

Environmental Education

The Water Issue

Educating in, on and about our Blue Planet

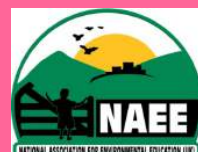


Green literacy: reading outside

Spiders: fear into fascination

Kenrick Days: summer visits

The Journal of the National Association for Environmental Education (UK)



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.

ALL MEMBERS RECEIVE THESE BENEFITS:

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- Resources and information for teachers and educators
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- Share your ideas via NAEE online, twitter, facebook, LinkedIn, pinterest
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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 is very much interested in doing things alongside others with the same or very similar missions/goals. Some of these groups include:

United Kingdom: Archeology 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); Think Global; TIDE~global learning; Women's Environmental Network; Youth Hostel Association.

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 THIS JOURNAL: If you are a teacher with experience in environmental or outdoor education, especially in pre-school or secondary school, and would be interested in writing an article for our termly *Environmental Education* journal, contact info@naee.org.uk or Henricus.p@yahoo.com.

BURSARIES: Thanks to the generosity of the late Hugh Kenrick, NAEE offers bursaries of up to £400 for schools in the West Midlands to take their pupils to visit an environmental education centre. Visit naee.org.uk/apply-for-a-school-bursary or email kenrick@naee.org.uk for more information.

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Cover photos Main picture: Sharks4Kids and Bimini Scuba Center taking kids to see sharks in Bimini, image Duncan Brake. Smaller pictures: outdoor signs, image Victoria Hackett; sweep netting for spiders, image Roger Key; thank-you letter from a Year 5 pupil after a farm visit, image Yorkmead Primary School.

All photos within articles by the author, unless otherwise stated.


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.

Eagle-eyed readers and members will notice a few changes in this edition of *Environmental Education*. We have now put all of the similar-themed features into one portfolio; we have aimed to improve the flow and signposting of the sections, to make it easier to navigate, including a new Final Thought to highlight an image of particular importance. The last is a nod to visual storytelling, used by many magazines.

Another change— we say goodbye and a huge thank you to Heatha Gregory who was NAEE National Coordinator for many years. We miss you, Heatha, and wish you the best in your future endeavours which we know will include nature. Welcome to Carolina Salter, who has come aboard as the new Office Administrator, already positively grasping the many aspects of this varied role. To see 'who's who' at NAEE, please refer to page 2. We always welcome input from you, our members!

This 'Water Issue' is the second with that title – the first one was 2015 – and we did that on purpose, to highlight the critical importance of this life-giving liquid, as well as the critical state of the world's oceans and rivers! It was timely to showcase just some of the amazing work aiming to educate, and encourage positive action to be taken in, about and for the water environment.

Whilst we live on planet 'Earth', it's actually the water systems that affect our daily lives and drive our broader being here. Even if you live far from the sea, the climate, drinking water, that rainstorm you were caught in yesterday – all show how we 'live' in and are part of the environment, yet we take it for granted.

As Steve Irwin, the Australian wildlife warrior who championed so many species of watery wildlife, and made crocodiles 'beautiful, loving mothers', said: "Crickey (wow) – isn't nature gorgeous!" We hope this edition rekindles your love of Nature in the Water. 

Henricus Peters



Our Editor Henricus with his wife and son enjoy snorkelling up close and personal in the Philippines

COMMENT

From the Chair

Nina Hatch




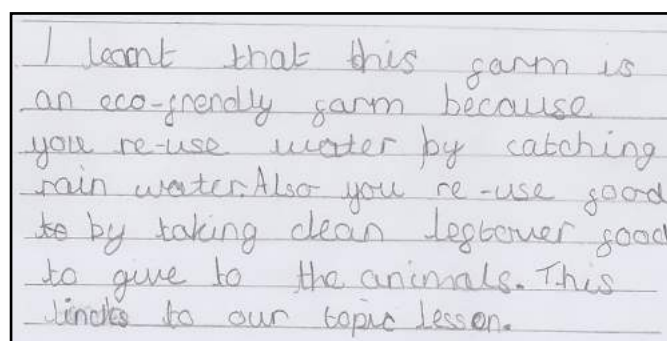
This summer has been just about the hottest on record for England combined with little significant rainfall for several months. This became very apparent to me as my school farm classroom's 7000 litre rainwater harvesting tank ran dry. We have emergency backup onto mains water, which of course has a cost implication, and defeats one of the sustainable aspects of the classroom building. We are fortunate that our system means that the farm animals could still have drinking water and the toilets in the building could still be used.

As the grass stopped growing and fields turned to a yellowing dust, next winter's stored grass (silage) started to be fed to the cattle. At times the cows were left indoors, although it was midsummer, as there was more shade in the cowshed. The reeds in our reed bed sewage system even started to die back as the moisture evaporated. As I write this, the rain has fortunately come, although the rainwater harvesting tank is still only 60% full. Now we can start to hope that there is sufficient grass to cut again for more winter feed. Cereal crops were ripening early with potentially smaller yields, and the price of straw as well as the cereal itself has escalated. The effect on root and field crops that will be harvested later in the year is potentially devastating.

It certainly brought home to me and to visiting school groups how fortunate we are in the UK with an easily accessible supply of clean water for all purposes. We take it for granted that we can turn on the taps. As the

water crisis finally made headline news I found that children were starting to appreciate that water is a precious commodity for the survival and sustainability of all life forms. I had some insightful discussions with pupils and their class teachers about how and why we should be conserving water. On the farm, talking about the weather is an everyday occurrence, almost a joke. Now the children started to understand why this is the case – they needed to ask permission to refill their water bottles from the drinking tap. Climate change became a real-life topic of conversation in a way that I do not recall happening before. Without adult prompting, children wanted to check the temperature on the outside thermometer before we went back outside from our classroom!

I do not wish such a lengthy period without rainfall to happen every summer. Yet it did demonstrate that even young children can see, consider and understand the effects of climate change, drought in particular. I hope that teachers too can appreciate the need for this to be far more than just the subject of a special assembly. 



Extract from a letter to Nina at Mount Pleasant Farm.
Image: Yorkmead Primary School

From the President Professor Justin Dillon




The invitation to write this column arrived while I was in Taiwan running a workshop on environmental start-ups. My flight home was cancelled because of Typhoon Mangkhut which caused death and

destruction across vast swathes of south-east Asia. In China, 2.4 million people were evacuated to safer locations and dozens of people were killed in the Philippines. At the same time, Hurricane Florence was smashing its way through North and South Carolina in the US. These events seem to be increasingly common and progressively more extreme. The catastrophic flooding that results from these events illustrates how our relationship with water is multi-faceted. Water is both essential for life and a threat to our existence.

My first experiences of environmental education focused on monitoring water quality. I later worked on the National Environmental Database project which involved sharing data electronically before the Internet was invented. We've come a long way since then, but the need for

education about water is even more important. The recent explosion of interest in plastic contamination of the seas opens up a new set of opportunities for environmental education. This issue provides ideas and inspiration – I hope that you enjoy reading the diverse contributions.

In Memoriam: Pepe Marcos-Iga

Just before I wrote this column I received notice that Pepe Marcos-Iga, a stalwart of the North American Association for Environmental Education (NAAEE), had passed away. Pepe was a charismatic and hugely engaging man devoted to conservation and to environmental education. I will miss him, he died much too young. I have sent his family and friends sympathies on behalf of NAAEE. 



Have DEFRA and DfE finally given up on environmental education?

Professor William Scott

DEFRA, with the DfE and Natural England, have now launched their *Children and Nature Programme*. This will start in 2019 and end by spring 2023. It sets out to deliver actions that they have committed to in the government's 25 Year Environment Plan (published in January 2018).

A key commitment of the Environment Plan is to encourage children to be close to nature, in and out of school. DEFRA says that ...

"the Plan recognises that playing and learning outside is a fundamental part of childhood and supports children's mental health and wellbeing. It also highlights that some children have good access to natural spaces whilst others do not, such as those living in areas of high disadvantage."

In order to address these issues, the *Children and Nature Programme* aims to support children from disadvantaged backgrounds to have better access to natural environments by means of three projects.

The key commitments within the programme are:

- *Providing support for schools in our most disadvantaged areas that wish to create nature friendly grounds and to design and run activities that support pupil's health and wellbeing through contact with nature.*
- *Making it easier for schools and Pupil Referral Units to take pupils on trips to natural spaces on a regular basis where they can combine learning with feeling healthier and happier.*
- *Supporting the expansion of school outreach activities delivered by community forests.*

- *Supporting a national expansion of care farming by 2023, trebling the number of places to 1.3m per year for children and adults in England.*

The funding comes from the Department for Education as the programme supports the DfE vision to provide *world-class education, training and care for everyone, whatever your background*.

DfE says that by increasing the time children spend in nature, the programme contributes towards its core principle of *ensuring education builds character, resilience and well-being*, including the Department's ambition to do more to understand the drivers of happiness and well-being and support work on mental health. By seeking to improve outcomes for the most disadvantaged, the programme supports the Department's principle of *'prioritising in all we do the people and places left behind, the most disadvantaged'*.

That said, DEFRA is at pains to point out that, in line with the DfE's "vision of institutional autonomy", participation in all projects in the programme will be completely optional for schools.

So, what do you make of this?


Excellent news, do you think? Certainly, if you're an environmental NGO in line for some of the cash, you'll likely be thrilled, even though it's optional for schools and mostly focused on happiness than the environment. Some, however, who keep an eye on what's going on across the world will surely wonder why there is no mention of the sustainable development goals (the delivery of which the government has signed up to). Is this an oversight or a deliberate distancing? Some will also probably worry that there are so few mentions of learning, and that where it does crop up, it's in terms of learning *in* (e.g. the outdoors / nature) as opposed to learning *what*.

Others will note that the programme, in its focus on individual, family and community health and happiness, fails to focus on broader questions about how the biosphere supports human health and well-being in a fundamental sense – and many of these will likely be aghast that there's no mention of climate change in the documentation.

Others will deprecate the absence of a focus on issues such as the following:

- the finer points of ecology
- the effects of climate change on biodiversity
- the malign effects of intensive farming on wildlife populations
- how government transport policies encourage poor air quality and increase early death
- encouraging practical monitoring and research skills applicable to the natural world
- badgers, cows and TB and the efficacy of culling
- the pros and cons of GMO technology
- the (dis)benefits of rewilding
- etc ...

None of this is important. The goals are just to help young people, especially disadvantaged ones, feel better. I have, of course, nothing against every child being fit and feeling good, and do wish that more of the UK's health budget could be aimed at promoting well-being as opposed to waiting until there are problems to fix.

However, this is DfE money not Public Health England's, and you'd might think it might be more appropriately focused. How very postmodern! So much for the environment; so much for education. Now's the time to shed another tear for environmental education. 

These thoughts, which are the author's, not NAEF's, are based on a blog first published in June, 2018 on: blogs.bath.ac.uk/edswahs.

William Scott is a recently retired Professor of Education at the University of Bath, where he was head of its Education and Sustainability research programme, director of the Centre for Research in Education and the Environment, and a deputy-director of the University's Institute for Sustainable Energy and the Environment. He is Chair of NAEF Trustees.

PROFILE | NAEF Fellow Lee Jowett

NAEF began its Fellows scheme in 2017 to recognise the significant contribution that individuals are making to environmental education through their work and so that the Association can work closely with them to further support and encourage environmental education in the UK.

Why did you join NAEF?



In a world where there is so much challenge and change, it is so important to be part of something bigger working towards looking after the environment, which is what the NAEF does.

Tell us about your background. Why were you selected to be a NAEF Fellow?

I started my career as a science teacher in Sheffield, which I did for 10 years. I've

always had an interest in the environment and education. As a teacher I had an amazing role as sustainable schools coordinator working with organisations to support my schools including an international school link in Uganda. I even had the opportunity to visit the school several times with students. I was selected because of my work in Leicester City supporting schools to become more sustainable as well as my involvement in the RCE-East Midlands and other networks which support environmental education.

