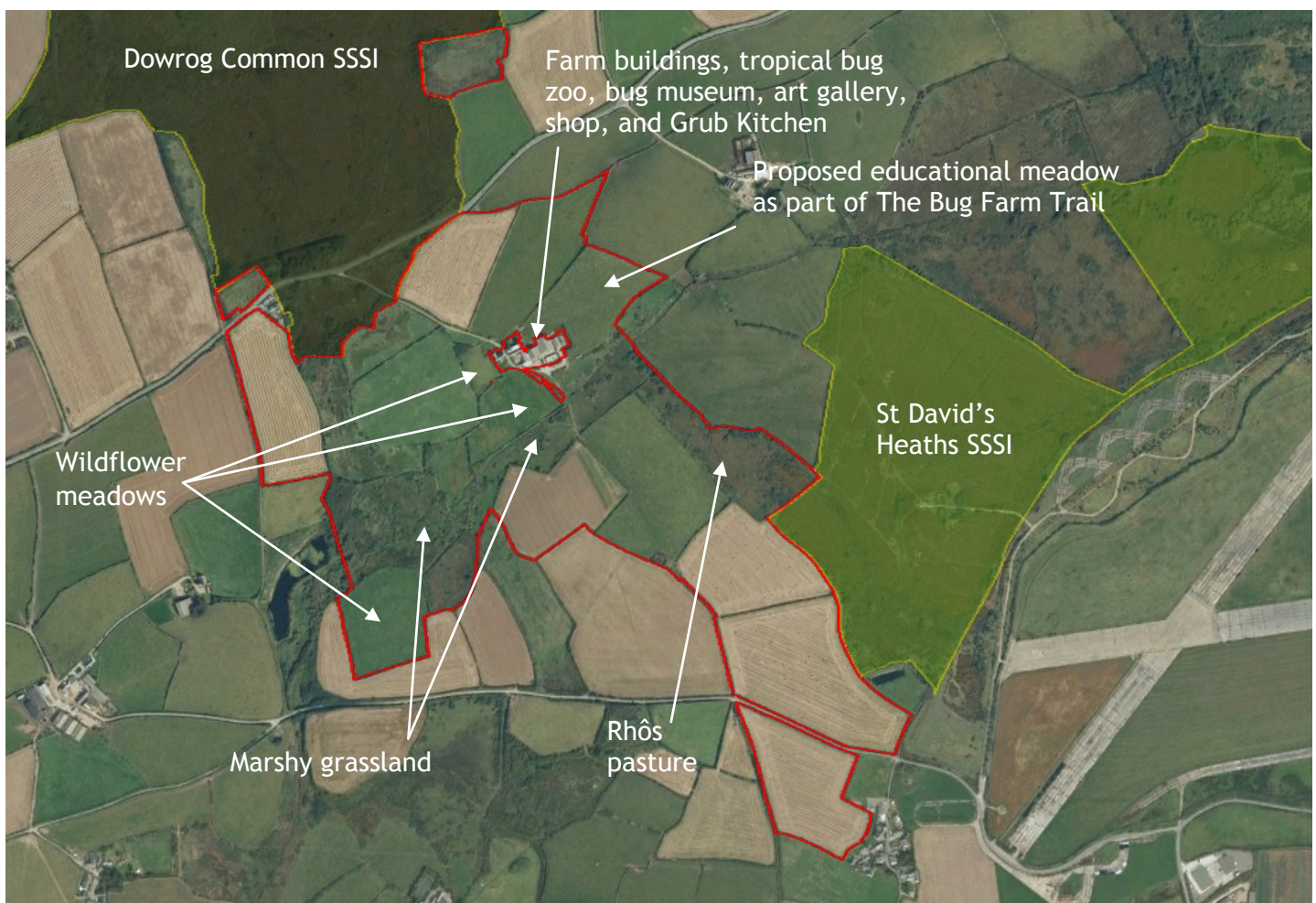


Rhôs Pasture and wildflower meadows at The Bug Farm

In 2015, a 100 acre 'Bug Farm' at Lower Harglodd Farm in St Davids, Pembrokeshire won the Save Our Magnificent Meadows 'Meadow Maker of the Year' award for Wales. The prize was awarded for work carried out by Bug Farm owner, Dr Sarah Beynon, for her work on creating a 45 acre habitat corridor with wet and dry meadows, heath, rhôs pasture and marshy grassland. It provides a link between two Sites of Special Scientific Interest (SSSI) - Dowrog Common SSSI and St David's Airfields Heaths SSSI - both outstanding areas of acid grassland and lowland heathland.

