

On a wing and a prayer



Twenty-five years ago this June, large blue butterflies flew again in England after becoming extinct in 1979. **Professor Jeremy Thomas** (below), whose painstaking experiments led to their successful reintroduction, reflects on the species' return and the sea change it wrought in insect conservation.

Despite its name, the large blue is a diminutive creature. With a wingspan of only 4cm, it's the largest and rarest British blue butterfly. The upper surfaces of its wings are a beautiful blue, while the undersides have a silvery hue. But its most distinctive markings are the black spots and border visible when it opens its wings. Because of its fluttery flight, these merge into an inky blue when it takes to the wing, making it a lovely sight.

The large blue has always been rare in Britain. Restricted to south-west England,

its numbers declined throughout the 20th century, and especially rapidly since the 1950s. By the time I was halfway through my PhD in 1972, the large blue survived in tiny numbers at just two sites. Conservationists – who for years had tried but failed to arrest its decline – held a crisis meeting and asked me to interrupt my PhD and turn my attention to the large blue. In those days butterfly ecologists like me were a rare breed too.

Between May and September for the next five years I lived on Dartmoor with



All photos: David Simcox

Britain's last large blue butterflies. I took a scatter-gun approach, studying every aspect of their life cycle, because there was something about their ecology we didn't understand, and that gap in our knowledge meant we couldn't conserve them. It was like a detective story, slowly eliminating all the possibilities from the enquiry until only the solution remained.

The large blue butterfly has a peculiar life cycle. It lays its eggs on thyme buds, and when the larvae hatch they feed on the flowers for two weeks and then fall to the ground. What follows is the strangest part. Red ants carry the larvae into their nests, where they live for the next ten months feeding on ant grubs, until they pupate and emerge as adults.

Solving the puzzle

We had known since 1914 that the large blue spent part of its life in red ant nests. But after months of laborious work, locating ant nests by leaving trails of cake crumbs across Dartmoor, I discovered that the large blue's larvae only survived in the nests of one ant species – *Myrmica sabuleti* – and that species was declining too. But why?

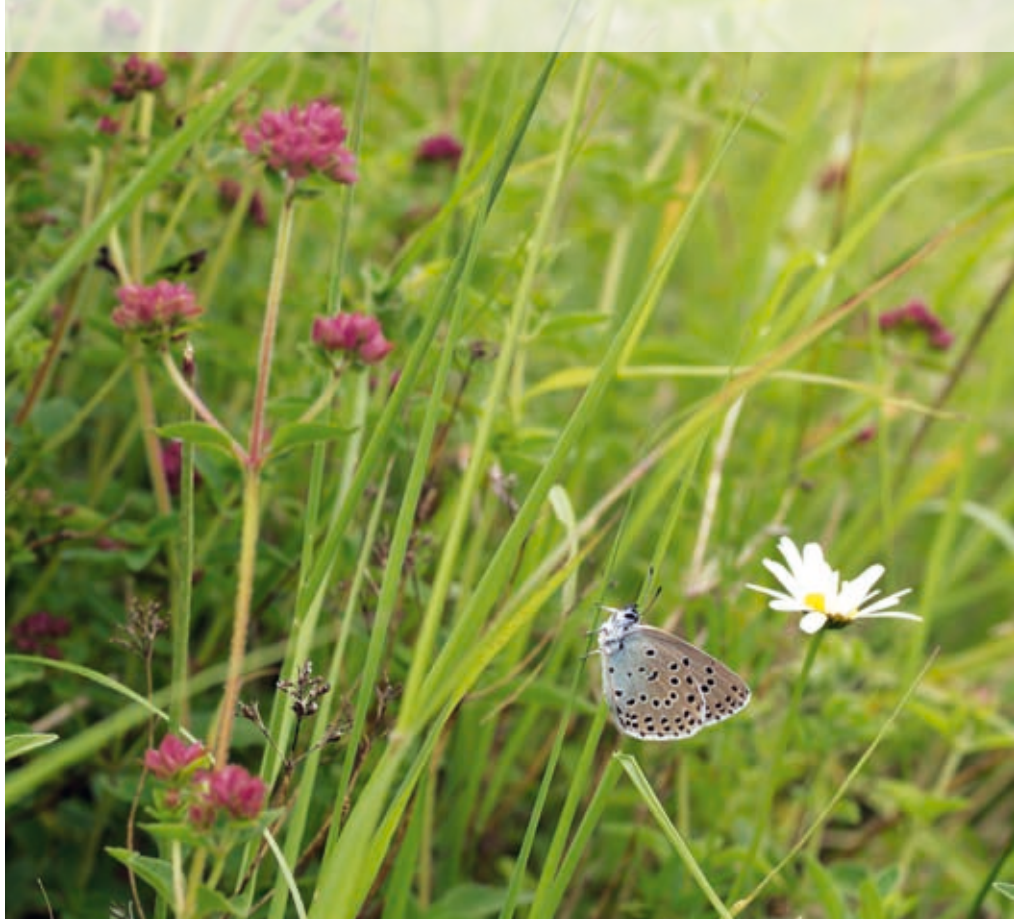
As has since been found with other declining species, changes in farming were responsible. We discovered that alterations in grazing, coupled with myxomatosis in rabbits, left grassland too tall and shady for the heat-loving ants to survive. And with them went the large blue.