Who are your role models in the field of education?

Like many teachers, I guess my role models in education have been my colleagues that I have worked with over the years including my PGCE and NQT mentors. My education role models have always been people that work

hard and are passionate about their subject knowledge and the students they teach, especially my amazing heads of department in all three of the schools in which I worked.


Who are your role models in the environmental field?

My biggest role model has always been Jane Goodall. As a school student I was interested in her work which helped with my decision to pursue a degree in Zoology and later in life an MSc on Conservation Genetics. I was extremely lucky enough to meet her as a school teacher and then several times more recently in my current role. The work she does to educate people around the world about their impact on the planet is just extraordinary.

What does NAEF do well?

As a national organisation the NAEF supports educators to learn about the environment and our responsibility to educate the future generation. It also challenges those in the field to reflect on their own practice and impact.

Please share a quote you like

A quote which I recently used at our schools celebration that I really like is: *"Every individual matters. Every individual has a role to play. Every individual makes a difference."* Jane Goodall 

Lee Jowett is Environmental Education Coordinator at Leicester City Council supporting whole school approaches to sustainability. He chairs the RCE-East Midlands, Leicester Schools Environmental, Health and Wellbeing group and is Chair of Governors in a large primary school in Leicester.

Contact [twitter@leejowett](https://twitter.com/leejowett) or [twitter@EcoSchoolLCC](https://twitter.com/EcoSchoolLCC)

HUGH KENRICK DAYS



Summer visits update

**Tabassum Fatima, Chloe Mason,
Katy Harley & Sophie Steadman**

Cromwell Junior & Infant School, Year 6 Kenrick Day visits to Martineau Gardens, June 2018

On 19th June 2018, Class 6 visited Martineau Gardens, followed by the Year 6 classes from our partner school, Bordesley Village Primary School on 20th and 21st June. The itinerary lived up to its promise of delivering a well-rounded experience of the botanical and zoological aspects of the year 6 curriculum.

The visual aids and use of the first person to talk about the biographical detail of the scientists (Charles Darwin, Alfred Russell Wallace and Carl Linnaeus) helped the children to consolidate and deepen their knowledge of adaptation, evolution and classification. With the diagrammatic representation of Darwin's 'Tree of Life', it was clear the children understood the metaphor and were able to see the progression of the information they had met previously as a sorting diagram. In that sense, it was an innovative way to present the facts.



Sorting toy animals using the classification system devised by Carl Linnaeus. Image: Tabassum Fatima

Moving into the wooded area to explore the trees and using the various classification keys to identify the species was a very good activity. The children thoroughly enjoyed it and were keen to find more examples and put the key to further use. It also gave the chance to learn further vocabulary, particularly adjectives, which was a useful link to English, once again.

Whilst in the Forest School area, the sensory and visual experience provided the perfect setting for the next round of activities. The rich content of flora and fauna was wonderful in complementing what the children needed to know in order to complete the activities.

Despite being year 6 pupils, the children thoroughly enjoyed the chance to play in the sand and on the 'shipwreck'. The creative outdoor furniture added to the ambience of being in the great outdoors.

Exploring the flower and herb gardens with an expert was another incredible part of the day. This was brought to life with the chance to see fruit and vegetables growing and also tasting the herbs. Attention to detail, not only in terms of subject knowledge and pedagogical



Looking closely at hairy hazel leaves in order to identify them using a classification key. Image: Tabassum Fatima

strategies for child-centred delivery, but also showing the children the importance of health and safety, was also demonstrated beautifully throughout the session.

Back at school, the children were able to continue with the follow-up work provided by the Gardens and also diverge towards their work on the importance of bees. The complimentary packet of flowers for bees (provided by the Royal Entomological Society as part of National Insect Week) was used enthusiastically in the school grounds, with further ambitions of contacting Martineau Gardens to pursue with other ventures and ideas to get the community involved, too.

All in all, it was a very positive and commendable experience which we will be recommending to other year groups to enjoy in the future.

Tabassum Fatima is the Educational Visits Coordinator at Cromwell Junior and Infant School in Birmingham.

Long Knowle Primary School, Year 3 Kenrick Day visits to Birmingham Botanical Gardens, June 2018

Year 3 pupils from Long Knowle Primary School in Wednesfield, Wolverhampton had an absolutely wonderful experience visiting the Birmingham Botanical Gardens on Wednesday 27th June 2018. We are extremely grateful to have received the Hugh Kenrick grant of £400. The grant covered our entry fee to the gardens for staff and pupils, a teaching session for the class, as well as transportation costs.

This term, we have learnt all about plants in our science lessons: we learnt about the different parts of plants, and what their functions are; what plants need in order to grow and stay healthy, and how this varies from plant to plant; and the life-cycles of flowering plants.

In our geography sessions, we have studied Brazil, comparing it to England. We learnt about the Amazon Rainforest and Sherwood Forest, and compared them.

Our visit to the gardens brought our learning inside of the classroom to life!

In the Rose Garden, we discussed why the flowers were brightly coloured. We talked about how the colours are attractive to insects, which linked to our work in the classroom on pollination and plant life cycles. One pupil said, *"We know that bees land on the flower to collect nectar, and the pollen gets stuck to them."*



Exploring the Cottage Garden and the Herb Garden. Image: C Mason

Before entering the Butterfly House, we talked about the life cycles of butterflies, and made links to pollination. The butterflies were very interested in our sunhats!

During our garden walk, we observed how different species of plants need different things in order to grow and stay healthy. We experienced the very hot climate of the Arid House, and inside we saw plants which do not need much water in order to survive.

In the Growing Schools Garden, we made links to the gardening work that is going on at school. The children were able to recognise tomatoes, carrots and lettuces. Following our visit, we will spend more time in our own school garden, learning how to take care of our local environment.

After lunch, we took part in the Rainforest Challenge teaching session. The centre teacher asked the pupils to identify the Equator, and the Tropics of Cancer and Capricorn on a world map. This was something that we had previously learnt in the classroom through our geography work, and the pupils were very proud to share their knowledge. The centre teacher then demonstrated to the pupils where in the world the plants in the Tropical and Sub-Tropical Houses are found, in relation to the lines of the earth.



The Rainforest Challenge in the Tropical and Sub-Tropical Houses. Image: Chloe Mason

The Rainforest Challenge involved the pupils reading clues about different rainforest plants, and searching for the plants within the Tropical and Sub-Tropical Houses.

On entrance to the Tropical House, we were immediately transported to the humidity of the rainforest! We were astonished to see bananas growing on trees, and to learn about the different uses of the plants inside.

Visiting the gardens was a fantastic experience for our Year 3 pupils. Thank you for this opportunity.

Chloe Mason is a Year 3 teacher at Long Knowle Primary School in Wolverhampton.

Yorkmead Primary School, Year 5 Kenrick Day visits to Mount Pleasant School Farm, July 2018

On the 26th and 27th June 2018, Year 5 visited Mount Pleasant School Farm. Our experience was extremely valuable and useful for all pupils. They were able to learn where their food actually comes from and appreciate time outdoors in the countryside. The children thoroughly enjoyed their time at the farm and gained lots of new experiences.


The trip linked to our topic 'How Green Are You?', which focused heavily on sustainable living and preservation of our planet. At the farm, children applied their theoretical knowledge, such as learning about their carbon footprint and where their food comes from. They were fascinated to see the working dairy farm, where we learned about the production of milk and even saw several newborn calves! Additionally, the children learnt how food was produced; they were able to collect eggs and learn how they are classified according to size.



One of the children's letters, mentioning sustainability.

Within class, children had previously learnt about sustainability, but at Mount Pleasant School Farm they saw it in action – from the reed bed sewage system to the rainwater collection for animal drinking water. Children also experienced feeding and interacting with the chickens, sheep, cows and wonderful farm dog. They loved this experience and many children were able to overcome their fears along the way. One child said, "I felt brave after feeding the animals as I was afraid at first." Another said, "I loved this trip... my favourite part was feeding the animals because I'd never done it before!"

Our children learnt the value of time outdoors in the countryside, working practically alongside animals and were inspired to consider farming as a viable future career choice. We are grateful for the valuable opportunity to visit Mount Pleasant School Farm and really hope to repeat our visit with the next Year 5s. Thank you.

Katy Harley & Sophie Steadman are Year 5 teachers at Yorkmead Primary School in Birmingham. 

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

GREEN LITERACY

Four steps for linking environmental education and literacy

Victoria Hackett

Step 1: Create signs

What is the first thing you see when you walk into an outdoor classroom? Is it a welcome sign? There is nothing more inviting than a welcome sign! A welcome sign is an invitation. A welcome sign gathers community. Welcome signs come in all shapes and sizes, as do communities. A welcome sign invites visitors to the outdoor space and leads them into a new space. For learning and teaching, welcome signs are like the front door of a house and often give visitors their first impression of your outdoor classroom. Using signs to interpret your outdoor space is a first step to linking environmental education into literacy outdoors. There are many types of signs and lots of benefits to adding signs to your outdoor space.



Examples of signs at Ithaca Children's Garden, New York.
Image: Victoria Hackett

Signs can....

- Demonstrate the life cycles of insects and animals using words and pictures
- Show pictures of the parts of a butterfly in the butterfly garden
- Show plants and tree identification with leaf matching picture games
- Label types of gardens and educate visitors about the different areas
- Give friendly reminders about staying on the path, picking food and sharing the rules of the area
- Ask curiosity questions to the viewer
- Label areas of study like 'The Decomposition Log'
- Include inspirational quotes to allow the visitor to ponder
- Be in many different languages
- Connect a garden to a nature-based children's book

Step 2: Add a 'Little Free Library'

A second step to linking environmental education into literacy outdoors is to add a 'Little Free Library' to the outdoor classroom. A Little Free Library is a "take a book, leave a book" free book exchange. They come in

all shapes and sizes, but the most common version is a small wooden box of books. Anyone may take a book or leave a book to share. Like signs, Little Free Libraries invite communities to gather and lead visitors into a world of books. Little Free Libraries are the perfect vehicle for infusing literacy outdoors, especially when they have a 'sign-in' journal inside for visitors to leave notes.



A Little Free Library. Image: Victoria Hackett

Step 3: Add some 'Wonder Boxes'

'Wonder Boxes' are smaller mailboxes that are distributed throughout the outdoor classroom. These little gems hold 'wonder'. The contents inside can be changed daily, weekly or monthly. Wonder Boxes may include a nature-based book with puppets, science materials for outdoor exploration and/or supplies for mathematical games.

There aren't any limits to how many Wonder Boxes can be in an outdoor classroom. Therefore, the possibilities are endless. Add Wonder Boxes to a 'garden that feeds' or a bird sanctuary. Create clues inside the Wonder Boxes that lead the visitor to each garden. Include curiosity questions, clues to where the next box is, and directions on how to travel there.

Step 4: Provide 'Curriculum-on-the-Go Kits'

A fourth step to linking environmental education into literacy outdoors is the use of 'Curriculum-on-the-Go Kits'. These are backpacks that house materials for enjoying reading, writing, drawing, storytelling, vocabulary and nature-themed activities. It's always good to refresh and renew these kits in order to keep your outdoor experiences rich and exciting for both you and the children.


A basic Curriculum-on-the-Go Kit might include:

- | | |
|---------------------------|---|
| • Pencils | • Natural materials |
| • Scrap paper / notebooks | • Digital equipment |
| • Portable seats | • Identification guides |
| • Clipboards | • Books |
| • Light-coloured cloth | • Fun hats to wear when telling a story |
| • Chalk | • A talking stick |
| • Magnifying glasses | • Puppets that live in the Curriculum Kit |
| • Pots / viewers | |

Think for a moment. What if every child in every school had access to an outdoor classroom that included signs, Little Free Libraries, Wonder Boxes and Curriculum-on-the-Go Kits for teachers? What would the impact be?