But what is a Bug Farm? In December 2013, Sarah, with assistance from her family, bought the farm which was the original family farm. She wished to restore the wildlife corridor linking the two SSSIs and encourage wildlife alongside running a research, farming and educational business. In June 2016, The Bug Farm also launched officially as a visitor attraction all about invertebrates. Sarah herself is an academic ecologist and entomologist with a love of farming and conservation who decided to combine these passions and start her own innovative venture at home in West Wales! Continuing the



Aerial photo image from 2009 showing the neighbouring SSSIs and The Bug Farm with the species-rich habitats. Google Earth Image © 2016 Getmapping plc.

education from field to fork, The Bug Farm is also the home of Grub Kitchen - the UK's first café and restaurant focussing on edible insects, run by Sarah's partner, top chef Andy Holcroft. However, there is something for everyone on the menu, with or without bugs in it! The common theme is that all dishes include lots of delicious, local produce promoting sustainable agricultural production.

Either side of the farm the land is more intensively farmed, dominated by improved perennial rye grass monocultures, potatoes and spring barley. The only remaining habitat corridor is a 6 acre field at The Bug Farm, spanning approximately 30 m, and rapidly scrubbing-over. It belonged to Lower Harglodd Farm which was put up for sale in 2013, and was due to be bought by neighbouring farmers. Sarah explains why she made the decision to buy the farm: "Whilst I appreciate the importance of the conservation of individual patches of wildlife habitat, what I believe is even more vital for the conservation of biodiversity is conserving and creating interlinked habitats, joined by wildlife corridors, allowing wildlife to move through the countryside and therefore be less susceptible to extinction events. I have spent the last decade meticulously planning my dream of living in Pembrokeshire whilst

running a working farm alongside continuing with my academic research and running educational courses all about invertebrates! The result is Dr Beynon's Bug Farm (or The Bug Farm): a 100 acre mixed farm and research centre based all around sustainable agriculture and the importance of insects and other invertebrates."



Sarah Beynon © The Bug Farm



Andy Holcroft © The Bug Farm



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“The farm had not been actively farmed as a unit for over 15 years and therefore required a lot of time and effort to be put into it. Being a farmer's daughter is one thing, but being a farmer yourself is something completely different! As the farmer's daughter, I have dug ponds and converted fields, on my parents land at Penweathers Farm, back to wildflower meadows; moving seeds, spreading green hay, harrowing, cutting and grazing with our Welsh Black cattle. This was no easy task when dealing with a conventional farmer who is a fan of the ‘mown lawn’ look! I am proud to say that, with many disagreements with my father along the way, and support from Flora Locale and Pembrokeshire Coast National Park Authority, these meadows are now flourishing and awash with life. I've even managed to convince my parents to let their 1 acre garden grow up as a meadow - it only took eight years!”

“As a farmer yourself, the challenges multiply, but so do the rewards” says Sarah. “It’s a great honour to be able to shape the land around you with your actions.” A little 6 acre field at The Bug Farm was the only remaining link between the two SSSIs. Sarah and her team have extended the corridor to include neighbouring fields which they are bringing back into management. Historically, the ‘rough land’, as rhôs pasture and marshy grassland is known, was used to out-winter livestock and, over the last 15 years, any accessible, dry areas that could be driven-on in summer, had been fertilised with nitrogen. The result was a proliferation of ruderal weeds such as creeping thistle, stinging nettle and broad-leaved dock growing alongside marsh orchids and lesser spearwort! However, much of the farm infrastructure had fallen into disrepair and, before anything could be done, the fences needed to be repaired to enable livestock to be put into them. Sarah drew up a strict 5 year fencing regime and is using a lot of electric fencing and patching in the meantime! It included planting more than 350 m of native hedging over three years which will be laid in the future (that is if the wind allows them to grow tall enough to be laid!). The farm is now about 50:50 grassland: arable/vegetable, something that Sarah is keen to retain due to the significantly higher efficiency of producing human food from plants than from animals: “We conservation-graze our species-rich grassland with a hardy, calm, native breed of cattle and get wonderful quality meat as a by-product of this conservation management. However, I believe that we should, where possible, use our improved land in order to grow crops and vegetables to feed a growing population more sustainably” says Sarah.



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A botanical survey by the Pembrokeshire plant recorder Stephen Evans, undertaken prior to Sarah buying the farm, allowed Sarah to plan where to grow either arable crops or keep as grassland. The survey even found the threatened three-lobed water crowfoot growing in one location. The Pembrokeshire Coast National Park Authority provided advice about creating wide rides through the heath and marshy grassland to promote heather growth and create poaching points for the crowfoot. Sarah was able to immediately implement this management by over-wintering her horses in these areas where they did a great job at poaching the required spots. She also brought in a herd of Welsh Mountain ponies to help out and cut broad channels through the gorse and heather.

