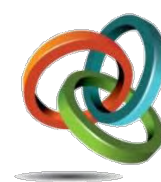




*Living and learning on a
Spanish eco-farm*

Journal of the Association for
Management Education and
Development



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Edition Editor: Alison Piasecka

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Cover image: Early morning view in rural Andalucia.
Photo: Alison Piasecka

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Knowledge, attitudes and behaviour

Biodiversity lessons from our stay at La Burra Verde

Kate Lake



Photo: Tim Whitworth

Editor's note

Kate's contribution falls into two related parts. The first reflects her interest in relationships between different plants; the second challenges us to think about what we can do reduce our negative impact on climate change.

In the first part, following her own particular interests and passions, Kate seems to me to contain some very apposite points. She challenges our usual definition of 'parasitism', for example, introducing us to an understanding of how these relationships can work, and I found myself wondering whether this wider understanding can also be part of our human landscape of intentions and behaviours. Implicitly, Kate seems to raise questions about the human world, as well as drawing attention to the mysteries of the plant world that she uncovers.

Following this, I really appreciate Kate's gauntlet, gently but firmly positioned here, in asking us what will it take from us to really knuckle down and confront climate change and environmental damage? At OST 2018, we really wanted to learn what that might mean, and the inspirational experience of La Burra Verde gave us a close-up chance to think about that, and to consider what different choices we can make in various ways to change our own behaviours, starting with Kate's provocation.

Part 1: Highlighting plant relationships: natural ways of interacting and co-existing

Taking time to study and identify wild plants at La Burra Verde, and on a trip to Hungary in May, has opened my eyes to more of the myriad ways by which plants (and – by extension - humans?) interact and live together. Those that 'simply' feed themselves by photosynthesis, getting minerals from the soil, are not as ubiquitous as you might think. Here are several examples we came across.

Near the entrance to the *finca* (farm) was *Dodder* - a fully parasitic plant with no leaves and many thread-like stems that it weaves all over the host plant, and which put out suckers called haustoria that withdraw nutrients from the host's stems. In the photo below of *Dodder*, the host is a *Sedum* and the small white pom-poms are the *Dodder*'s flowers.

On our walk along the acequia we saw *Broomrape*, another full parasite - this time on the host's roots. Their seedlings put out a root-like growth and once attached, the Broomrape 'robs' its host of water and nutrients (no negative connotations implied).

Shades of parasitism

There are degrees of parasitism. A very common plant in the finca was a type of *Bartsia* or Mediterranean linseed. It came in two different coloured varieties – pink/white or yellow. This is hemiparasitic, in other words, it can do both. It has green leaves, and so can photosynthesise if it has to, but under normal conditions, it obtains water and mineral nutrients from its host plant, and possibly organic nutrients too.

The *Bird's Nest Orchid* that I saw this year in Hungary has another relationship twist, challenging preconceptions of how a plant can be defined. With no leaves and no chlorophyll, its survival depends on a single species of fungus that also forms an association with nearby trees. The trees supply the fungus with sugars and extract minerals from it a symbiotic, mutually beneficial relationship. The orchid's roots, shaped like a bird's nest, link to the fungal network and take its nutrients - a complex *ménage à trois* called mycoheterotrophy, where the orchid's role is somewhere between parasite (if it causes harm to its host) and commensal (if it causes no harm).

Dodder



Photo: Alison Piasecka

Broomrape



Photo: Alison Piasecka

The dazzling spectrum of relationships between plants (and fungi) shows us how organisms evolve alongside each other and become inter/dependent. The terms we use to describe them are generalisations and change as we learn more about their incredible intricacy and variety and try to categorise them. Here I've

identified a few examples of the extraordinary convergent interactions that evolution has thrown up over the millennia. Biodiversity is so fundamental and precious. But – like co-existence between people and communities – it is fragile. We need to celebrate, investigate and protect/recreate the habitats it requires.

Bartsia trixago



Photo: Kate Lake

Bird's Nest Orchid



Photo: Kate Lake

Part 2: Thinking about climate change

When I was saying goodbye to my namesake, our host, Kate, I said staying at La Burra Verde had made me think. She said, with a smile, 'everyone says that'. That response stayed with me. I claim to care about the environment. I volunteer for a wildlife charity, work with children in the local nature reserves and advocate wildlife-friendly gardening. I engage with 'Citizen Science' projects monitoring wild populations of birds and butterflies. I believe there is overwhelming evidence that human-induced climate change will have immense and damaging impacts on ecosystems and biodiversity and human populations and societies.

We can know how to live in a more environmentally friendly way, our attitudes can be environmentally sound but it's changing our behaviour that's important; shifting further along the spectrum away from the end that damages the earth. Reflecting on how I live my life - I'm already doing all the 'green' things that I enjoy or that are easy. But some changes feel like they would require more effort.

For example: Do I need a car and if so what car? Could I make even more local journeys by cycling or public transport? Will I actually get around to making the effort to switch my energy provider to one that deals only in renewables? Shall I get solar panels on my roof even though feed-in tariffs have stopped? Am I flying more than I need to when taking holidays? Could I become an active member of the local Friends of the Earth group?

To quote Alison, staying at La Burra Verde can bring realisation of 'how closely tied I am to modernity and some measure of consumerism'. If I just leave it at the realisation stage and don't take any further action, it's an empty lesson. Watch this space?



Kate Fairtlough's house, La Burra Verde, OST2018. Photo: Tim Whitworth



Solar electricity, water conservation and frogs to eat the mosquitoes, La Burra Verde, OST2018.
Photo: Tim Whitworth

Compost loos, La Burra Verde, OST2018. Photo: Tim Whitworth



Photo: Tim Whitworth

About Kate

Kate has been a biology teacher and manager working in London colleges for 35 years. Now retired, she's keen to become an all-round naturalist and to pass on her enthusiasm for maintaining biodiversity in the natural world through informal environmental education settings.

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