

Nomenclature Problems in Oak Propagation

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The meeting in Kassel, Germany in September 1998 served to highlight a problem that many oak enthusiasts have been aware of for many years; the problem of hybridisation when oaks are raised from garden seed.

The tour of the gardens in Kassel showed that many trees considered belonging to a particular species were, in fact, hybrids. Of course, this is not a problem that is restricted to Kassel. It can be found in many oak collections. For gardens having the necessary space to maintain an extensive collection I see this as only a minor problem. Hybrids can be just as attractive and, once their parentage is known, as interesting as their parents, and most are less common in cultivation. For example, in Wilhelmshöhe we came across a tree said to be *Q. marilandica* (L.) Münchh., which was, in fact, *Q. x bushii* Sarg., the hybrid of that species with *Q. velutina* Lam. which occurs naturally in the eastern United States. At Karlsaue we encountered many hybrids. These included *Q. bicolor* Willd. x *Q. macrocarpa* Michx., a likely hybrid where the parents are grown together. Both *Q. frainetto* Ten. and *Q. macranthera* Fisch. & C.A. Mey. ex Hohen. appear to have crossed with *Q. petraea* (Matt.) Liebl which was probably the common native oak where the seed was collected. *Q. canariensis* Willd. had crossed with *Q. robur* L.

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Many fine hybrid oaks are grown in gardens. Some of them very popular, such as *Q. x hispanica* Lam., *Q. x turneri* Willd. and others. And, if gardeners had not experimented with raising plants from garden seed, these plants would not be with us today. Other deserving hybrids have never quite made it. How many of us have seen and coveted the fine *Q. x hickelii* A. Camus at Les Barres? It is a perfect oak for a small garden, only waiting to be propagated.

With so many incorrectly labelled plants in gardens, a nurseryman attempting to offer a good selection of oaks is faced with a dilemma. While grafting is assumed to be a reliable method of propagation, it is not only subject to potential incompatibility problems, it also relies on obtaining correctly identified material.

Like a garden, a nursery propagating oaks by grafting is faced with a minor problem, and the name of the offered plants can be changed once their true identity is established. For example, in Kassel we were shown material offered for sale as *Q. lyrata* Walter which was almost certainly a hybrid with *Q. bicolor*.

It is a simple matter to change the label, but a hybrid such as this is going to have less appeal than its parent species, even if it would make just as fine a tree. At least this cross has a hybrid epithet

so can be called *Q. x humidicola* E.J. Palmer. I suspect that the hybrid between *Q. macrocarpa* and *Q. robur* will be more in demand now that it has been named *Q. x macdanielii* W.J. Hess.

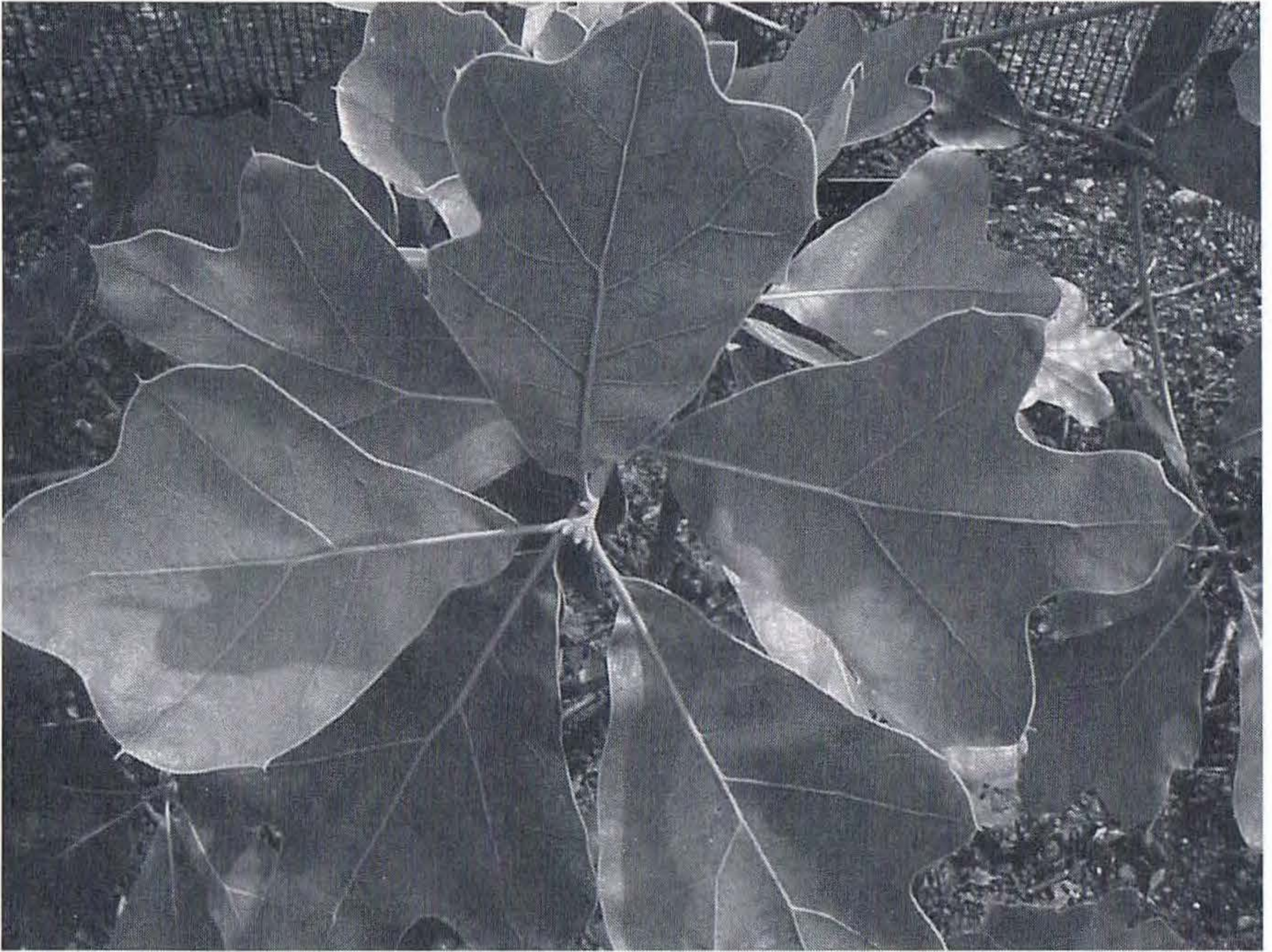
Propagation by seed is even more problematic because of the high probability that acorns from a mixed collection will give rise to hybrids. This is not restricted to plants that have been with us for a long time. The relatively recently introduced *Q. rhysophylla* Weath., cultivated for only a little over 20 years, now commonly produces hybrids with other red oaks. Since it is easier to raise it from the seed that is now being produced in gardens than to collect material from the wild in Mexico, many plants are incorrectly identified. Growing plants from garden seed is certainly commendable in one way; it avoids the often illegal collecting of seed of this rare species. In this and similar cases, our intention should certainly be a sustainable production without further depleting native populations.

