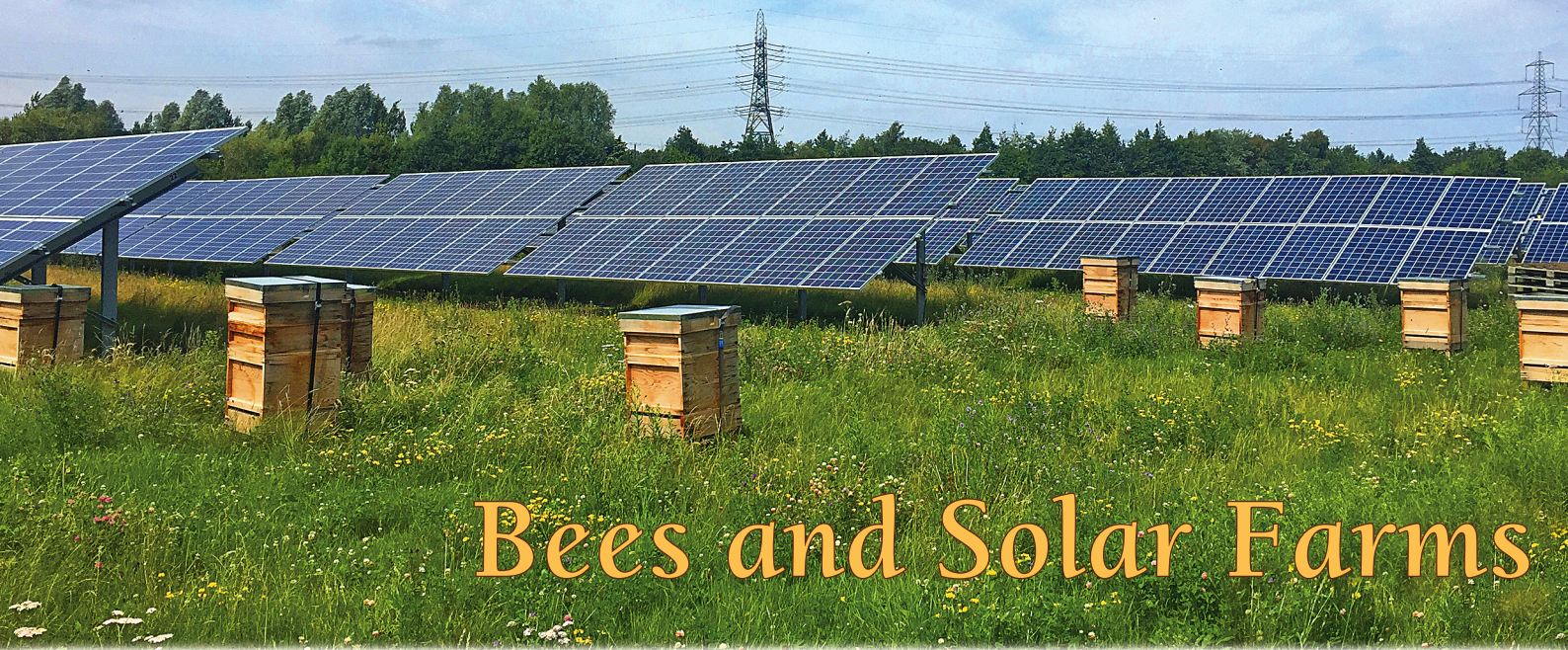


The New Fallow Land



Bees and Solar Farms

Dale Gibson

Stephen Fleming, Deputy Editor

Some people consider solar farms with their rows of photovoltaic panels as a blight on the landscape, but ask an ecologist or even a beekeeper and you are likely to receive a very different reaction. They see the creation of a new biodiverse habitat, a new type of nature reserve.

Sunny Delight

First appearing in Britain in 2011, there are now solar farms on more than 1100 sites across the country, some as far west as Cornwall and others as far north as Morayshire. Occupying about 20,000 hectares (48,000 acres), they represent a tiny fraction of available agricultural land (0.1%) and tend to be on less productive land, sometimes old airfields, and often in areas that minimise the visual impact in the landscape.

