

# Trees, nativeness and climate change

Scientists involved in tree research, planting and conservation now accept as a fact that climate change is happening and will continue on a scale emphasised in last issue's editorial (in fact there are various indicators which suggest it may occur at twice the rate of the last IPCC high emission scenario). Their main problem up till now is that because there are so many uncertainties, not just about exactly how climate will change, but also because they know very little about how trees will react, that they have seemed paralysed, unable to give advice to people about how to practically respond because the normal scientific paradigm insists on full knowledge before advice can follow. Thankfully, this period is now coming to an end, with considerable consequences, particularly for the "native" vs non "native" debate.

I have always been rather unhappy with the way "nativeness" has been defined in the UK and used by the conservation movement in an almost fascist way at times. Such people seem to have forgotten that their definition of "native" (plants which have arrived here since the last ice age via wind and animals but not humans) is quite artificial. Nature is never, ever, fixed and unchanging. New seeds are always being brought in by birds which can travel thousands of miles. Similarly, violent weather events are an important method of seed dispersal over long distances. And what about humans? We are part of nature after all. So why should we be separated off from other animals and be removed from this process?

And as conservationists complain about non-native trees, they do so eating bread and pasta from wheat, milk from cows, potatoes, onions, courgettes, sweet corn, peppers, tomatoes, French and runner beans, etc etc. All these are widely grown in British agriculture and none is native. A few non "native" plants in forests and gardens are irrelevant compared with the land under agriculture.

In recent years the conservation movement has tried to whip up hysteria about "*invasive alien plants*" with some success in the UK and rather more in North America. I find this entirely unjustifiable for the following reasons:

To begin with, the language that 'invasion hysterics' (IH's) use is often laden with emotion which triggers reactions of fear. "Invasion", "swamping" and "over-running" imply a threat and imbue plants with evil malign intentions. Plants do not have evil intentions. Many plants are opportunistic, producing numerous seeds or runners, in the hope that there will have been a disturbance where they can exploit the new conditions. Usually, such plants only become a nuisance to humans where there has been human mismanagement or human-caused degradation of land.

There is also some doubt about ecological theories that natural biota are coevolved, tightly-integrated, perfectly balanced systems. There is in fact plenty of evidence from modern ecology and paleobiology indicating that current species assemblages are recent, non-coevolved aggregations, that species disperse independently, and species interactions form and dissolve readily; and that species assemblages are both resilient and accustomed to integrating new members. I wouldn't go as far as David Theodoropoulos in completely discounting the co-evolution theory, but it is certainly not the whole story.

IH's also frequently state that invasive plants reduce habitat diversity and cause extinction of native plants. Again, the evidence is not there to support such statements. Take as an example Japanese knotweed, the number one "plant enemy" in the UK. This opportunistic plant is a 'nuisance' over a total of a couple of hundred acres of land (a quite insignificant amount compared with the total), mostly highway verges and edges of pasture fields. Yet it is a valuable plant for wildlife, in particular overwintering insects, providing better habitat for them than short mown or grazed grass. In contrast, there are many thousands of acres being colonised by the 'native' bracken which is another opportunist.

Take as another example sycamore. Its “native” distribution is considered to be mainland Europe as near to the UK as Paris. However, with the climate in France having warmed already in the last century by about 1°C, its range will now be at the English Channel. A tree on the coast of France could easily spread its seed to England in a northerly storm wind. So when do we accept that it is a true native tree? With climate change happening apace, its natural range will soon be much of Britain. And what of its much despised lack of wildlife value? It is true that it is associated with far fewer insects than oak trees, but then so do all the newer “native” plants like hornbeam and lime. Yew is pretty poor in this respect too. As sycamore is here for longer, more species will associate with it.

As for the claim that invasive plants are a great threat to biodiversity, there is simply no evidence to back this up. “Invasive” plants have not caused the extinction of a single species. In fact the evidence shows that human dispersal has increased biological diversity, with new plant assemblages forming.

The fact of climate change happening now and in the future is forcing conservationists to address these issues (after burying their heads in the sand for years).

A conference was held on 15<sup>th</sup> June 2005 in Guildford, Surrey, called ‘Trees in a Changing Climate’, where representatives from most tree planting, research and forestry organisations in the UK met and discussed what effects the changing climate will have on trees, and what the implications are for choosing what trees to plant now. There was a clear consensus with most people agreeing that:

- The concept of strict nativeness as applied to the UK (and elsewhere) is no longer viable. We have to accept that, especially with changing climate, we cannot hold on to any fixed list of plants and call them “native”.
- Biological or nature reserves, which in the UK are small islands usually surrounded by farmland, will not be viable in the future for more than a few decades. Many of the species in them to be conserved will have to be transplanted to more northerly locations to stay in their natural range.
- Planting “native” trees grown from locally collected seed is no longer the best strategy for the long term health of the trees. Instead, a range of seed sources should be chosen, including local sources and other sources from more southerly locations (I have been giving this advice for several years.) Even conservative conservation organisations are coming to this conclusion – expect the National Trust, English Nature, the Woodland Trust etc to change their policies in the next couple of years. The National Trust will decide soon to abandon its policy of replacing like with like when trees fail through disease or storm damage at historic properties.
- Non “native” trees should also be planted, for example sycamore (*Acer pseudoplatanus*), downy oak (*Quercus pubescens*) and maritime pine (*Pinus maritima*) for timber production in addition to oaks etc. These are examples of trees whose natural range will extend north to include the UK.

In addition, I would argue strongly that:

- Ecological changes which occur as a result of naturalising non-“native” plants may be outweighed by the benefits of useful plants in terms of increasing local self-reliance and the efficiency of agro-ecosystems (eg. by using nitrogen fixing trees instead of fertilisers made from oil).
- The recent popularity of conserving local varieties of fruit trees, e.g. apples, in the context of climate change leads inexorably to the question of where they will be best adapted to. The answer for the future is – not the region where they were developed, but instead in regions further north.

- In terms of productive fruit and nut trees, very few are “native” to the UK in the strict definition. Certainly not apples, pears or plums. In the future, gardeners and horticulturalists should choose the most suitable species from the wide range available from the worldwide palette. Similarly for other plants, the UK has such a limited flora that it is essential to use non-“natives” for efficient and diverse food production.
- Although species from different parts of the world should generally be welcomed, good sense should not be abandoned. Opportunistic species which could cause a nuisance to your neighbours (because of their land use) or nearby wild land (of which we have none in the UK) may be best avoided.

Reference: David Theodoropoulos: Invasion of the aliens: Science or pseudoscience?  
See <http://dttheo.org/AABGAPaper.htm>

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