Vicky Stever, Director of the Hurlburt Field Library [in Florida, USA] notes: *"A child's quest for knowledge about his world, which is energized by experiences in the outdoors, leads naturally to literacy. Kids have questions, and books have answers. A child who enjoys 'The Tale of Peter Rabbit' will be on a continuous search of discovery that makes reading possible."*

The simple task of creating literacy-rich environments outdoors with signs, Little Free Libraries, Wonder Boxes, and Curriculum-on-the-Go Kits invites educators to make the shift into environmental inquiry. Growing literacy outdoors inspires inquiry-based learning and nurtures children's sense of wonder.

Victoria Hackett M.Ed. is a leading education consultant who specializes in outdoor learning and play. She is the founder of outdoor-classrooms.com, a virtual community for 'Natural Teachers'. She offers e-courses (including 'Let's Grow Literacy Outdoors'), provides on-site training, gives keynotes, hosts retreats, and leads 1-1 consulting projects. Victoria is passionate about inspiring educators to create their own one-of-a-kind children's gardens as outdoor classrooms. Her mission is to create an international virtual community of Natural Teachers who inspire children to reconnect with nature. Her vision is for every child, in every school, to have access to an outdoor classroom. 

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More information: outdoor-classrooms.com

YOUNG WRITER

Bird lover, Twitter user

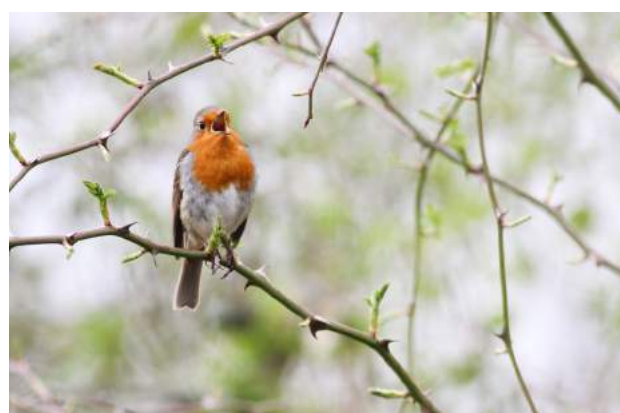
Mya Bambrick

I've been passionate about wildlife, especially birds, from a very young age. Most weekends, I spend my time outside doing either birding, bird ringing or wildlife photography. One thing that I've found out over the past few years is that there's generally *not* a lot of young people into wildlife or birds around where I live. This means I normally end up doing my hobbies mostly on my own or with my mum. Sometimes this can be an escape from the amount of people and noise in my town and the stress of school.




Mya Bambrick. Image: Craig Payne Photography

On the other hand, it's nice to be able to share your passion with other people and discuss things that we are both interested in. In my opinion, introducing a natural history GCSE or some type of environmental education into secondary schools would increase the number of young people with an interest in wildlife or that just care about their environment. Personally, at primary school, nature was included a lot. We had a nature area, nature table and every so often we would go pond dipping. Being into wildlife at the time, I set up a wildlife club, where I tried my best to get people interested in the birds, bugs and mammals that were around them. It was partly successful with lots of people attending in the first few sessions but eventually people became uninterested.



Robin singing. Image: Mya Bambrick

Despite some people's negative opinions on technology and social media it really has helped me find other young, like-minded people who share the same passions. I think it's not only a great platform to share photos, opinions and blogs but it's somewhere where you can talk about what you are interested in without being thought of as 'weird' or without the worry that people will tease you about your hobby. Also, with documentaries on television, such as *Blue Planet* and *Planet Earth*, watched by millions, and issues such as plastic pollution becoming better known by the general public, perhaps over the next few years, more young people will become interested in the animals and the world around them and then our wildlife will be in safer hands? 



Kestrel in flight. Image: Mya Bambrick

Mya Bambrick is a wildlife photographer, birder and trainee bird ringer. She has loved wildlife from a young age and started wildlife photography five years ago.

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Educating about water



Learning about canalside habitats and wildlife. Image: Canal and River Trust

#NotWhaleFood

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Image: Jayne Jenkins coralreefimagebank.org

WATER Whales and dolphins

Reducing marine pollution: schools are playing their part!

Lorna Hall

Based at Whale & Dolphin Conservation Trust's Scottish Dolphin Centre at Spey Bay, we are ideally situated at the mouth of the River Spey where it enters the Moray Firth, creating an excellent feeding site for numerous species of birds and animals, including the resident population of bottlenose dolphins that resides along the East Coast of Scotland.

Our education programme aims to excite people about these amazing dolphins on our doorstep, educate them about the threats whales and dolphins face and inspire them to help protect the marine environment, with much of our work this year focusing on the problem of plastic.

The issue of plastic in our seas is a global problem and poses a major threat to our marine life, including whales and dolphins. We have experienced a huge increase in schools' interest in this topic since it featured in Sir David Attenborough's *Blue Planet 2*.

The Wonderful World of Whales and Dolphins

Educating children about whales and dolphins is our first step to enthuse and excite them about these wonderful marine mammals. Using life-size cut-outs to look at the size and appearance of different species and showing real and replica bones and baleen allows children to visualise these often elusive mammals.

Their amazing adaptations to life underwater, their use of sound through echolocation and communication, are all things we teach with fun and interactive games and activities in our education programme.

Of course the chance to see dolphins wild and free along our coast is the cherry on top and watching out for dolphins is a popular activity on a school visit to us. Armed with binoculars and survey sheets, everyone's attention is focused on the sea, watching out for a fin or a splash.



School pupils learning about how dolphins use sound.
Image: Honorata Tyczka, St Sylvester's RC Primary School

Our Plastic Seas and #NotWhaleFood

Through showing everyone a plastic bag that came from the stomach of a whale to playing games about entanglement and ingestion of litter and its accumulation up the food chain, we can highlight to children the danger plastic poses to all marine life.

Exploring ways to reduce their plastic waste at home and at school and encouraging others to do the same, school children have created some amazing posters and displays with us, showing that plastic is #NotWhaleFood and everyone can play a part in helping to protect whales and dolphins from this threat.



Education Officer showing pupils a plastic bag found in the stomach of a whale. Image: Pip Wheeler

And of course what's more fun and rewarding than carrying out a beach clean, knowing that you are actively doing something to help protect wildlife.

#NotWhaleFood is WDC's campaign aiming to tackle plastic pollution, working in partnership with BRITA. Find out more at notwhalefood.com.

Schools take charge

It has been amazing to see just how many schools have taken on looking at this topic of plastic with their pupils. The P6 class at St Sylvester's RC Primary School in Elgin, Moray have been one such school.

Our first meeting with the P6 pupils was to introduce to them the species of whales and dolphins seen along the Moray Coast; looking at their size, behaviour, anatomy and feeding methods and then the problem of plastic; how it gets to the sea, how it's mistaken for food and eaten and accumulated up the food chain.

Our second meeting focused around what we can all do to help protect our marine life. How can we stop plastic entering the sea? How can we clean up plastic already in the sea? How can we reduce plastic waste?

Their answers (to name just a few!): buy less plastic and more cans and cardboard, bring your own reusable bag and use ROVs (remotely operated underwater vehicles) to collect plastic underwater.

Our third visit took place at Spey Bay with the class visiting us for a day out at WDC's Scottish Dolphin Centre where not only did the pupils join us for games about echolocation and entanglement but they continued their actions to protect whales and dolphins by creating some inspiring posters about the problem of plastic as well as carrying out a beach clean. Thinking more about reducing waste and plastic, the school took part in our waste-free lunch competition where we challenge schools to bring as little non-recyclable waste with their packed lunches and St Sylvester's were this year's winners!

In-between these visits, the class themselves have done some fantastic work towards tackling the problem of plastic. This includes writing some very inspiring letters to local businesses, encouraging them to reduce single-use plastics like straws and take-away cups and instead use “more eco-friendly materials and help make the world a better place”.



School pupils created posters to highlight the problem of plastic and how people can help.


Image: Honorata Tycska, St Sylvester's RC Primary School

“Thank you for taking the time and effort to come visit us, I very much enjoyed it. You were very inspiring to me and I am going to do the best I can to help you and the rest of WDC. I will do things like never litter and beach clean-ups.” P6 pupil

“I was distressed to hear that all this plastic is in animals. It was very informative. I now am searching shops for

non-plastic food wrapping and am planning a beach clean-up.” P4 pupil

“We thoroughly enjoyed Lorna’s visit and this was an excellent start to our Science Week focusing on plastic pollution. The presentation was very informative with hands-on activities and games to keep the children’s attention. Thank you for a great day.” P4/5 teacher

“Thank you to you and your staff for helping my P4 class to have such a wonderful trip out on Monday to the WDC. The children and the staff had a super time and it was very educational as well. Well done for all of the awareness raising that you do on conservation. The planet needs our help so please keep doing what you do so well.” P4 Teacher 

Lorna Hall is Education and Outreach Officer at Whale and Dolphin Conservation, a charity dedicated to the protection of whales and dolphins. WDC’s vision is ‘a world where every whale and dolphin is safe and free’. Their mission is ‘to amaze people with the wonder of whales and dolphins and inspire global action to protect them’.

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WATER Canals and rivers

The waterside classroom

Emily Dyer

The Canal & River Trust is the charity that cares for and brings to life 2000 miles of waterways across England and Wales, because we believe life is better by water. With ever increasing rates of obesity, stress and declining mental health in the UK, we are uniquely placed to make a significant contribution to improving the wellbeing of millions of people, and what better place to start this challenge than at the beginning – with our children and young people.

The Trust works with schools and groups through our popular learning programme ‘Explorers’. We inspire children’s learning by connecting them to our canals and rivers, whether that’s on the towpath, in their classroom or clubhouse or at one of our museums and attractions. Visits are led by our skilled Education Volunteers who are crucial to the success of our programme. Outreach visits either in school or to the towpath are completely free of charge. Each canal and river is unique and offers powerful ways to engage children and bring learning to life, and the opportunity for cross-curricular study is immense. In the children’s own words:

“The trip has allowed me to understand how the cannals [sic] were made and it has allowed me to understand how the coal was transported and about the reccent [sic] history that was there. In my opinion it was amazing and I hope to go again.” Year 3 pupil.

We always encourage schools and groups to venture out onto the towpath or river bank for their visit. There’s nothing better than seeing the green-blue flash of a kingfisher or the workings of a lock in real life. But a good



Discovering incredible feats of engineering at World Heritage Site, Pontcysyllte Aqueduct. Image: Canal & River Trust


way to introduce a topic is with an in-school outreach visit first, and this also provides a more focussed setting to introduce water safety – a key factor across all of our work.

Our aim is to equip children with the skills to enjoy all that our waterways have to offer safely and sensibly. We have a suite of free water safety resources available on our website, with a popular one being ‘Spot the Hazards’. Children are presented with a waterside scene showing some people making safe decisions whilst being by water, and some people making poor and dangerous choices, such as jumping across locks. We ask children to spot the hazards and think for themselves what the danger might be – rather than simply providing a list of do’s and don’ts. Children have a go at throwing a life ring and learn the safest way to rescue someone if they fall in the water. We always teach children our SAFE message – to Stay Away From the Edge. Our water

safety offer is increasingly popular with teachers, being so closely linked to the PSHE curriculum, and participating teachers are grateful that this is offered for free in their community:

"The sessions which you each led were very informative and held the children's' attention. Indeed, the water safety session could save one or more of our lives in the future." Teacher, Greenways School, Stoke-on-Trent.

Once out on the towpath, learning comes alive. Children unearth the trade routes of their local canal and discover what it was built to transport, be it coal or chocolate. They can dress up as wealthy dukes who commissioned the canals, or hard-working navvies that dug the trenches. They can pond dip for mayfly larvae or trial different techniques to protect river banks from erosion. They develop empathy skills from learning about the tough life of traditional boaters and develop confidence by expanding their skills beyond the classroom. Our education offer is tailored to reflect the local area, so children learn about the historical, geographical and biological significance of what's on their doorstep. This is important, because it helps them develop a sense of pride for where they live.