Unfortunately, *Q. rhysophylla* has so far proved to be very difficult to propagate vegetatively. However, there is no reason why further research could not find a suitable method.

I would be very wary of any oaks grown from seed collected in cultivation,

International Oaks

photo by Allen Coombes



Quercus xbrittonii, found at Rosemoor Garden in Devon, England.

and suspect them to be hybrids until proven otherwise. Of course, only by experimenting can we discover which oaks will hybridise with which other species.

The problem with trees in cultivation is that exotic species are usually single plants surrounded by dominant native oaks, and the chance of them pollinating themselves is small. Where larger numbers of trees are grown, the offspring are more likely to be true to the parent. Plants that are isolated, either geographically or taxonomically are likely to come true from any seed that is produced. *Q. cerris* L., for example, comes true from seed in Europe because it will not cross with the common native species, *Q.*

robur and *Q. petraea*. However, when its close relatives, such as *Q. castaneifolia* C.A. Mey., *Q. libani* G. Olivier, and *Q. acutissima* Carruth. are grown in areas where *Q. cerris* is common, hybrids are likely to result.

Propagation of hybrid oaks presents a problem. Those that produce viable seed, which seems to be most of them, can give mixed results. A row of seedlings we were shown from the splendid tree of *Q. xstreimii* Heuff. 'Pungens' at Karlsaue had produced several of apparently the same parentage as the par-

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ent tree (*Q. petraea* × *Q. pubescens* Willd.), but one plant was obviously the result of pollination by *Q. robur* giving an oak with 3 parents. Even if a hybrid is pollinated by one of its parents, the resulting plants will tend to be close to the pollinating parent.

A particularly good way to propagate a hybrid is to raise it anew each time.

Thus, at the Sir Harold Hillier Gardens and Arboretum, we raised seedlings of *Q. macrocarpa* which fruited in 1995, a good year here for many species. All the offspring appear to be hybrids with *Q. robur* and are no more attractive now that this hybrid has been named. The same can be accomplished in North America by collecting seed of *Q. robur* growing amongst *Q. macrocarpa*. In fact seed of *Q. robur* from North America could be of great interest to collectors in Europe, as long as we know the likely pollinator. This, however, is of little use to the nurseryman. If he wants to grow *Q. xbrittonii* W.T.Davis for example, does he ask for seed of it, or one of its parents? Seed from the hybrid itself, is likely to produce a backcross to one of the parents or hybrids with a third species. As with species, grafted plants can suffer from incompatibility, or, as is the case with several currently available, be propagated from mis-identified plants.

