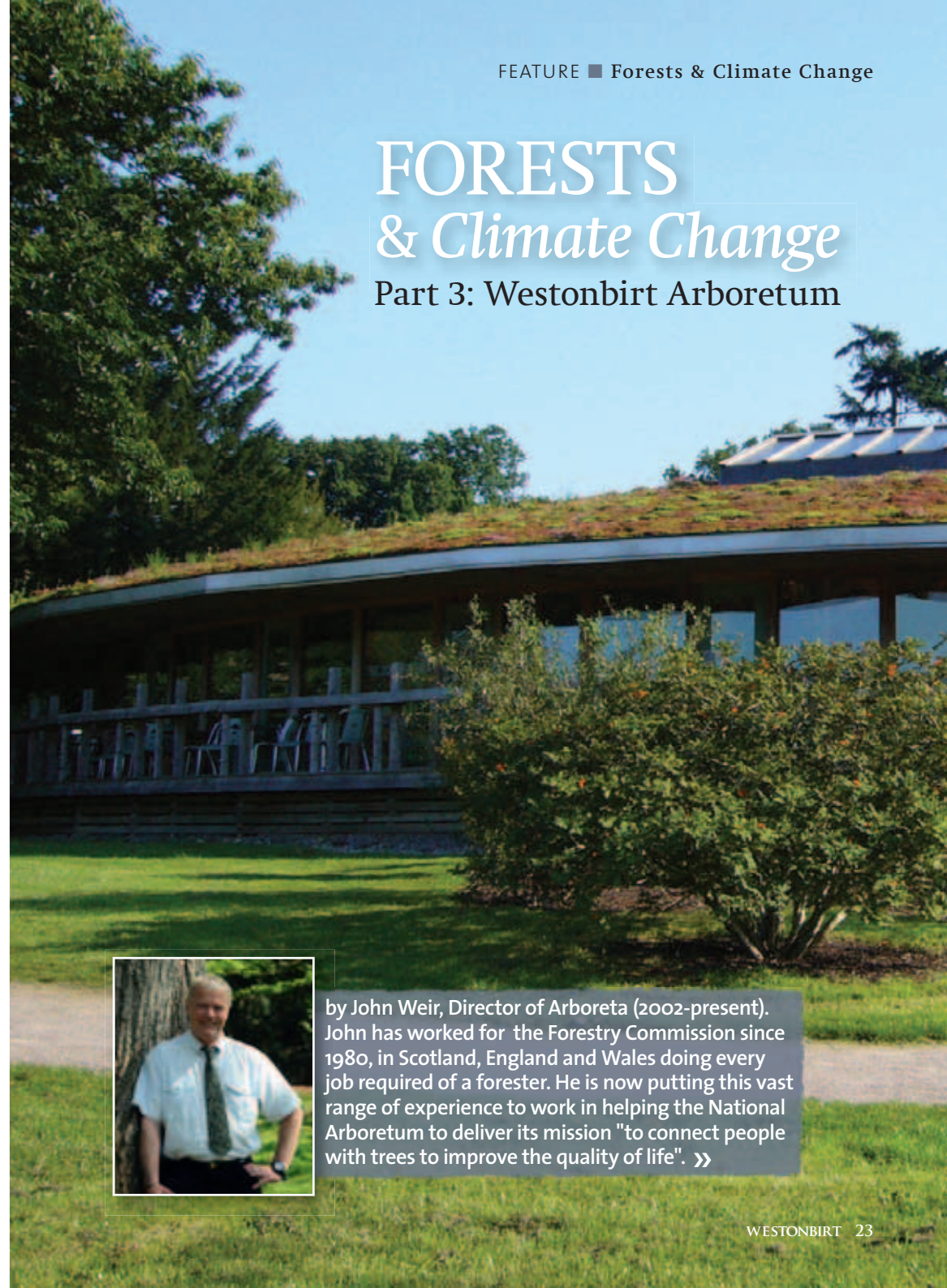


FORESTS & *Climate Change*

Part 3: Westonbirt Arboretum



by John Weir, Director of Arboreta (2002-present). John has worked for the Forestry Commission since 1980, in Scotland, England and Wales doing every job required of a forester. He is now putting this vast range of experience to work in helping the National Arboretum to deliver its mission "to connect people with trees to improve the quality of life". »

“THE RESULTS SUGGEST THAT WE ARE MOVING SOUTH AT 12 METRES (40 FT) PER DAY. THIS IS 2.7 MILES PER YEAR.”



Forestry Commission

Fast-moving carpet of bluebells, and INSET: Map of the natural range of the European Oak *Quercus Petraea*

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» **S**itting here in the pouring rain with my fleece on, it is hard to accept that we are experiencing increasing global temperatures. I have to remind myself that what is outside the window is weather and not climate. The tranquillity of the arboretum and the longevity of our trees can make us feel secure and relaxed, so it would be easy for me to sit back and become complacent.