Underpinning all of the work at the Trust is the aim to create thriving communities for the eight million plus people that have a waterway on their doorstep. Our canals and rivers run through some of the most heavily populated communities in England and Wales, providing accessible green and blue space where it's needed the most. In today's pressured world, the water offers a much needed escape. A place to reflect, a place to breathe, and for our children and young people, a place to learn. 



Learning about wildlife that lives along the waterways.
Image: Canal & River Trust

Emily Dyer is Education Services Coordinator at the Canal & River Trust. She coordinates the Trust's education programme 'Explorers', developing learning resources and promoting the offer to schools and groups across England and Wales.

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**Canal &
River Trust**

WATER **Marine pollution**

Scuba divers engaging in citizen science **Professional Association of Diving Instructors (PADI)**



Project AWARE


'Project AWARE takes action to create both local and global change for the ocean and the communities who depend on it... Project AWARE develops actions under our Clean Ocean and Healthy Ocean programs each year. In 2018, we will be supporting our community and advancing policies on Plastic Debris and Sharks & Rays.'

projectaware.org



Dive Against Debris®

'Project AWARE's flagship citizen-science program, Dive Against Debris®, empowers scuba divers to remove marine debris from the ocean and report data on the types, quantities and locations of materials collected.'

'Since the program's launch in 2011, more than 50,000 divers have participated in Dive Against Debris® in 114 countries around the world, reporting over 1 million pieces of trash. As the only underwater debris data collection program of its kind, Dive Against Debris® both improves the health of ocean ecosystems through localized volunteer efforts and provides valuable information about underwater debris to help inform policy change.' 

projectaware.org/diveagainstdebris

Whale Education Month

Anna Bunney

Whales and dolphins ignite a fascination in everyone that comes across them – whether that's lucky enough to be in real life or through the television. They are record breakers – the Cuvier's beaked whale is the deepest diving marine mammal on the planet, the sperm whale has the largest teeth and brain of any animal and the largest animal to have ever lived on our planet is the blue whale. But despite being beautiful and fascinating creatures, they face many threats and we all need to act now to help protect and conserve them in the future.

That's where the children come in – our future generations that can really make a change to the way we protect the oceans. ORCA is one of the UK's leading whale and dolphin conservation charities, and we are dedicated to the long term protection of whales, dolphins and porpoises in UK and European waters. We have worked in schools for the past seven years, on a local scale and we have inspired tens of thousands of children about wonderful whales and dolphins and marine conservation.



Learning about whales in the classroom. Image: ORCA

But as a small charity, our education outreach was limited, until last year when we launched our Whale Education Month project. We developed fun, interactive materials, a 'Whale Education Kit', which provided teachers all over the world with educational resources to deliver to their classes and groups about the fascinating world of whales and dolphins. Three lesson packs were developed in 2017 – one on whales, one on dolphins and one on porpoises. The feedback from this was phenomenal, with over 100 schools worldwide taking part – but we want 2018 to be even bigger!

"The Whale Education Month materials were fantastic - We produced whale fact files, researched and produced posters explaining the dangers of single use plastics to sea life and used what we had learnt to write whale rescue stories." Year 5 teacher from Lancashire


"This is a brilliant way to motivate any school educator about cetaceans as its packaged up and so easy to use. Fun, Visual and packed with facts and easy activities." Teacher from Newquay, Cornwall

"Every time we're involved with ORCA, the children enjoy themselves and learn new things. But most importantly they know what they can do to help these animals. Thank you." Year 4 teacher, Portsmouth



Looking at the skull and teeth of a cetacean. Image: ORCA

As well as the lesson plans and activities from last year, this year we will also be providing schools with a lesson on marine litter. It's a topic that is all over the news, and teachers will be given an interactive lesson plan and associated materials to inform their students about this current threat to the marine environment. In particular it will focus on how making small changes in our lives will help our oceans in the long term. The lesson plans are packed with an interactive presentation, as well as games and activities to help children gain a deeper understanding of the topic.

Teachers are encouraged to deliver the materials in the month of October – but the materials can be downloaded and used anytime. 



ORCA outreach at Godshill Primary School. Image: ORCA

Anna Bunney is the Education Coordinator for ORCA, a charity dedicated to studying and protecting whales, dolphins and porpoises in the UK and European waters.

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Dive into the world of sharks in The Bahamas

Jillian Morris

The Bahamas is considered to be 'the shark diving capital of the world', and it definitely lives up to this title. The waters surrounding these islands are home to diverse and healthy populations of sharks. Some populations are resident, while others are migratory, making a stop in The Bahamas during specific times of year. Along with incredible diving, The Bahamas is also home to some world-renowned shark research centers and conservation organizations. This shark haven draws divers, researchers and film crews from around the world and is truly a remarkable place.



Jillian filming a tiger shark in Bimini. Image: Duncan Brake

I live on the tiny island of South Bimini, which is about 50 miles from Florida. Despite being tiny in physical size, the island has some huge shark action. It makes regular appearances on Shark Week every year and is home to the Bimini Shark Lab (biminisharklab.com). We regularly see and dive with Caribbean reef, lemon, blacknose and nurse sharks. During the cooler months of the year the shark action really kicks off and we get blacktips, bulls and great hammerheads! Last year we even had a tiger shark make regular appearances on the hammerhead dive. It's a really special place and it's amazing to have sharks in our backyard.



Students at a school in Nassau, The Bahamas, learning about sharks. Image: Jillian Morris

Through our organization Shark4Kids, we partner with Bimini Scuba Center (biminiscubacenter.com) to take kids out to see sharks. The Bahamas was declared a

shark sanctuary in 2011, prohibiting the targeting, landing or possession of sharks. A study done by the Cape Eleuthera Institute (ceibahamas.org) found that sharks and rays generally add nearly 114 million USD annually to the Bahamian economy. We want the local students to see and experience why so many people journey from around the world to see their sharks.



The 'Fins Up' crew. Image: Sharks4Kids

These kids are the future for sharks of The Bahamas. They will maintain the protective legislation put in place, support the establishment of more marine protected areas and be dive guides and eco tour guides. It's important and necessary to provide them with the knowledge and their own connection to sharks. We want to replace fear with fascination and respect. We also visit local schools as well and have partnered with The Bahamas National Trust to work with schools and groups throughout The Bahamas. It's amazing to see the whole community come together to protect these invaluable resources. Kids can make a difference and we are proud of the amazing students we are working with in The Bahamas.

Jillian Morris is the founder and president of Sharks4Kids, a shark education program that provides free online educational materials for teachers and students to help them bring sharks into the classroom. They also offer outreach visits, educational tours, snorkelling trips and shark tagging expeditions.



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2018 is the International Year of the Reef!

Kirsty Richards

The 2018 has been designated the third International Year of the Reef (IYOR) by the International Coral Reef Initiative (ICRI). This year-long celebration is a great opportunity to come together to strengthen awareness on the plight of coral reefs, and to step up and initiate conservation efforts.

In the first 6 months of the year over 100 events have taken place around the world in support of the IYOR and many countries including Japan, Germany, Seychelles, the Philippines, the UK and Trinidad & Tobago have declared their support with official launches and awareness-raising events. Individuals, schools, charities and businesses are also getting involved by organising beach cleans, reef photography exhibits and educational community outreach days.

School children have put their passion for coral reefs on paper and designed stamps and beautiful pieces of artwork inspired by the International Year of the Reef. This year ICRI teamed up with the Khaled bin Sultan Living Oceans Foundation (livingoceansfoundation.org) for their annual Science Without Borders® Challenge. Their theme for the IYOR was 'Why coral reefs matter', which saw over 600 entries from 38 different countries! The top three entries from the High School and Middle School categories will be on display at coral reef events around the world in the coming months.



'The Last Coral Reef' by Selena Lang, age 16, US (High School winner) and 'Saviour of Human Beings' by Xiyan Wang, age 13, China (Middle School winner). Images from tinyurl.com/ycfv9gbd




Also in celebration of the IYOR, the British Government challenged children aged 4 – 17 to design an official stamp for the British Indian Ocean Territory (BIOT). Once again, hundreds of entries were received from around the world on the theme 'Why are coral reefs and oceans important?'. Four winners were selected, one from each of the age categories, and may be on an envelope coming through your letter box soon!



The winning stamp design in the 4 – 6 age group category: Kyle Irvine, age 6, Aberdeenshire. Image from tinyurl.com/y9yfw7gr

Green Fins (greenfins.net/en), initiated by United Nations Environment and coordinated by the Reef World Foundation, to raise awareness of best diving practices, has jumped in with both feet to support the International Year of the Reef with a busy schedule of events and side campaigns. Their [#redefinethereefinfographic](https://www.greenfins.net/en/redefinethereefinfographic), encouraging and educating SCUBA divers to be environmentally aware and have zero-impact dives, has reached thousands across social media and through their Green Fins-certified dive centres. Did you know the average SCUBA diver makes contact with the reef an average of 6 times per dive?!

Guam, a US territory in the Western Pacific, officially launched IYOR back in February and formed 'Guam Year of the Reef'. They have since been busy involving the local community in outreach events, educating the tourism sector in coral conservation and have also produced their own range of IYOR 'swag' including t-shirts, hats, and reusable shopping bags! 

Kirsty Richards is the ICRI International Year of the Reef Coordinator.

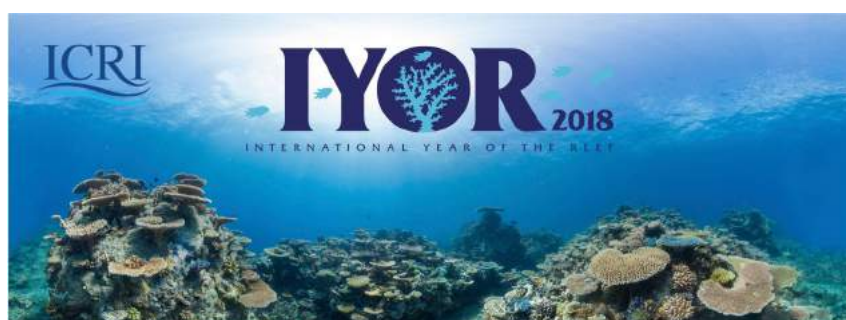
The IYOR website is the central hub of all activities and events taking place around the world in support of the IYOR. Here you'll find a wide variety of freely-available resources for use at your IYOR event including our logos, infographics and beautiful imagery from The Ocean Agency.

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The Philippines: diving into good and bad experiences

Henricus Peters

Henricus Peters writes of his opinions of snorkeling in a once-beautiful but now damaged place.

"Imagine a place with the finest sandy beaches, magnificent coral-fringed islands, soaring limestone cliffs, tropical forest from the coast to mountaintops, exotic species of plants and animals, and red sails in the sunset – and you are in the Philippines, one of the world's great natural treasures.

It is an archipelago of over 7,100 islands, extending from north to south along the southernmost rim of Asia. Luzon in the north and Mindanao in the south are the two largest islands of the archipelago – equivalent to the United Kingdom, Japan, or the State of Michigan in the USA. The length of the irregular coastline with numerous bays, gulfs, and islets is about twice that of the United States.

Few places are richer in biological diversity but none so threatened as the Philippines.

Unless actions are taken, what has been coined the 'Pearl of the Orient Seas' will be but a fading memory."

So writes Colin Rees, a lifelong birder and natural scientist, in his very accessible book *The Philippines A Natural History*¹.

So why so diverse, I hear you say? The archipelago lies within the great Pacific 'ring of fire', which has resulted in a rugged, varied, mountainous terrain with coral bays added for good measure. The warm, humid climate of the Philippines – perspiration poured off of me from only walking – together with its high rain and rich soil – it rained daily when we were there in August – has produced a wealth of wildlife, making it one of the world's top places to view nature.

