

## SHORTER COMMUNICATIONS

### WHICH CLONES OF NATIVE BLACK POPLAR *POPULUS NIGRA* SUBSP. *BETULIFOLIA* DO WE HAVE IN SOMERSET?

In the absence of a county Species Action Plan (SAP) for the native Black Poplar (*Populus nigra* subsp. *betulifolia*), the Somerset Native Poplars Group (SNAP) uses instead the national SAP produced by the Black Poplar Working Group, to which we have added some appendices containing assessments, targets and ways forward for the taxon here. Copies of this extended plan have been given to relevant bodies such as Somerset Wildlife Trust, Natural England and the Local Public Authorities. SNAP has been employing this when surveying to find the county's trees (about 900, all so far male), and when supplying stock for planting from our two local nurseries.

A main feature of the conservation plan for this tree is the stipulation that when planting out new trees in the wild we should endeavour to use 'local stock', ie trees grown from cuttings taken from old trees growing close to where the new trees are to be planted. But what is 'local'? There seem to be no female trees in the county, suggesting that propagation (and natural regeneration in the wild) in the past must have almost always involved male trees. The offspring of each male tree will, in principle, be genetically identical and so collectively form a clone. (There is a tendency for modern science-fiction films to use 'clone' wrongly to refer to each genetically identical individual rather than the collective of them!) But we have had no idea how many clones there are in Somerset, or how widespread each is. The result is that we have had no real guide as to how far away from each planting site we should look for parent trees from which to obtain cuttings, whether directly or from 'stools' previously established in our nurseries. Also, we have

had no idea how many different trees we should be using – and from how wide an area – as sources of new stock in those nurseries. Without this information we have adopted a conservative rule of only using cuttings coming, either directly or via the nursery, from a parent growing within about 5km of the planting site. This precautionary approach might seem sensible enough, but whether it is actually *necessary* in order to conserve the county's 'clonal diversity' is questionable.

Suddenly, two years ago, matters played into our hands. We were approached by Sam Samuels of the Forestry Commission's (FC) research station at Roslin, just outside Edinburgh. We were asked whether we would like to have free DNA assessments done on our nursery trees, to establish what clone each comes from. Reacting smartly, so as to take advantage of the offer, we sent off green shoots from each of our nine nursery trees. With one exception, our nine trees were purposely chosen at random from among the 300 or so trees known in the western half of Somerset (actually Taunton Deane, Sedgemoor, and West Somerset Districts), excluding Exmoor. The exception was a tree belonging to the Environment Agency (EA), which we added to our sample as an afterthought. This body is the 'lead agency' in the national SAP, and so few would doubt it a good idea to have the EA on board as a partner in this venture with the FC. But even this tree was chosen at random from among such examples in the hands of EA, so our sample (selected using the 'pseudo random number' generator on a hand-calculator) was very nearly a true random one overall. This meant that it would be unlikely to contain an unrepresentative number of shoots from any one clone.

At the same time as we were sending in samples (August 2009), Wildlife Trusts and other voluntary-sector bodies elsewhere in the UK were sending in similar numbers of shoots for the same analysis, the FC's aim being to get some idea of how many clones of native Black Poplar there are in Britain, along with an assessment of their distribution and relative abundance.

For each sample, the FC analysis involved dissolving a small piece of leaf tissue in a standard solvent and then identifying the DNA present in the solution by using a technique called *gel electrophoresis*. This technique pulls the DNA of the chromosomes out into its component parts – all in a line – and no two clones have exactly the same parts in the same place on the line. By comparing our samples against the DNA ‘fingerprints’ of known clones, the FC has been able to determine the clones to which our nursery trees belong (Table 1). Four points are immediately clear from this analysis:

- Seven of the nine trees in our nurseries are from the same clone, National Clone No 23.
- This clone is elsewhere to be seen in the far east of England, but not in the west.
- Just one of our trees is of the famous ‘Manchester’ clone. Manchester has perhaps 50% of the few thousand native Black Poplars in the UK, all thought to have been propagated 150 years ago from an old native tree in one of the deep old ‘cloughs’ (ravines) that run through that city.
- Only one tree, at Corfe, is of a clone unknown elsewhere.

To say that these results are surprising is putting it mildly. We had expected some trees to have originated from outside the county, as we know that estate owners in the last two centuries did not just

propagate from their own trees, but now we find that possibly as many as 80–90% of them are likely to have come from hundreds of miles away. In principle, of course, it is conceivable that trees in Essex and Suffolk (eg the ones in Constable’s painting of ‘Dedham Lock’) just might be from stock originating in Somerset, but the general opinion amongst members of the Black Poplar Working Group is that our trees are probably derived from an ‘eastern’ clone rather than vice versa.