The dry meadows are now grazed lightly during autumn and spring (and winter if the weather allows) and then shut up for hay, which is cut in late August or early September, providing perfect herb-rich hay for fat ponies and haylage for the Welsh Blacks! In early 2015, the family's herd of

Welsh Black cattle took over the conservation grazing duty from the Welsh Mountain ponies to increase the grazing intensity and remove some of the nutrients that have built-up over the years of spreading fertiliser. The cattle and horses are rotated around the farm, moving them to fields that most need grazing in order to prevent the grasses smothering other plant species. In late-summer 2016, Sarah signed a grazing licence with the National Trust and the Welsh Black cattle now also conservation-graze 40 acres of the St Davids Airfield Heaths SSSI. The heather cuttings from the heath are, this year, being trialled as cattle bedding for those animals that are inside for the winter.

Sarah explains about some of the other habitats she has created: "I also wanted to create a corridor of standing water. Therefore, last winter I contacted Amphibian and Reptile Conservation (ARC) and together we have restored five ponds, giving the pond fauna and flora stepping stones between the two SSSIs. The meadows are coming alive with new species records, including three-lobed



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water-crowfoot, small red damselfly, brown-banded carder bee, palmate newts, otter, adders, barn owls and dormice to name just a few! Although the farm is in the agri-environment scheme Glastir Advanced, all of this work is on top of the habitat management that needs to be undertaken as part of the scheme.”

Sarah has even done some re-seeding of improved grassland. She found that the land (and her pocket) responded better to scarifying and then over-seeding with wildflowers rather than total re-seeding. Yellow rattle, common knapweed, wild carrot, meadowsweet, fleabane and other seeds have been harvested from the meadows at Penweathers Farm in 2013 and hand-broadcasted at Bug Farm. Green hay and barn brushings rich in seeds have also been spread over the improved and semi-improved grasslands and any livestock are supplementary fed hay from species-rich meadows so that any viable seeds have the opportunity to germinate and grow. This has led to a proliferation of wildflowers across the farm. Sarah explains the results of this work in one field “In 2015, we grazed one stony, tussocky field down hard with cattle, horses and sheep and then topped it, removing the clippings. As it was so stony, the field was then hand-rotovated - quite a task - and we broadcasted a bespoke seed mixture that we had bought from Cotswold Seeds, before rolling it. We grazed the field lightly with cattle and horses in year one to ensure that the grass did not swamp the seedlings, which came through nicely allowing it to be cut for hay in 2016. It’s early days, but I have high hopes for this small meadow and it is now part of a film project with the University of Wales where we are exploring the importance of pollinator-rich habitat through art!”

In 2015 Sarah commented about the farm: “Even though I have only been lucky enough to spend less than two years here so far, the difference in that short time has been extraordinary. I have been especially pleased to see that red bartsia and three-lobed water crowfoot has spread and that orchid numbers were double last year. The first tree bumblebee and brown-banded carder bees

arrived this year too. I just can't wait to see what is here in five years time! We have already recorded a new horse fly and moth to the county on the farm and I hope these are the first of many more first county records."

Since then the wildlife has increased on the farm through Sarah and her team's hard work, which has included planting 1,200 hedging trees and a putting in a new 50 m hedge bank and pond in 2016. Sarah explains her aspirations for the future: "We now want to share what we have learnt with others through workshops, talks and events. For example, in the past year, we have delivered events on land management through Farming Connect; the local records centre held a recording day at the farm and we have welcomed numerous school groups to the farm."

The Bug Farm visitor attraction, complete with tropical invertebrate zoo, bug museum, walled garden, art gallery, indoor play barn, farm walk, and gift shop welcomed over 5,000 visitors in August 2016 alone! It showcases modern, efficient agriculture working alongside wildlife conservation in order to show consumers how their food choices influence the way that land is farmed, and the brand new Bug Farm Trail is due to open for Easter 2017. Sarah is currently hoping to raise funding to sow half a wildflower meadow in 2016 as part of The Bug Farm Trail in order to show the difference in invertebrate life between a perennial ryegrass field (the other half of the field) and a species-rich meadow. Utilising the endless

tyre and scrap metal heaps, The Bug Farm is also working with Welsh artists, using the scrap metal to create a pollinator-inspired sculpture trail.

Sarah has been determined from the offset that The Bug Farm is a viable business in its own right and was therefore thrilled to win the 'Most Exciting New Business/Owner' at the Pembrokeshire Tourism Awards and the 'Best Start-up' at the FSB World-pay Business Awards in 2016. "The business is designed around delivering information to farmers, consumers and at a policy level, in order to deliver real change" says Sarah. "Indeed, it is starting to provide an income both as a visitor attraction and farming enterprise as well as being a research centre investigating the benefits that invertebrates, particularly dung beetles and pollinators, bring to the farming industry."

For more information on The Bug Farm see <http://www.drbeynonsbugfarm.com/>. Sarah Beynon was selected by the Welsh Government as an 'emerging legend' for the 2016 Year of Legends.



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