The surrounding seas are blessed with a vast array of soft and hard coral, nudibranchs, seahorses and fish, including the strange and wonderful humphead wrasse, and the whale sharks, the largest fish in the ocean.



Whale shark. Image: Simon Pierce
coralreefimagebank.org

In the small town of Oslob, a very long drive from our base in Cebu, my family had decided to undertake a 'swim with whale sharks' experience – to witness and try first hand something I had read a great deal about. The town is now well-known – some would say 'infamous' – for this form of eco-tourism. It is one of the very few places you have a guaranteed encounter with the largest fish in the sea; guaranteed, because they actually encourage the giant creatures close to shore by providing a source of easy food for them. The whole affair, whilst resulting in large numbers (hordes?) of tourists near the sharks, with the risk of a person getting 'tail flicked' at worst, or just bumping into said creature – was actually well controlled. An introductory session had very good and pertinent guidelines of 'how close' to swim if you needed to

disembark the boat; also 'no sunscreen to be put on', as this pollutes the water and harms the fish. There were noticeably many, many people waiting their turn on the beach – but, it can be argued, that's better than bodies in boats or the water.

The encounter itself was, for my boy of 5 years, and I must admit even me, breathtaking in being in eye-distance above and right-next-door-to these incredible, very docile creatures! My son was the first to go in, despite my wife's initial protests regarding his safety (he is still learning to swim). He, holding the boat and with mum alongside and dad taking photographs – a family thing! He will remember that marine encounter – a small boy above and alongside a very gentle giant – forever.

The WWF² (and other organisations) have argued against the practice, as they say the actual feeding disturbs the whale sharks' migratory patterns, but then I have also seen other research evidence to suggest that younger sharks have more limited migrations, and these were certainly not adults.

The argument for doing the whale shark experience – income for local former-fishers-turned-boatmen – alongside the very tangible 'getting close to nature' is so far winning for me, although other articles have come to more ambivalent conclusions (Warne, 2018)³. I must say that, aside from the actual whale watching beach site with its informative boards, there was a very old and dilapidated CITES poster in the local Oslob tourist office, but nothing else. About any school groups visiting – only local ones I suspect. However, that's not unusual for what is a developing activity in a developing country.

Our other 'diving' experience here in the Philippines – snorkeling on several different coral reefs – was actually more problematic in two ways. Firstly, access to the 'beautiful beaches' that the Philippines is renowned for, seemed to be restricted to where only the more wealthy can enjoy. In one Wildlife Sanctuary, we 'saw' the beach but there was no way onto it! Secondly, the actual reefs themselves had, in many instances, been decimated, turned white and severely bleached, reportedly through swimmers standing on the corals, and over-fishing including use of dynamite, amongst other potential factors.

Educational experiences, aimed at raising awareness of these and other environmental issues, are slowly becoming established activities, focused on by eco-tourism, and in schools. The Haribon Foundation⁴ and Birdwatch Group⁵, amongst a few groups, are taking up the cause of educating about the environment – especially the seas, in the Philippines.

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Bogtastic brilliance: inspiring generations about the blanket bogs of the Peak District and South Pennines

Rebecca Cassidy

Games, activities, events, walks, talks and classroom fun... the Moors for the Future Partnership (MFFP) has provided interactive and engaging education since its inception fifteen years ago.

The Partnership has been working since 2003 to protect the most degraded landscape in Europe: the Peak District National Park and South Pennines Special Area of Conservation, in the heart of the UK.

Using innovative conservation techniques, it has transformed over 32 square kilometres of black, degraded peat moorland. A monitoring programme provides evidence of the effectiveness of these techniques and is backed up by a programme of communications and engagement that inspire people to care for these special places.

The work of the partnership is delivered by the Moors for the Future staff team through the Peak District National Park Authority as the lead and accountable body. It is supported through its partners including the Environment Agency, Natural England, National Trust, RSPB, Severn Trent Water, United Utilities, Yorkshire Water, Pennine Prospects and representatives of the moorland owner and farming community.



Moors for the Future Partnership staff. Image: MFFP

Healthy peat moors provide a whole host of benefits to both people and animals including: a unique habitat for wildlife; absorbing and storing carbon; providing good quality drinking water, and potentially helping to reduce the risk of flooding. However, not many people know about the huge value of peaty blanket bogs... which is where Moors for the Future Partnership comes in!

One of the Partnership's first projects back in 2003 was to design and build the Moorland Discovery Centre (MDC), based at the National Trust's Longshaw Estate on the fringes of Sheffield. The MDC was created to provide a lifelong learning centre, aimed at encouraging groups of all ages to experience the wonderful moorland of the Peak District National Park.

Since then, the Partnership has developed classroom resources for teachers including a moorland discovery pack, designed to give information and ideas for classroom and field-work from Key Stages 1–4, on themes including geology, peat, ecology, water and moorland

management. There are lesson plans, assembly materials, work and answer sheets on topics based around moorland issues including wildfire and pollution.

Our citizen science programme encourages people to get out and about to record how our moorland environment and its wildlife are changing over time. By logging scientific data about upland species such as the mountain hare, curlew, green hairstreak butterfly and the bilberry bumblebee, as well as moorland plants, mosses and environmental factors like the water level (known as 'water table') into a national database, the project aims to find out about the long term prospects of the globally important landscape of the Peak District and South Pennine moors.



A mountain hare. Image: MFFP

Anyone can take part, from those with just an hour to spare to those with a lifetime, and people don't need to have any previous experience. It's an opportunity to learn new skills, improve wildlife identification abilities and meet new people – all while getting out and about in the inspiring upland environment.



The 'Big Moss Map' - a citizen-science survey of sphagnum moss. Image: MFFP

If people want to get involved on a more regular basis, there is a wide range of volunteering opportunities available including in environmental monitoring, engagement and wildlife surveying

Mollie Hunt was a volunteer whilst she read Zoology at The University of Sheffield, and secured a full-time role with the Partnership after her studies. Mollie said: *"I had the opportunity to get involved in lots of different aspects of citizen science, ranging from technical logger repairs, to learning about moorland species; writing blogs about the data we'd collected; spreading the word about our work at events, and leading groups of other*

volunteers on field visits. *It really was diverse! I've volunteered in quite a few places but never had the opportunity to learn and get so much varied experience from one organisation. It was also a great way to get to know the Partnership team and to try out some of the roles as a volunteer before applying to join the team.*"

The Partnership also hosts guided walks and talks for all ages and cultures, to learn more about our work and the special landscape of the Peak District and South Pennines. One of the groups the Partnership works closely with is Crisis Skylight South Yorkshire, which supports homeless people in and around Sheffield; hosting regular guided walks and events with users, to help them connect with nature and learn more about the moorland environment and animals.

The Bogtastic Van is travelling to towns and cities in and around the Peak District National Park and South Pennines, to inspire members of the public about the wonderful world of blanket bogs. Visitors can step on-board the mobile exhibition vehicle to experience the sights, sounds and textures of the moors, including an audio-visual experience, lights and special bog moss floor! People can also play on tablet app games and do their bit to help Lizzy Lizard, whose home has been devastated by wildfire. Players need to coordinate helicopter flights, spread moorland mosses and plants, to bring Lizzy's home back to life.



The Bogtastic Van. Image: MFFP

In June 2018, the Partnership worked with City of Trees to bring over 60 local school children onto Crompton Moor near Oldham. Using the innovative Bogtastic Van and a range of other activities, MFFP, City of Trees, and the Friends of Crompton Moor engaged and inspired the children about the importance of moorlands.

Bryan Cosgrove from City of Trees said: *"It was magic! We got kids out into the open, learning about the importance of the moor and sphagnum bogs, and having fun! The teachers enjoyed it, and expressed an interest in being involved in future work up there."*


In the coming months, the Partnership is set to start up a junior ranger group for teenagers aged 13 to 18, with a special emphasis on moorland conservation. Working alongside the Peak District National Park Authority, the monthly group will help young people to look after the special qualities of the unique landscape including taking part in practical conservation works like helping to restore natural moorland plant communities, and scientific monitoring. An online survey designed to monitor the views, attitudes and understanding of young people in



Crompton Moor event. Image: City of Trees

relation to the natural world will serve as a barometer, measuring how those views are changing as a result of engagement practices.

Jackie Wragg, MFFP Youth Engagement Officer, said: *"Apart from knowing that they're helping a great organisation look after the countryside, we hope junior rangers will be able to put this work experience on their CV, raise their profile with future applications and interviews, and foster an early interest in potential conservation career paths."*

The Partnership is commemorating its 15th anniversary in 2018/19 with 15 unique celebrations throughout the year, including engaging with thousands of members of the public from school-aged to the elderly. We kick-started the festivities in February 2018 with the launch of the Bogtastic Van, where children from Edale CE Primary School were the guests of honour and very much enjoyed bouncing on the wobbly bog floor! 



15th anniversary logo. Image: MFFP

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If you're unable to visit the Bogtastic Van, the Lizzy Lizard game can be downloaded from the Google Play store, and the audio-visual experience video can be viewed on YouTube (tinyurl.com/y82ublob)

Revaluing parks and green spaces: for a healthy and happy childhood

Helen Griffiths

Recent research from Fields in Trust 'Revaluing Parks and Green Spaces' has identified that an estimated £34.2 billion worth of wellbeing benefits per year are delivered by frequent use of parks and green spaces. There is an estimated saving to the NHS of around £111 million per year based solely on a reduction in GP visits.

The research was based on 4000 respondents aged 16+. A significantly higher proportion of park and green space users have dependent children, with around a third regularly visiting their local park with children. The research quantifies the improvements in health and wellbeing associated with frequent use and reveals some vital connections between young people's physical and mental health and accessible parks and green spaces.

Our research cites The Institute of Health Equity who say 'children who live close to green spaces have higher levels of physical activity, and are less likely to experience an increase in BMI over time'¹. Playing and learning outside is a fundamental part of childhood, and strong evidence from a four-year project commissioned by Natural England² showed that learning outdoors results in children being happier, healthier and more motivated to learn.

Yet, despite an overwhelming quantity of evidence, there is still a need to identify parks and green spaces not for what they cost to maintain – or could realise as a capital asset if sold for housing – but for the physical health, mental health and wellbeing values that they contribute to the individuals and communities who use them for play, sport and recreation.

Since 1925, Fields in Trust has been protecting land for play, sport and recreation in perpetuity and campaigning for recognition of the community health and wellbeing value of these spaces. Whilst recognising the urgent need to build new homes, it is vital that all neighbourhoods, and particularly children, should enjoy healthy active outdoor recreation within walking distance of home. Children learn physical literacy through play long before they participate in any formal sporting activity and yet there is no mandatory provision of play spaces.



Charsfield Recreation Ground 'Have a Field Day' community event.
Image: Fields in Trust

We believe that more consideration needs to be given to the play spaces that provide multiple opportunities for

children to engage in physical activity at a young age. However, research from the Association of Play Industries³ shows hundreds of playgrounds are being closed. The early stages in a child's development are the most important and parks and green spaces allow them opportunities to exercise and be close to nature from an early age.

Childhood Obesity Strategy

In June 2018, the UK Government published the second part of their Child Obesity Strategy⁴. Public health professionals had been critical of the lack of ambition and limited scope of the first part of the strategy. Part Two does at least recognise that physical activity could be a significant part of the solution. The report references 'limited access to green spaces' as a contributory cause of childhood obesity. The plan suggests Local Authorities can '... ensure access to quality green space to promote physical activity'. Whilst still not all-encompassing – this plan is a step-up from the first part of the government's Child Obesity Strategy which had no reference to accessible green space at all and only one mention of 'exercise'. But it reflects the lack of a clear lead from government on access to parks and greenspaces for the health and wellbeing of children.