In the last edition of our magazine, Dr Mark Broadmeadow made the case for us to act with urgency as ‘uncertainty is not an excuse for inactivity’. He described how we could adapt our woodlands using little more than good common sense. I am a practitioner and in my role as steward for Westonbirt I have a responsibility to act on the facts and advice of

our scientists. Mark’s advice is already being put into practice at Westonbirt.

Here I will try to explain why I share his sense of urgency.

FACT: The climate is warming and this is a direct result of mankind’s activities.

A RACE AGAINST TIME?

The speed and intensity of change is uncertain but the current models show a range of projections depending on the amount of greenhouse gases released into the atmosphere. The impact of this change is often interpreted by reference

to areas of the world that have a climate similar to that which we are predicted to have.

The maps in the last edition suggest that by 2050 Westonbirt will have a climate similar to the west coast of France. This sounds quite inviting, so what? A quick look at a map, measure the

distance from here to there with a ruler, do some sums on the calculator, and the results suggest that we are moving south at 12 metres (40 ft) per day. This is 2.7 miles per year.[†] I am told this logic is not flawed. WOW!

How fast can plants move under their own steam? A fast-moving

bluebell about four centimetres a year! After the last ice age, oak sprinted at a maximum of 450 metres (1400 ft) per year – but this was into an otherwise uncolonised landscape!

Fact: The rate of required movement is greater than our trees have ever managed for themselves.

CONSIDER NATURAL RANGE

Plants evolve to live with the climate of their location and can only change their natural range slowly. Tree evolution is particularly slow. However, their natural ranges can be extensive – for example, oak covers the majority of Europe. In looking forward to 2050 it is this wide natural range that gives me more confidence that we can adapt using the measures described in Mark’s article. »

“ WITH OUR CURRENT EMISSIONS TRAJECTORY, BY THE END OF THIS CENTURY WE WILL END UP WITH A CLIMATE CLOSER TO THAT OF THE MEDITERRANEAN ”



Low (top) and High (bottom) emissions scenarios showing how the UK's climate could turn mediterranean by the year 3000.

» **BEYOND 2050**
If we continue with our current emissions trajectory, by the end of this century we will end up with a climate closer to that of the Mediterranean. This is altogether another story – think about how different those hills and

fields are from England's. If this were to happen, our collection would need a very different mix of trees to keep the current ambience. In fact our challenge would be of little importance in light of the worldwide extinctions taking place.

Fact: We must do everything in our power to ensure that mankind knows of the implications of our lifestyle and create an urgency in which people change their behaviour.

WHAT IS WESTONBIRT DOING ABOUT IT?

• **Assessment:**
Dr Richard Jinks (Forest Research) is working with Hugh Angus (Head of Tree Collections) to review how our various

collections will respond to climate change. Some of their initial findings indicate that we have a significant number of trees that are intolerant of summer drought. The good news is that there are adaptive measures that we can, and will,

take to look after these. Richard will share his work with you in a future edition.
• **Biosecurity:**
Pests and diseases probably present the biggest immediate threat to the Westonbirt »



The Great Oak Hall at Westonbirt, built in 2000 from locally sourced timber

» collections. While we have measures in place to protect us from today's threats, we must second-guess those of the future. In partnership with Forest Research, we are preparing a new risk assessment to see how we can improve our biosecurity.

• **Resilience:**

We will make our areas of native woodland more resilient by thinning to the fittest trees and by widening the genetic diversity by introducing trees from more southerly provenances.

• **Renewable resource:**

Our buildings are already good examples of using wood as a substitute for non-renewable products. We will continue to use wood wherever possible

and explain why this is important.*

• **Cohesive action:**

While some plants find new niches, others struggle. The botanical networks are discussing how threatened collections can be moved to more appropriate sites and what actions can mitigate the impacts of climate change. All agree that we must share our knowledge and convince others of the imperative to take action.△

• **Education:**

We have recruited a 'climate change interpretation officer' to develop messages that will stimulate people to do their part to ensure we live in a sustainable way. The Education Team work hard to communicate the importance of trees to a new generation, one that will inherit the results of our actions.

WORKING TOGETHER

In fact there is a lot happening. This brings me back to my opening paragraph. Westonbirt is special because of what it is. It provides a haven from the pressures of life. I have a responsibility to ensure that this ambience is not threatened by the very actions we take to preserve it. This is a difficult balancing act to achieve. I need your help to provide a safe future for Westonbirt, but I will try to ask for your support in a way that does not take away the enjoyment of today.■

† The speed of travel is greater towards the pole. Published work by North American scientists suggest the impact at the boreal forests is almost twice this and there is real concern about how these forest areas will adapt.

* see *Part 1: A Convenient Truth*, Summer 2008

△ PlantNetwork Climate Change conference, see page XX of this magazine.