global campaigning organization. Their vision is to create a greener, healthier and more peaceful planet.” ** greenpeace.org.uk

Institution of Environmental Studies: “Founded in 1971, the Institution of Environmental Sciences has a strong focus on promoting sustainable development in order to help protect nature in the UK.” * the-ies.org

Keep Britain Tidy: “Littering on our streets is another contributor to the damage being done to our environment and since 1955, Keep Britain Tidy has worked hard to reduce it. Through education and campaigning, they continuously spread the word that littering and waste is something that needs to be dealt with more efficiently and at reduced risks to the environment.” * keepbritaintidy.org

London Environmental Educators' Forum (LEEF) “is a membership organisation for London's most passionate green educators”. Their aim is to “make London a world-leading city for connecting people to nature and sustainability”. leef.org.uk

National Trust is a large charity and membership organisation focused on heritage conservation in England. nationaltrust.org.uk

Natural History Museum has a world-renowned collection of wildlife resources and a rich website to match. nhm.ac.uk

Recycle Now “is a government-funded campaign that was first launched in 2004. More than 90% of local authorities in England use Recycle Now which aims to educate people on how to effectively recycle their waste.” * recyclenow.com

Renewable UK: “The sole aim of Renewable UK, a renewable energy trade association, is to increase the number of homes that are using green energy. This is energy that is created via renewable sources such as the wind and sun that do not have a negative effect on the environment.” * renewableuk.com

Royal Forestry Society is a very old membership organisation for those actively involved in woodland management. rfs.org.uk

Wildlife & Countryside Link “is a unique coalition of charitable organisations concerned with the conservation and protection of wildlife and the countryside.” wcl.org.uk

Wildlife Trusts: “With more than 800,000 members spread across close to 50 different groups across the UK, the Wildlife Trusts are responsible for protecting various natural environments. Whether parks, woods or nature reserves, these trusts will fight to keep them protected.” * wildlifetrusts.org

Women's Environmental Network: “This charity educates, empower and informs women and men who care about the environment. They focus on campaigning on environmental and health issues from a female perspective. Wen acts to achieve equality, justice and joy.” ** wen.org.uk

Young People's Trust for the Environment “aims to encourage young people's understanding of the environment and the need for sustainability. Their mission is to give young people a real awareness of environmental problems.” ** ypte.org.uk

* With thanks to field.org.uk/the-top-15-useful-environmental-websites-in-the-uk

** Information from attitudeorganic.com/5-best-environmental-charities-in-london

Amphibians and reptiles

Amphibian & Reptile Conservation Trust has lots of great resources including a new 'adder guide'. arc-trust.org

Froglife: expert information on frogs, toads, newts, snakes, lizards; including a great Learning Zone. froglife.org

Birds

Birdgirl is a blog by Mya-Rose Craig: “a young birder, birdwatcher, twitcher, naturalist, environmentalist and writer about birds, wildlife, nature, conservation and ringing (banding) who is an Ambassador for Survival International and a Charter Champion for The Charter for Woods, Trees and People”. The aim is to increase equal access to natural spaces for minority ethnic communities. birdgirluk.com

British Trust for Ornithology: BTO's website is all about the science of birds including 'Birdtrack' where you can lodge your birding records. bto.org

Royal Society for Protection of Birds: RSPB's website includes a raft of resources for bird identification, education resources and events such as the Big Garden Birdwatch. rspb.org

Insects

Buglife: “saving the small things that save the planet”. Their website includes bug identification guides through the 'habitat hub' and 'species hub'. buglife.org.uk

Butterfly Conservation focuses on saving butterflies, moths and their habitats. butterfly-conservation.org

Royal Entomological Society is the home of insect science and the website includes identification guides. royensoc.co.uk