In energy terms, solar farm photovoltaic (PV) panels produce

some 8,000 megawatts (MW) of power. In total, solar power now supplies about 3.5% of the UK's total electricity.

However, the benefits of these new solar farms go far beyond renewable energy. They have been called the new fallow land, and, if the 'Ten Commitments' of the Solar Trade Association's good practice are followed, these new-style farms can increase biodiversity, giving both economic and ecological benefits.

Multiple Land Use

Planning consent for solar farms often requires there to be environmental benefits in addition to sustainable energy production. Often, the land between the panels is available for pastoral farming. Horses and cattle are unsuitable because they may dislodge the infrastructure, while pigs and goats might just eat it. So, it's down to sheep and poultry – and occasionally bees. In

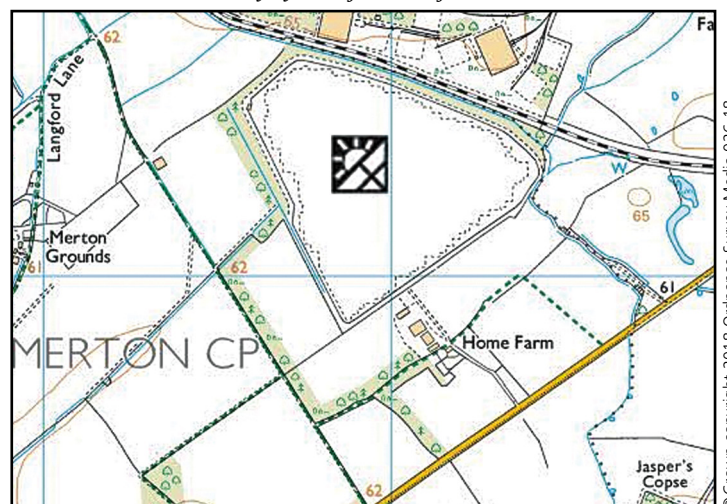
wildlife terms, there are lots of beneficiaries.

At mid-day on 6 June 2016, Loud Lane Solar Farm in Suffolk produced enough power to boil 750 kettles simultaneously. And there was a lot of buzzing too – Dale Gibson of Bermondsey Street Bees keeps about a dozen hives on the award-winning farm and his bees forage the wild flowers around the panels. The estate owner William Notcott, an expert plantsman, has ensured that many pollinator-friendly flowers have

been seeded, and occasional mowing keeps the vegetation in check so that it doesn't shade the panels. In many respects, it's a developing nature reserve.

Professional ecologist and hobbyist beekeeper Dr John Feltwell would agree. He has been advising solar farm developers about suitable planting and advocates seeding native cover that probably thrived on the site before modern farming. It won't ever return to the sweet meadows of a bygone age, he says, but from

The new Ordnance Survey symbol for solar farms



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Solar farm near Sandwich, Kent

day one the benefits are evident. And as the seasons pass, the vegetation reseeds itself and the biodiversity is enhanced for insects, birds, reptiles and mammals. Early solar farms had gaps between the panels to allow tractors to mow but increasingly, growth is managed by grazing.

To date, individual solar farms in Britain usually occupy only a few tens of hectares. Any forage they provide is therefore unlikely to make a noticeable impact on the honey produced, but with suitable underplanting it could provide a useful supplement to honey bee diets.

Solar farm sizes are likely to become more ambitious. A proposal, expected to be submitted in June 2018, will be for a 360-hectare solar farm, the Cleve Hill Solar Park, near Faversham in Kent. If it goes ahead it will dwarf the 100 hectares of the current largest solar farm at Shotwick in Deeside. In Kent, local opposition is strong and among the fears are claims that the existing wildlife will be affected.

Wildlife Benefits

The limited amount of research that has been undertaken indicates that wildlife benefits from the presence of solar farms.