School Grounds for play, sport and learning

Fields in Trust is a representative - along with other organisations - on The School Playing Fields Advisory Panel, convened by the government's Department for Education, which reviews the disposal of school playing fields. However, the regulations do not cover all types of school and in some cases applications for disposal can be made direct to the Secretary of State. With outdoor space playing such a crucial role in ensuring the physical and mental wellbeing of school pupils, we believe that protecting school playing field land should be a priority. It is disappointing to see any disposal of playing field land bypassing the independent panel to allow profit-driven sale and development of school playing fields. Ideally all disposals should be equally subject to independent scrutiny.



School sports in Coed Bach Park, Swansea. Image: Fields in Trust

It is not, however, simply for physical exercise that school pupils need access to outside areas. UK charity Learning through Landscapes⁵ report that 78 per cent of teachers identified a change in teaching practice and two thirds observed improved attitudes to learning among their pupils when schools improved their grounds and used outdoor space for pupils to access the full curriculum. Just as physical education classes

can be taught outside – so can art, creative writing, biology – almost any subject can draw on the natural environment for added impact.

Roaming Range

It is now more important than ever to ensure local parks are protected and remain freely accessible. Children's independent mobility – or 'roaming range'⁶ (the extent of the neighbourhood where children can play outside without adult supervision) has shrunk by more than 90% in 40 years and independent travel is increasingly restricted to older children. Parks are a vital part of our social infrastructure, yet increased traffic, the pressures of school work, parental fears and the decrease of available green space have limited children's outdoor play. Add to this the growing attraction of indoor, screen-based activity and the current generation of young people are losing connections with the natural world and living an increasingly sedentary lifestyle.

But that's not all – as Robert Macfarlane has pointed out – the reduction in access to nature has resulted in a loss of the vocabulary to describe common British plants and animals. With just over half of native British species in decline Macfarlane states '...at some level it is recognised that we will not save what we do not love, and that we rarely love what we cannot name'.⁷

There is a vital need to encourage children and young people to spend more time outdoors, to experience contact with nature and to reap the health and wellbeing benefits.



Beekeepers at Gillespie Park, Islington, protected with Fields in Trust as a Queen Elizabeth II Field. Image: Fields in Trust

Interventions to improve access and activity

Fields in Trust protect some green spaces on school sites including, for example, a community-use athletics track in South London. We are keen to extend this provision to secure more school sites and, in the process, help make them accessible for community use beyond the school timetable: evenings, weekends and holidays. This will add to the total area of green space which is accessible for local community use – close to where people live.

A good example of a simple initiative to increase outdoor activity is the 'Daily Mile' pioneered by St Ninian's Primary School in Stirling. Children are taken out of the classroom and encouraged to walk – or run – a mile every day in almost all weathers. Improvements in the pupils' fitness and attention in the classroom were noted by their teachers. At the Fields in Trust Awards in 2015 Auchterhouse Primary School was nominated for our 'Getting Active' award for their version of the Daily Mile – undertaken on the Auchterhouse King George V Field,

which is protected in perpetuity by Fields in Trust. The scheme has increased activity for all children in the school from P1 to P7, as well as staff, parents and grandparents.

Young participants commenting on the impact said:

"It is good for my heart as it gets the blood pumping around my body and it gives me more oxygen, so that means I get more energy" Sam P6

"I am more focussed in class after the walk" Daniel, P7

Public Health England guidance⁸ suggests simple ways in which people can be encouraged to become more active. Many of the suggestions – walking, active outdoor recreation and gardening require access to outdoor parks and green spaces to complete.

Parks and greenspaces are referenced within the PHE document as one of the features of the built environment that have an impact on physical activity; local authorities are urged to maximise their potential as places for the local community to get active.

Well-designed, well-maintained, accessible green space can have a significant impact on public health. Our research demonstrates that regular park users undertake fewer GP visits per year – saving an estimated £111 million per year to the NHS immediately, plus the additional savings from unnecessary medication and treatments.

Learning from these insights, Fields in Trust's Active Spaces programme is creating physical activity projects to inspire the most inactive communities to get active and use their local parks and green spaces. Funded by The London Marathon Charitable Trust this programme offers funding to help initiate community participation in sports and physical activities on fifty local sites, which will be protected for future generations to use and enjoy.

One recently protected Active Space is the Lynnsport site in Kings Lynn, Norfolk; which had an uncertain future as it was included in plans for a new housing development. However, a committed community campaign demonstrated that local people wanted to retain this area for recreational use. The local council reconsidered their development plans and now the Fields in Trust Active Spaces programme is permanently protecting this space for the community; ensuring that it remains accessible for all to enjoy. The activation programme on site will kick-start a behaviour pattern where families engage in physical activities together – setting a habit which will last a lifetime and community cohesion has been enhanced following a successful local campaign.

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Spiders: turning fear into fascination

Dr Geoff Oxford

Most young children have an inherent fascination with the natural world. Their views are, of course, also influenced by the behaviour of parents and other adults around them, and a desire to conform to peer pressure. This moulding of attitudes applies especially to spiders, and usually in a negative direction. The British Arachnological Society (BAS) strives to reverse this trend by enthusing and educating both children and adults about spiders and their other eight-legged relatives.

Children love weird and wonderful facts and spiders supply them, in spades. A 'spider safari' run for families at a recent wildlife day near York, illustrates how simply observing spiders can maintain the attention of five to six-year olds upwards. Influencing their parents is, perhaps, even more important. Under a hazel leaf we found two, bright white, spiky egg-sacs. The diminutive female spider responsible for them sat alongside, hardly visible to the naked eye. That such a small spider could have produced not one, but two, egg-sacs, each about 7x her own volume, was awe-inspiring. Only one of the 670 or so British spider species produces egg-sacs like these – *Paidiscura pallens* (sadly no common name). A few trees on, again under a leaf, we discovered a patch of mould – or so it seemed. It was in fact another egg-sac, this time the work of one of the beautifully golden long-jawed spiders (*Tetragnatha* species).



Sweep-netting for spiders. Image: Roger Key

Then for some more active investigations. Small mist sprayers were used to reveal a variety of web types, which illustrated the different means spiders use to catch prey. Iconic orb-webs were found everywhere. Other types of web were constructed in dense ivy. The spiders, lurking in deep holes, were lured out with a sonic electric toothbrush, which mimics the buzzing of a trapped fly. This was, needless to say, the highlight of the safari and kept everyone enthralled for a long time. All, including some parents, wanted a spider-tickling toothbrush for their birthdays!

Secondary school pupils present a greater challenge if attitudes towards spiders are to be changed. By that age, likes and dislikes are almost set in stone. But even here all is not lost and peer pressure can be channelled as a force for good. Some years ago, the BAS held its annual field weekend at a Field Studies Centre in the Lake District. We were there at the same time as a group of pupils in their mid-teens. One evening one of

them asked what we had been doing that day; an opportunity not to be missed. One of our members held an impromptu spider workshop during which he showed them some of the specimens we had caught, explained how to sex them (mature males have a pair of bulbous pedipalps at the front of the body; in females they are slender and leg-like) and related aspects of their biology. Spider sex-lives were, of course, of particular interest. They learned how mature males have first to charge their syringe-like pedipalps with sperm before finding and courting a female. During mating the male pedipalp is applied to the female and sperm is transferred to storage structures within her body. Once one student became fascinated others did too and live spiders were enthusiastically passed around without negative comment.



An impromptu spider workshop. Image: Geoff Oxford

The BAS organises a number of identification workshops each year, led by dedicated volunteers. Aimed primarily at adults, they concentrate on the basics of spider identification either using our new photographic guide, *Britain's Spiders*¹, or examining genitalia (the only sure way of correct diagnosis for many species) with microscopes in a classroom. Often we have at least one arachnophobe determined to 'do something about it'. At the end of a day learning about the lives of spiders and their pivotal role in ecosystems, and examining (and admiring) live specimens under a microscope, they are usually much more positive about them.



Spider workshop aimed at adults. Image: Geoff Oxford

The BAS's major public event each year is attending the three-day RSPB Birdfair held near Rutland Water. Our stand is always lively; we have a selection of live British spiders on display and a wealth of printed information. For such events, and to inform general enquiries, we have written a series of fact-sheets about several of the common spider types likely to be found around houses, and also their relatives, the harvestmen and false-scorpions². One activity we have run for a few years is to help visitors to our stand construct viewing chambers called spi-pots. These allow the temporary restraint and close examination of small invertebrates, including spiders. Made out of empty plastic mini-milk pots and packaging foam, they provide an example of reusing what would otherwise be recycled or confined to landfill. One group of South Korean ladies, with almost no English language skills, soon understood the principle and were among the most enthusiastic crafters. Another lady claimed making a spi-pot was "*the best thing I've done all weekend*". Children, of course, think these devices are wonderful. Indeed *Britain's Spiders* was written to be used in the field with a spi-pot and hand lens.



Birdfair — making spi-pots. Image: Geoff Oxford

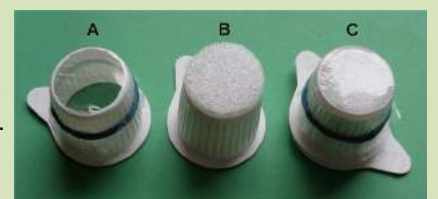
Manning our Birdfair stand is exhausting but hugely rewarding. Everyone has a story about spiders and so engaging them in discussion is usually easy. We hope they leave with a greater appreciation, and fascination, for this often maligned group of organisms.



Enthusing the next generation of arachnologists. Image: Helen Smith

Constructing a mini-spi-pot

Pot A has the base removed and covered with cling film. Pot B has a disc of foam packaging material glued to the base. The two are assembled as in C. The spider is put in Pot A so that it rests on the cling film and Pot B is gently inserted. The trapped spider is held against the cling film and can be examined with a lens or microscope, before being released. (Photo credit: Geoff Oxford)



A Birdfair visitor inspired to sketch the beautiful Wasp Spider. Credit: Helen Smith

The BAS website is a very well-used resource, providing a wealth of information, particularly on British arachnids, for all ages and levels of interest. The Society actively exploits the more recent opportunity to bring together via Twitter what has become much our largest and most diverse audience. Our followers share information, conversations and images on everything from academic arachnology and training opportunities to identification queries. The provision of information to often arachnophobic and concerned members of the public is a major element in this and is always very positively received. 🌱

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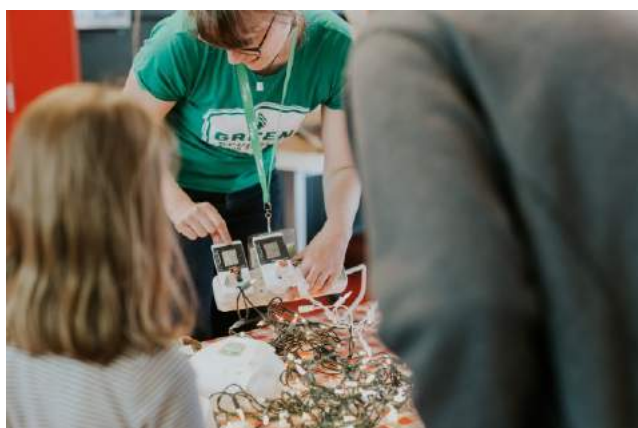


Engaging with students & schools: energy efficiency education in Nova Scotia

Colleen Freake

Green Schools Nova Scotia is a free environmental education program that promotes energy efficiency behaviours and reducing energy waste. Nova Scotia is home to Canada's first energy efficiency utility – Efficiency Nova Scotia – which administers the Green School NS program.