The Society also runs **National Insect Week**. insectweek.co.uk

Mammals

Badger Trust “exists to promote and enhance the welfare, conservation and protection of badgers, their setts, and their habitat ... the leading voice for badgers in England and Wales, with a network of around 60 local voluntary badger groups, and supported by thousands of supporters and followers.” badgertrust.org.uk

Born Free is an animal charity that is “passionate about wild animal welfare and compassionate conservation.” Many of their campaigns centre around threatened and endangered mammal species such as lions, rhinos and pangolins. bornfree.org.uk

British Hedgehog Preservation Society is a charity that is “dedicated to helping & protecting hedgehogs native to the UK (*Erinaceus europaeus*).” britishhedgehogs.org.uk

Hedgehog Street is a campaign where people can register as ‘Hedgehog Champions’ by making their gardens more hedgehog-friendly and encouraging their neighbours to help create ‘hedgehog highways’. hedgehogstreet.org

Mammal Society undertake many training courses, mammal surveys including ‘mammal mapped’ for evidence based conservation. mammal.org.uk

Trees and plants

Botanic Gardens Education Network “promotes and advances the delivery of education in member organisations” by offering support and training for “professionals working in education related to plants and the natural world.” bgen.org.uk

Plantlife is a UK wild plant conservation charity. plantlife.org.uk

Woodland Trust: “we plant, we protect, we restore”. Their website includes an A to Z of British trees and a nature calendar. woodlandtrust.org.uk

Marine conservation

Marine Biological Association has been promoting excellence in marine scientific excellence since 1884. mba.ac.uk

Marine Conservation Society is a “United Kingdom wide community of ocean lovers”. Their website includes information about beach clean-ups and education resources. mcsuk.org 

We are always looking to share useful and interesting websites. Please send your favourites to Henricus Peters via info@naee.org.uk.

FINAL THOUGHT

Is Nature sending us a message? Henricus Peters

Nature is sending us a message with the coronavirus pandemic and the ongoing climate crisis, according to the UN's environment chief, Inger Anderson. She said that humanity was placing too many pressures on the natural world with damaging consequences, and warned that failing to take care of the planet meant not taking care of ourselves.

Leading scientists also said the Covid-19 outbreak was a ‘clear warning shot’, given that far more deadly diseases existed in wildlife, and that today's civilisation was ‘playing with fire’. They said it was almost always human behaviour that caused diseases to spill over into humans.

Anderson: ‘There are too many pressures at the same time on our natural systems and something has to give... We are intimately interconnected with nature, whether we like it or not. If we don't take care of nature, we can't take care of ourselves. And as we hurtle towards a population of 10 billion people on this planet, we need to go into this future armed with nature as our strongest ally.’

The Guardian March 2020³⁸

Anderson highlights what humans were – and still are – doing wrong So, we went into lockdown in many places, and were no longer able to enjoy our wider experiences of national parks and reserves, yet found or ‘rediscovered’ ways to engage with nature in our very own backyards. *Environmental Education* 124 focused on this effect, and reflected on how the slowed-down pace of life might be influencing our attachments to local nature. We also problematised the way in which people living in different socioeconomic situations had different degrees of access to the benefits of going outdoors, and wrote about the inequalities involved in that.

As lockdown has continued in different ways around the world we find journals like Scientific American Magazine pointing to these conclusions too: “More time out in Nature is an unexpected benefit of Covid rules – exploring the natural world can be restorative to mental health.”³⁹

So, on the one hand, a benefit – or arguably positive consequence of Covid – is that we are reconnecting with our natural environments on a much smaller scale, and certainly in a much more intimate and personalised way, compared to before. On the other hand, the whole Covid experience can be seen through another lens: that of a new way to study the way we do things – or do things badly; how easily we take things for granted. Introspection? Self awareness? An environmental education study of ourselves?

“It's not how we make mistakes, but how we correct them, that defines us.” – Rachel Wolchin 



If lockdowns taught us anything, it's that the little things really do count. A weta at rest. Image: Zealandia Wildlife Sanctuary.

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