In one study, eleven solar farms (<https://tinyurl.com/y9gfbmsu>) were compared to nearby control plots and the results showed that solar farms are more botanically diverse,

partly as a result of reseeded, and have more butterflies, bumblebees, birds and even bats and hares. The calling cards of perching owls suggest the abundance of small mammals. Some solar farms take particular care in promoting wildlife – sometimes ponds have been created and gaps in the arrays of panels have been left for skylarks' nesting sites.



Beekeeping Bonuses

As well as the honey bee foraging opportunities provided by solar panel underplanting, Dale Gibson sees additional advantages of his solar farm apiary. He has little worry of bee rustling because the farm is protected by a perimeter fence and CCTV monitoring. 'Even an SAS badger would have difficulty in getting in,' he says.

Dale also appreciates the ease of access even in wet springs and damp autumns when honey-laden supers must be transported offsite. The hard-standing roads for the solar farm maintenance vehicles are very convenient for Dale too.

Dale recognises that he needs to be a very responsible beekeeper on such a site and is currently consulting with one of the largest solar farm operators to produce a best practice standard for any beekeeper with an apiary on a solar farm.

Solar Farms' Future

With increasing awareness of the need for sustainable energy, an increase in solar farms might be expected. However,



John Feltwell

Wildflowers can thrive on solar farms

the government's withdrawal of its subsidy programme (the Renewable Obligation scheme) in 2015 is being felt and the development of many solar farms has been curbed. Nonetheless, the industry is optimistic. The Solar Trade Association concedes that growth in the UK solar sector has slowed but says that the withdrawal of the government subsidy coincided with a fall in input costs, innovations in energy storage technology, and new, lower-cost ways of financing installations. It foresees an acceleration in the growth of the UK solar industry soon.

John Feltwell points to one unusual challenge that will start to face these new-style nature reserves in about 20 years' time. Planning permission is usually granted for only 25 years, sometimes 30, at which point the original permission

requires that the infrastructure is removed and that the land should revert to its original use. A change of land use from a wildlife reserve of sorts to a monoculture of wheat or oil seed rape would seem to be a rather retrogressive step. That would indeed be quite a loss, says John Feltwell, and less than 20 years away for some of the early innovators! Perhaps if the all-round benefits of solar farms are realised, such requirements will be revisited and amended. Meanwhile, honey bees and beekeepers can enjoy this new biodiverse habitat. 🍯

Additional Reading

Feltwell, John (2013). Solar farms and biodiversity: www.solarpowerportal.co.uk/blogs/solar_farms_and_biodiversity_2356

Colchester BKA's Solar Farm Apiary

Barbara Sharp of Colchester BKA talks about her club's experience of keeping bees on a large-scale solar farm.

We were invited by the solar farm manager to put beehives on a 26-hectare solar farm on an old airfield near Colchester in Essex. When we first visited I was shocked at the number of panels – 70,000 – and a little concerned about how it might affect the bees. However, tentatively we took the plunge three years ago and it has worked out really well.

The first year was a learning curve for everyone as it was a new experience for us and the farm. By the second year, we had an excellent crop of honey. This year we have eight hives on site and can add more if we wish.

The advantage we most appreciate is that the site is monitored 24 hours a day. The only theoretical disadvantage is that if there is a thunderstorm we must leave the site promptly, but in practice this has not affected us at all.

Sheep control the vegetation under the solar panels. At first, they liked to rub on the sides of the hives, but the solar farm manager funded and erected a secure wooden fence to protect the hives.

Around the farm there is a variety of forage and within it, it has changed. This year the

farm manager has funded and sown wildflowers near the hives to help the bees. He has also installed several bug hotels around the perimeter and is encouraging wildlife with pallets filled with logs, pots and twigs.

We have a very good relationship with the solar farm company and they are keen to provide help where they can. It's a national company and we are encouraging them to adopt the same approach elsewhere. Our initial doubts were unfounded and I think we have educated the many visitors about the benefits of bees on a solar farm.



Patrick Saunders