Efficiency Nova Scotia's purpose is to change lives by unleashing the power of energy efficiency. The programs that are offered have the objective to reduce energy consumption through a range of upgrades and programs. For example, there is a free program for residents of the province to exchange incandescent light bulbs for LED light bulbs, and there are other programs to improve home insulation to reduce heating costs for Nova Scotians. Programs like these have helped over 278,000 program participants. Efficiency Nova Scotia works with over 200 local partners to achieve annual energy savings of \$150 million CAD. Each year 700,000 tonnes of CO₂ equivalent are avoided annually through the work of Efficiency Nova Scotia.



Green Schools Nova Scotia engages youth in learning about energy consumption, so that they can make choices knowing their decisions have an effect on the world. Image: Green Schools NS

The Green Schools NS program supports a broad range of school and community efforts to encourage sustainability and resilience in the face of climate change. In our Eastern coastal region of Canada, we have been experiencing a range of climate change effects: extreme weather, sea level rise, and shifting seasons. Green Schools NS is focused primarily on the important role energy efficiency plays in reducing greenhouse gas emissions. Our program provides learning opportunities for students of all ages that assist in developing an understanding of the connection between our environment and the everyday choices we make.

Energy efficiency has two main aspects: energy conservation and improved efficacy of energy use. An example we use to teach students about energy efficiency is to change incandescent light bulbs to LED light bulbs. LEDs use up to 90% less energy while lasting many times longer: up to 25,000 hours! By offering hands-on learning experiences with energy efficiency, the Green Schools NS program advocates for an 'energy efficiency first' mindset. Program activities span a huge range of capabilities and learning levels, from upcycling craft with an energy-saving purpose to exploring careers in energy efficiency.



Grade six students measure energy consumption with the Green Schools NS program that connects to their curriculum unit on electricity. Image: Green Schools NS

The program encourages everyone to take action, to change their behaviours, and to help the Earth. Green Schools NS facilitates the sustainability learning journey of schools in a way that empowers students while making environmental curriculum connections for teachers. The program is inclusive so there are no conditions or commitments required to join the Green Schools NS program.

Our dynamic program team offers in-person engagements on energy efficiency and the environment to students from preschool to graduation. Engagement Officers support teachers by acting as a point person for all environmental education topics. Program offerings include supplemental learning resources, contests, and connection to our broad network of partner organizations with a range of expertise.

The majority of the free teaching resources on our website have links to the Nova Scotia Department of Education curriculum for students of all ages. The resources range from reminder-based checklists to energy consumption data collection projects. An example of our most popular resources is the Lights Off Monday¹ Support Package which provides an action plan for an energy efficiency campaign at school.



Green Schools NS Engagement Officers connect with students of all ages about how to help the Earth, including stories, games, and curriculum-linked activities. Image: Green Schools NS

In recent months, the most frequently downloaded resource of the program was the Sweater Day Slideshow. National Sweater Day is an annual winter event in Canada piloted by WWF-Canada with the objective of

saving energy and raising awareness. In Canada, heating accounts for 80% of residential energy use. On Sweater Day, we turn down the heat by two degrees Celsius to save energy and everyone wears sweaters to stay warm. Free resources like slideshows are one of the ways our program promotes sustainability, supports teachers, and encourages energy-saving initiatives.

The engagement team at Green Schools NS provides learning opportunities at schools throughout the region both in person and at a distance using interactive video calls. We use resources that are freely available on our website to provide foundational understanding of electricity which directly connects to the Grade 6 curriculum. Our most-used resource is the Grade 6 Electricity Curriculum Slideshow which is used in hundreds of classes across the province each year to assist in teaching our students about the importance of reducing energy consumption. Green Schools NS is committed to positive solutions to reduce greenhouse gas emissions, from learning new habits like turning off unnecessary lights to improved standards for electronics like Energy Star; we want to share the best practices for saving energy!



The Green Schools NS program cultivates environmental leadership through educational engagements, support for teachers and Green Teams, and our numerous resources. Image: Green Schools NS

Some schools in Nova Scotia have undertaken large projects to go green. The Green Schools NS program celebrates the achievements of our participants with shout-outs on social media like Twitter and Facebook and in featured stories on our blog². For example, you can read our story³ about our program's participation in a special day-long event at an elementary school on the theme of empathy and resilience. Other featured stories have been about our community's experience keeping chickens at school, school garden harvest events, and so much more. At Green Schools NS, we appreciate the opportunity to share positive stories about solutions and to inspire others to waste less.

Quotes from participating students & staff:

"I worry about global warming and greenhouse effect, so I'm glad to take this lecture." Grade 11/12 student

"Thank you for the work that you are doing, visiting and helping schools to take better care of Earth. I think it's important and wanted to say thank you for showing me what I can do!" Grade 6 student

"Thank you for an informative presentation that supplements our curriculum!" Elementary teacher

"Great presentation. Getting info to kids at this young age is the way to go!" Grade 1 Teacher



The Green Schools NS program celebrates major environmental events like Earth Day as opportunities to engage with the public on the importance of energy efficiency. Image: Green Schools NS


More quotes:

"My daughter came home yesterday and told me 'a girl came to our class today and told us we should play outside instead of watching TV'. I told her to ask her older sister to go out and play with her, but her sister was playing her Nintendo DS and didn't want to go out. So, I got my jacket on and went outside with her. Her sister ending up joining us and we had so much fun. We ran all around our whole farm. Last night when I was putting her to bed she said, 'mom, that was the best day ever.'
Parent of a primary student

"Making connections to concepts taught in class with an outside source through technology shows students the importance of communication through technology and how relevant the information and concepts they are learning about matter in the real world and how they can play a vital role, i.e., their actions do have an effect on themselves and others in the world."

John Burt, Richmond Education Center/Academy, Oceans 11 teacher, after a virtual engagement using Google Hangouts

"The presentation was great and a good way to start our unit on heat and heat efficiency!"

Diane Simms, Central Colchester Junior High, after a virtual engagement 

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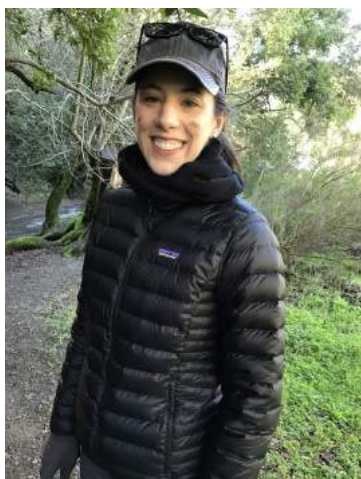
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Forest Fridays with Nature Natalie

Natalie Crowley

Each Friday afternoon the Lower School building at Presidio Hill School becomes eerily quiet. Students in grades Transitional Kindergarten through second grade can be found playing and exploring in the nearby Presidio rather than in their classrooms or on the schoolyard. In first grade, students participate in Forest Fridays, a year-long program that I developed to deepen their connection to nature. At the beginning of the year we establish routines and develop comfort and familiarity with our beautiful outdoor "classroom," the Willow Dome in El Polin Spring. The first graders learn how to activate their animal senses, practice fox walking, and play animal form games where they pretend to be everything from a hungry fox to a sleeping bird. They track animals, dig for worms, build forts, share their Story of the Day, and return weekly to their treasured Sit Spots for a few moments of outdoor mindfulness. Towards the middle of the year we do a deep-dive into the world of plants and learn how to distinguish native and non-native plants, as well as edible and inedible plants. Students enjoy foraging and consuming a salad of sour grass and miner's lettuce. By May we are exploring the connection between the Presidio and its original human inhabitants, the Ohlone people. We end the year by taking an Inventory from the Ground Up to express gratitude for the many beautiful and enriching experiences we had that year in the forest.



What are Forest Fridays?

Forest Fridays are a dedicated time to connect with, learn, and play in nature. I was inspired by the forest schools of Europe that originally started in Scandinavia and have since spread throughout the UK and other European countries, and increasingly to some American early childhood settings as well. Our weekly nature time is guided by Jon Young's¹ Coyote Mentoring² model and follows the Natural Cycle (a model for how energies move through a day, a week, a year, a lifetime).



Making muddy handprints on the walkway. Image: Natalie Crowley

I have written a year-long curriculum³ of 20 lessons that cover topics ranging from mapping to bird language to Native American hand games. The lessons were written for first and second graders but can easily be adapted up or down for other age groups. In the style of the Natural Cycle, each lesson begins in the North-East with an opening routine, then moves to the East for an inspiring story or song, followed by the South-East for a game or activity to activate the senses. Next we head to the South for our focus lesson about whatever topic we are currently exploring, then to the South-West to take a break. This free exploration and imaginative play represents the bulk of our time in nature. In the West we gather and share our stories of the day, then head to the North-West for reflection. Finally, we end in the North to integrate all we have learned by journaling and creating a new page for our Floor Book⁴.

When asked what she likes about Forest Fridays, first grader Sadie said, *"I really like doing the activities, like songlining."* Classmate Wyatt said, *"My favorite thing is looking at bugs and learning about the trees."* Lily noted, *"It feels nice to be outside, but it's also tiring!"*



Engaging in an outdoor story. Image: Natalie Crowley

How do I do Forest Fridays?

- Step 1: Find an outdoor home base. You don't need a full-fledged forest—any green space, even if it's small, will work. Check out these four green space alternatives⁵.
- Step 2: Get your school's administration and students' families on board. You'll want to do your homework first and show them you've thought through all the benefits and risks⁶ and have clear plans and procedures in place to ensure a safe and enjoyable experience for all. If you encounter resistance, try these 5 ways to get parent buy-in⁶.
- Step 3: Get outside. Start small if you need to, but whatever you do, don't hesitate! Your kids and your well-being will thank you.

What if I don't have time in my schedule for a regular forest excursion?

Teachers often ask me some variation of this question: “I have an extra 20 minutes to fill with my students today. What can I do with them outside?” Teachers inherently know that being outside is good for the children and for them, but many struggle to find the time and resources to engage in a regular nature immersion program while still teaching the required curriculum and standards required by their schools. With this in mind, I wrote my book⁷ for teachers, parents, and caregivers who understand the value and importance of having their children spend time in nature but may not consider themselves “outdoorsy”. The activities are Common Core-aligned and objective-based. No matter how much time you have or advanced preparation you've done, there are outdoor lessons and activities you can do with your students that are fun, educational, and worthwhile. Outdoor education does not have to be something “extra” or “in addition to” what teachers are already doing; rather, it is an opportunity to get creative and apply what students are learning in a new, engaging context.



Den building as a team. Image: Natalie Crowley



Hunting for invertebrates under logs. Image: Natalie Crowley

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- ⁴ mindstretchers.co.uk/training/talking-and-thinking-floorbooks.html
- ⁵ naturenatalie.com/no-forest-no-problem-alternatives-to-a-traditional-forest
- ⁶ naturenatalie.com/product/benefit-risk-analysis-worksheet (free)
- ⁷ tinyurl.com/yar6yn9v (eBook) or tinyurl.com/y8kzf8sa (PDF).

Natalie Crowley is a First Grade Teacher and founder of the outdoor education resource site Nature Natalie. She is the author of *Teaching Outside: 20 Quick & Easy Outdoor Education Activities for Children*

More information: naturenatalie.com

naturenatalie.com/blog

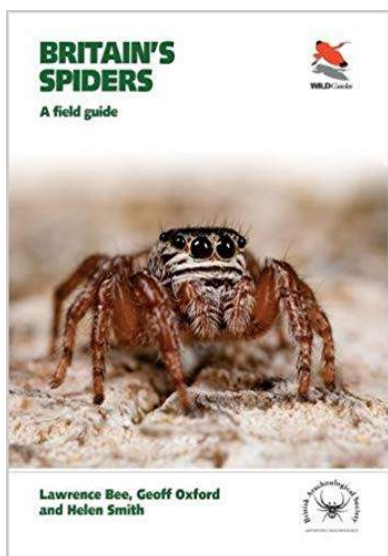
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REVIEWS | Books

Britain's Spiders – A field Guide

Lawrence Bee, Geoff Oxford & Helen Smith



This 'Wild Guide' is a very solid product – in fact it's the first photo-based field guide to British spiders since 1989! With more than 700 photographs, detailed accounts of ID tips for each genus and species, alongside conservation status, behaviour and habitats, this is no lightweight thing at 470-plus pages!