I recently obtained a plant said to be *Q. xbrittonii* only to find that it showed no influence of either of the supposed parents. This hybrid, between two of North America's most distinct species, *Q. ilicifolia* Wangenh. and *Q. marilandica*, should be easy to recognise and I did come across it recently when I was shown some seedlings said to be of *Q. marilandica*. Some of these were obviously hybrids with *Q. velutina* (*Q. xbushii*) while others were hybrids with *Q. ilicifolia* (*Q. xbrittonii*), and, being offered a plant, I was able to pick out the perfect intermediate. The vagaries of cross-pollination are, however, inadequate for the commercial nurseryman, who needs a reliable source of material. But one who is enterprising and knowledgeable enough could easily raise and select such hybrids.

Nomenclatural changes often pose a problem to oak growers. It is important to remember that the application of any plant name is defined by the type specimen, and when we consider changing the name of a garden plant for nomenclatural reasons, we should always take this into account. At Karlsaue an example illustrated this very well when we were shown a tree under the name *Q. xambigua* F. Michx. At one time this name was considered to apply to hybrids

between *Q. coccinea* Münchh. and *Q. rubra* L. I imagine this was the considered parentage of the tree and so, when that name was current, it was given to the tree believed to be of that parentage.

Looking in the recent checklist (Govaerts & Frodin, 1998), however, we see that *Q. xambigua* is regarded as a synonym of *Q. rubra* and it would be understandable if the name of the tree was changed to *Q. rubra*. However, the tree could still be a hybrid between *Q. coccinea* and *Q. rubra*. The application of the name has changed, but the identity of the plant has not.

Some believe that hybrids should be named solely with a statement of their parentage and not with a hybrid epithet. However, when a hybrid has several cultivars, it is convenient to group them, as is done with the forms of *Q. xhispanica*. Personally, I prefer to use a hybrid epithet if one is available, but would strongly recommend keeping a record of the original suspected parentage.

The naming of a cultivar has great advantages as it isolates one form that is propagated. However given the problems associated with grafting cultivars — time, expense and potential incompatibility — it is tempting for many to raise them from seed. While some come more or less true, others will not; even without the possibility of hybridisation with other species. However, there is no intention that nomenclature restricts in any way what is grown, only what the resulting plants are called.

Any cultivars raised from seed, how-

ever, will show some degree of variation. For example, the plant named *Q. robur* 'Cristata' will produce seedlings differing in habit and size of leaf and acorn, out of which it is possible to select particularly garden-worthy forms for vegetative propagation. For such variable entities we should consider calling them not a cultivar but a Group. Thus any *Q. robur* form with cristate foliage can be referred to *Q. robur* Cristata Group. Distinct forms (such as 'Facrist', an upright selection) can be named as cultivars.

Changing to Group status, however, should not be done lightly. Careful consideration must be given to the intention of the original author of the name. We cannot simply change a cultivar to a Group if it has been raised from seed as that would obviously detract from the intention of anyone who names what may have been originally a very distinct form.

The Kassel meeting not only highlighted the problems that hybrid oaks cause, but showed the difficulty in identifying them, and there was often considerable discussion over each tree. At the moment we are lucky in that many of the old oak collections that have distributed their seed still exist and it is often possible to go back to the parent plant and its neighbours to discover the true identity of its offspring.

I am certainly not dissuading collectors from raising oaks from garden seed.

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In fact, I positively encourage it. Not only can it produce interesting results, it shows the relationships between different species and, as long as adequate records are kept, could help to determine the identity of some of the hybrid oaks in cultivation. There still exist oaks in cultivation of doubtful parentage and duplicating the hybrid could give informative results. I would certainly be interested in receiving seed of *Q. rugosa* Née where it is growing (preferably as a single plant) with *Q. robur*. Could this produce *Q. warburgii* A. Camus? There are surely collections in South Africa or Australia, maybe elsewhere, where these species grow and fruit together. Perhaps somebody has already raised such a plant.

An example of a naming problem that has arisen recently is the identity of a plant distributed from European nurseries as *Quercus* x *fernaldii* Trel. (*Q. ilicifolia* x *Q. rubra*). The plants I first saw under this name had curiously distorted foliage with rather deeply cut leaves and lobes ending in long, curved bristle tips. They were often puckered and hard with a distinct reticulate vena-

tion beneath, the abnormalities probably caused by a virus. An occasional shoot produced appeared to be typical *Quercus rubra* and I originally considered naming this plant as a cultivar of that species. However, our plants now show none of the distorted foliage, only that resembling *Q. rubra*. There are two possibilities. Firstly the plant currently grown is the same as the original thought to be this hybrid, and secondly, a graft failed at some stage and the understock has been propagated. Whichever of these is true, this plant should not be considered to belong to *Q. x fernaldii*.

And as its characteristics are not stable, it should not be regarded as a cultivar. As for the true *Q. x fernaldii*, I have not yet seen it, but would be interested to hear from anyone who has a fruiting plant *Q. ilicifolia* growing amongst *Q. rubra*.

Reference

Govaerts, R. & Frodin, D.G. 1998. World Checklist and Bibliography of Fagales. The Royal Botanic Gardens, Kew.