All this knowledge came just too late to save the last British large blues. Just when we knew both the cause of its decline and how to reverse it, it was gone. For me it was a huge disappointment; after years of hard work I felt I had failed.

But what we learned, of course, paved the way for its successful reintroduction. As their old home on the edge of Dartmoor was being grazed to encourage the ants, David Simcox and I set out to find a donor population, which was easier said than done. We needed to find butterflies elsewhere in Europe that emerged at the same dates as the thyme buds in south-west England. Yet in other areas with similar climates – such as northern France and the Netherlands – the large blue was also extinct.

Return of the native

Several unsuccessful attempts later, we finally found a population on the Swedish island of Öland and brought back 250 caterpillars which David reared in the lab until their final larval stage. These we released every evening for ten days, making mad dashes from the Centre for



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Ecology & Hydrology's (CEH – at the time called the Institute of Terrestrial Ecology) Furzebrook lab in Dorset to the release site on Dartmoor.

Twenty-five years on, large blues live in around 30 colonies in south-west England. Two of the largest sites support between 4000 and 5000 adults – populations not seen in this country since the 1950s. These are now possibly the largest concentrated populations in the world.

The project has been a huge success. But the successful reintroduction of the large blue butterfly is about much more than a single species. Its greatest legacy is that it shows that conservationists can reverse the decline of a globally-threatened insect species once they understand the factors driving it.

It may seem obvious now, in an era of evidence-based policy making, but 25 years ago this was new, and hugely influential. The project taught us that insect conservation must be based on ecological science, and it has become a paradigm for other efforts to conserve insects in temperate climates.

The other key ingredient in the project's success is the hard work and cooperation of many people in many organisations,

including the Centre for Ecology & Hydrology, Natural England, the National Trust, Somerset Wildlife Trust, Network Rail, the J & F Clarks Trust, Gloucestershire Wildlife Trust and Butterfly Conservation.

Even without the time and land these organisations and individuals donate, this one project to save a single species is costly, and finding that funding is a constant battle. But in creating a flagship for wildlife it represents a net gain to conservation, and through it we have learned how to conserve many other species as well as helping to predict the effects of climate change on vulnerable ecosystems. On a personal level, I get a thrill every time I see the large blue butterfly, and I will never tire of seeing it. ❖

MORE INFORMATION

Professor Jeremy Thomas is a Fellow at CEH. He is currently Professor of Ecology at the University of Oxford, a Professorial Fellow of New College, and holds a Visiting Chair at the University of Reading..

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