All three authors are experts and active Council members of the British Arachnological Society.

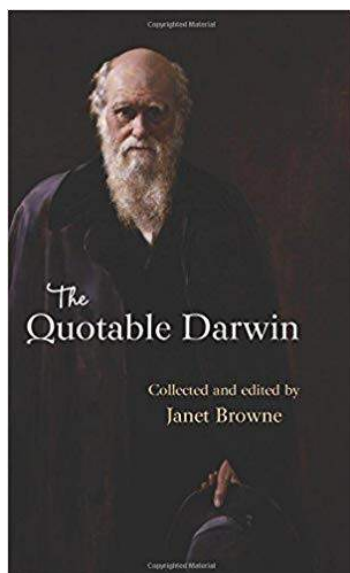
As Nick Baker, naturalist and tv presenter states: “*this book represents the final frontier of the field naturalist – at last a guide to these amazing creatures*”.

***Britain's Spiders: a Field Guide.* Lawrence Bee, Geoff Oxford & Helen Smith (2017). Princeton Press, in association with the British Arachnological Society. Flexibound, pp480. ISBN 978-0-691-16529-5. £17.43.**

[amazon.co.uk/Britains-Spiders-Field-Guide-Wildlife/dp/0691165297](https://www.amazon.co.uk/Britains-Spiders-Field-Guide-Wildlife/dp/0691165297)



The Quotable Darwin
Collected & edited by Janet Browne



I found myself first chuckling, then at times laughing out loud! Is that *really* what Charles Darwin thought – and wrote down? The brilliance of this book of quotes is its clear and easy structure. The text is logical: from early life and voyage of the beagle; marriage and scientific work; *Origin of Species*; mankind; himself; friends and family.

In the chapter 'On Himself', one of particular interest to this reviewer, he (Mr Darwin, speaking in the third person when writing to a friend) 'considers that the theory of evolution is quite comparable to the belief in God; but you must consider that different persons have different definitions of what they mean by God'.

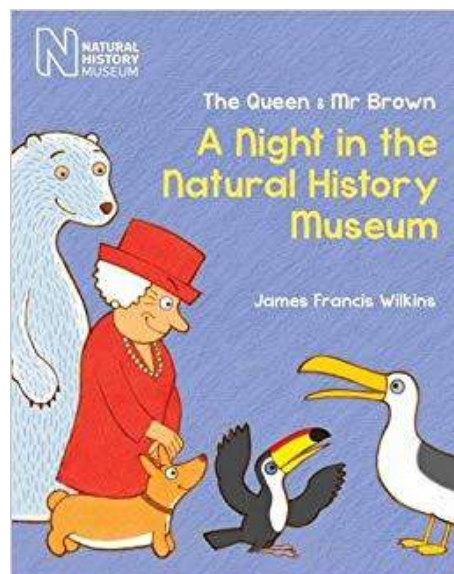
Yes, Darwin-expert Janet Browne, professor of history of science no less, presents a rich and fascinating insight into Darwin in his own words – the naturalist, traveller, thinker, and of course author of the groundbreaking *On the Origin of Species*, the book that shook the Victorian world to its very (human) core.

Browne sources Darwin's writings, letters to friends, and especially his several scientific notebooks, to bring the reader a multi-layered portrait of a man on a mission to explore and understand the world. Here, through a 'journey of ideas' we see Darwin as not only a scientist, but also a caring husband and father, and a lively correspondent who played billiards – to 'drive the horrid species out of my head'.

This book includes many of the key responses to Darwin's ideas – and very much travels on the road of his thoughts and how they changed over time in regard to the natural various phenomenon he tried to unravel. *On the Origin Of Species* is a remarkable book; the Quotable Darwin illustrates how he got to some of the conclusions, and why not others. It therefore sits well as a 'complementary and supplementary reader' to *Origin*. Browne gives us a fresh perspective on a remarkable man who was always thinking deeply about the natural world. One of my 'top nature heroes'. Good on her for not only trying, but thriving in the task.

***The Quotable Darwin*. Collected & edited by Janet Browne (2017). Princeton Press. Hardback pp34. ISBN 978-0-691-16935-4. £20.00 (Amazon).**

The Queen and Mr Brown: a Night in the Natural History Museum
James Francis Wilkins



Following on the success of *A Day for Dinosaurs*, illustrator James Francis Wilkins is back with another colourful and fun storybook.

You might argue that this book leans heavily on the film *A Night At the Museum*; but I would respond "so what?" The idea is appealing, works, and promotes lots of interesting ideas, especially our connections with nature.

The story tells of the Queen growing up 'as a girl fascinated by nature – she loved to spend days climbing trees, paddling in ponds, and looking under stones'. There is a lovely image of her having to shake hands with lots of people, but sees a FLYCATCHER and..... must stop herself from LEAPING for joy at the sight!!

Which brings her to ... write to the Director of the Natural History Museum to seek permission to visit after all the visitors have left, to satiate her 'deep interest in Nature'.

Following opening pages featuring a dinosaur – a nod to the first book – the Queen with her dog Mr Brown (a nod to history!?) sees a number of exhibits, before bumping into a startled toucan. After sharing a biscuit, the bird summarily states 'it's alright, you can come out now – they're friendly!' The story then is told of the various animals she meets, her encounters including a frog who actually licks the Queen's nose!

Aside from the obvious unrealistic elements – especially the Queen going to and from without so much as an escort – this book is a genuine delight, and has much to be commended for!

***The Queen and Mr Brown: a Night in the Natural History Museum*. James Francis Wilkins (2016). NHM Publications. Paperback, pp48. ISBN 9780565093761. £6.99 (on sale, reduced from £12.00 at time of writing).**

nhmshop.co.uk/the-queen-and-mr-brown-a-night-in-the-natural-history-museum.html 

Reviewed by Henricus Peters

There are so many websites about the topic of water; to do it justice would require a book, so here are just a few 'goodies'.

General

NASA Jet Propulsion Laboratory

Earth – and therefore – the oceans, from space.
jpl.nasa.gov/edu/learn

World Ocean Day

World Ocean Day began on 8 June 1992 at the Earth Summit in Rio de Janeiro, Brazil. However, it is not an officially recognized secular holiday by the United Nations as of yet.
theworldsoceans.com

Great Barrier Reef Marine Park Authority

The Australian Government's official Great Barrier Reef website.
gbrmpa.gov.au

Water education

Clean water for every child

'For children to grow up healthy and happy, they need access to clean water, proper sanitation, and good hygiene. Water, sanitation and hygiene (WASH) are basic human rights, that Unicef is working to uphold for every child.' This website details Unicef's work to make WASH a reality for children around the world.
unicef.org.uk/what-we-do/water-and-sanitation

Waterwise

Non-profit UK non-governmental organisation all about reducing water consumption.
waterwise.org.uk

Water for Kids

Water for Kids was set up as a charity in 1996 after two Environmental Health Officers (EHOs) visited Peru to help eradicate cholera.
waterforkids.org.uk

Project Wet: water education for teachers

'Action-oriented education that enables every child to understand and value water' – USA and global.
projectwet.org

Ocean First Education

A non-profit focused on marine education.
oceanfirsteducation.com

Freshwater Biological Association

Conserving our freshwater systems, with the Riverfly Partnership.
fba.org.uk & riverflies.org

WWT Wildfowl & Wetlands Trust

Wetland and birds resources and activity sheets.
wwt.org.uk & wwt.org.uk/learn

Marine Biological Association Library

Runs public and school events, alongside its great ID information.
mba.ac.uk/nmbli

Buglife

Buglife's website includes information about water invertebrates and their Strategy for Freshwater Invertebrates.
buglife.org.uk

Wildlife Trusts

Trusts across the UK and Scotland, each with educational opportunities and resources. Sections on the website about oceans, including a drive to use less plastic.
wildlifetrusts.org

RSPB Royal Society for the Protection of Birds

Many RSPB reserves include wetland/coastal habitats and species. The teachers section includes Wild Challenge, activities, Schools Birdwatch, ideas for trips, and youth groups Wildlife Explorer and Phoenix.
rspb.org.uk/fun-and-learning/for-teachers

British Dragonfly Society

Of course, dragonflies start life in water! This website has great packs, activities, crafts, presentations and ID photo checklists.
british-dragonflies.org.uk

Marine Conservation Society UK: Cool Seas

Whales and dolphins, pollution and beach cleanups. Excellent Kids online activities and downloadable resources.
mcsuk.org/coolseas

Mammal Society

Fact sheets, surveys and more about marine, freshwater and terrestrial mammals. Including the Save the Water Vole campaign.
mammal.org.uk

Whale & Dolphin Conservation

This organization has global outreach – UK, USA etc. Kids facts, activities and education packs including a Dolphin Diploma.
uk.whales.org
uk.whales.org/search/site/kids

Shark Trust

Downloadable leaflets, posters with info and some campaigns.
sharktrust.org/en/education
Online creative things to do re. sharks.
sharktrust.org/juniors

Froglife

'A national wildlife charity committed to the conservation of amphibians and reptiles – frogs, toads, newts, snakes and lizards – and saving the habitats they depend on.' This website has a huge range of resources, publications and downloads, including a National Curriculum-linked pack.
froglife.org
froglife.org/learning-zone

International Otter Survival Fund

An organization studied to scientific study and conservation of otters in the UK and around the world.
otter.org/Public

Marine Megafauna Foundation

All about preservation and management of manta rays worldwide.
queenofmantas.com

Water experiments

Science Kids

Hundreds of experiments for kids to try, including those related to water and weather.

sciencekids.co.nz

Water safety

Water Safety Code

The website of the Royal Society for the Prevention of Accidents (RoSPA) gives advice including how to spot dangers near water and following safety advice.

rospa.com/leisure-safety/water/advice/children-young-people

Swimming Smarts

Including advice about always swimming with a partner, learning life-saving skills and knowing where is safe to swim, particularly in the sea.

kidshealth.org/en/teens/water-safety.html

Life saving

The website of the Royal Life Saving Society UK—'the Drowning Prevention Charity'.

rlss.org.uk/water-safety/water-safety

Museums and centres

River and Rowing Museum

Based in Henley-on-Thames. There is a Learning section on their website and they offer activities for schools and families.

rrm.co.uk

National Maritime Museum

The home of history of all things seas/oceans, shipping, navigation.

rmg.co.uk/national-maritime-museum

Sea Life Centres

With branches all over the world.

visitsealife.com

Climate and climate change

Met Office

The UK meteorological service has excellent resources, including information related to this summer's heatwave in the UK.

metoffice.gov.uk/climatechange

Other websites/news

Year of the Bird

In the USA, 2018 has been dedicated to focusing on our feathered friends.

National Geo magazine features birds in many articles.

nationalgeographic.com

The famous Audubon Society is also promoting its benefits to all concerned, including a Bird Guide app.

audubon.org

Association for Science Education (ASE)

ASE have an updated and much-cleaner-looking website with new tabbed sections. It also includes quick links to libraries, ASE partners and a general search.

ase.org.uk

Henricus Peters is a teacher in China and joint Editor of this ejournal.

Please do pass on details of your favourite websites so that we can share them with members.

Contact: info@naee.org.uk or Henricus.p@yahoo.com

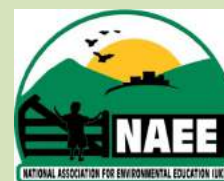
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FINAL THOUGHT

What we humans are doing to our Blue Planet: these two images show, very graphically, the damage that results from human activities, wanton or not.


The images are of coral in American Samoa. The first is from December 2014 (before bleaching) and the second is from just two months later, in February 2015 (during bleaching). 



Image: The Ocean Agency / XL Catlin Seaview Survey coralreefimagebank.org.