The presence of a small proportion of trees from Manchester would perhaps be less surprising. The tree from which our nursery specimen is derived is on a Taunton industrial estate, and Manchester is a very industrial place whose businesses quite rapidly extended to other parts of the country. The tree in question is of a size that indicates that it must have appeared there prior to the development of the present industrial estate in the 1970s; but, interestingly, the area in which it grows had previously harboured a number of huts used for some years, many decades earlier, as stores for the wares of a Manchester cotton baron. Is it possible, then, that this northern businessman brought with him a shoot of a favourite or familiar tree? This might sound fanciful, but native Black Poplars used to be very popular amongst Mancunians: parks authorities and industrial firms planted literally hundreds of them in the 19th and early 20th centuries, giving the impression that city people up there reckoned that ‘tree’ always meant ‘Black Poplar Tree’. Hardly any other species was planted around the city’s open spaces, a practice that continued for more than a century. The old Black Poplars are now dying out there, being replaced increasingly by modern ‘euro-american’ hybrid poplars, of which (as yet) we have far fewer down here.

TABLE 1: ORIGINS AND CLONES OF NATIVE BLACK POPLARS USED BY SOMERSET NATIVE POPLARS GROUP FOR PROPAGATION

Nursery sample no.	Location of ‘parent’ tree	National Clone No.	Main area of occurrence (outside Somerset)
MA1	Poundisford Park	23	Suffolk and Essex
MA2	Bishops Hull	23	Suffolk and Essex
MA3	Taunton, Chestnut Drive	23	Suffolk and Essex
MA4	Taunton, Bindon Road Industrial Estate	28	Manchester
MA5	Corfe	Unique ?	Unknown elsewhere
MA6	Trull, village green	23	Suffolk and Essex
MA7	Burrowbridge	23	Suffolk and Essex
MA8	Cannington	23	Suffolk and Essex
MA9	Washford, Dragon Tree	23	Suffolk and Essex

The clone-type of the Corfe sample is an enigma. We had expected this to be of the common National Clone No 23. To find that this one is unique to our area is very much the reverse of our expectation. Actually SNAP never meant to send off a shoot deriving from it to the laboratory at all! We had intended to send a shoot deriving from its immediate neighbour in the nursery, which was from a tree planted to commemorate the Millennium, but the secateurs must somehow have slipped sideways in the nursery. The irony is that we know the millennium neighbour, intended for sampling, came ultimately from Essex or Suffolk (donated by Writtle Agricultural College, Essex) and was most likely therefore to be of National Clone No 23.

A possible explanation for our ‘Corfe clone’ is suggested by the work of Edgar Milne-Redhead, who was famous for instituting through the *Daily Telegraph* an amateur survey of native Black poplars in the UK once it had become clear that these had been poorly identified in the *Atlas of the British Flora* (1962). Milne-Redhead had personally visited the Black Poplars of Poundisford Park, in the very next parish to Corfe, and commented that a ‘very ancient’ specimen in the middle of the Park was highly likely to have been the tree from which the other 20 or so trees there (and, by extension, in surrounding parishes) had originated. Now one of SNAP’s other nursery stools *is* from a tree in Poundisford Park – a medium-sized tree, now known to belong to National Clone 23, rather than Milne-Redhead’s ‘very ancient’ specimen that was dead and gone by the time we were taking cuttings to establish nurseries. Is it possible, however, that the Corfe tree is directly descended from Milne-Redhead’s hoary old beast, and that trees of this line are indeed peculiar to this area? The evidence suggests that there are at least two clones in and around the Corfe/Poundisford Park area. Some of the surviving trees in the Park and neighbouring areas are amongst the oldest and largest in Taunton Deane (Fig. 1), and it is tempting to speculate that a proportion of these grand old trees could belong to the newly recognised ‘Corfe clone’, representatives of a blood-line predating the introduction of National Clone No 23 and, just possibly, true Somerset natives.

The results of the DNA analysis have thrown our local Species Action Plan into confusion. If most of the trees here were originally brought in from hundreds of miles away, do we need to bother at all with a policy of propagating only from trees that



*Fig. 1 A native Black Poplar in Poundisford Park (photo: Simon Leach)*

were growing within about 5km of any new planting site? The decision we have reached – but it is just a holding position until we have sampled views more widely – is that we will be especially careful to use the apparently local stock around Corfe and Poundisford, but not be purist elsewhere. The caveat, though, is that only nine trees have so far been analysed, and we cannot exclude the possibility that there may be other (as yet unsampled) clones out there as well.

In principle, of course, we would like to subject all, or nearly all, of Somerset’s 900 or so trees to DNA analysis – but this might bankrupt either the FC or the nation, or both, and so the request to do so could prove a little unpopular. Even so, further sampling of trees in the Corfe/Poundisford area would be useful, to ascertain which trees there belong to which clones. In the meantime, I would be pleased to hear from anyone who would like to get involved in SNAP or who wishes to comment on any of the views expressed in this article.

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