The Old Schoolhouse

PATRICK BOWE writes about the collection of monospecific plant genera that he grows in his garden at Glenmalure in County Wicklow.

A curiosity, 30 years ago, as to why certain plants in Hillier's *Manual of Trees and Shrubs* were described as of a 'monotypic genus' led to a long-term plan to assemble as many as possible of such individuals, now known as monospecific rather than monotypic, in the temperate climate garden of the Old Schoolhouse in Glenmalure, Co Wicklow, Ireland. The first planting was of a *Cryptomeria japonica* but the subsequent collection has gathered momentum only in the last ten years. It is not complete or systematic but rather is of what is hardy in its location, the floor of a mountain glen, well sheltered by a belt of ×*Cuprocyparis leylandii*, with an elevation of about 150 metres above sea level and distant inland about 22 kilometres from the Irish Sea.

The collection is limited to trees and shrubs that are relatively self-maintaining as the house and garden are not occupied throughout the year. It now numbers about 80 genera. On account of the garden's small size of just under 1 hectare, it was not possible to arrange the collection in the way of a large conventional arboretum, the spacing between the plants being sufficient to accommodate large individual specimens in isolation so that they might grow to full maturity unhindered by the proximity of near, or adjoining, specimens. Rather, the focus of the collection was to be on the plants' small taxonomical detail, the arrangement of its leaves, buds and branchlets, opposite or alternate or spiral, such as to give them the status of belonging to monospecific genera. With conifers, it might be based on such details as the arrangement of the seed cone scales. This approach would be facilitated by the closeness of the planting envisaged. Visually, a garden would result that would be composed of hopefully picturesque groups of plants rather than individual specimens. The arrangement is one of long grass traversed by mainly straight, mown paths. The closeness of the planting will, no doubt, require the collection's thinning as it matures but it is hoped that this will allow the retention of the more significant trees and shrubs. Lastly, in following the advice of William Robinson on integrating a garden visually with its surroundings, an occasional native tree such as a birch and Scots pine have been retained as well as an occasional planting of my predecessors such as a tulip tree to give the garden the appearance of settled age, although recent plantings having grown, these will gradually be removed.

An early awareness arose that some genera are assigned reliably and widely as monospecific. By contrast, the assignment of others is unstable in that their status is the subject of botanists' disagreements. The latter situation is stunningly evident, for example, on reading the entry for *Schima wallichii*

Acradenia frankliniae growing in the arboretum at The Old Schoolhouse in Glenmalure, Co Wicklow, Ireland.

in the reference work IDS Trees and Shrubs *Online* that is supported by the International Dendrology Society. Its genus is described as comprising 'anywhere between one and thirty species of evergreen trees!' Similarly, Hillier's *Manual of Trees and Shrubs* notes *Fabiana imbricata* as monospecific yet IDS Trees and Shrubs *Online* proposes some 25 species in the genus. This is not

only the result of botanists' disagreements but also, with a notable increase in plant hunting expeditions, new species are discovered that may render a formerly monotypic species no longer so. Further, a monotypic species may have been due to the extinction of other species in the genus, now known to us only by means of fossils. Lastly, all of the garden's genera in this account can be taken to be monospecific unless otherwise stated.

A close relationship between a monospecific genus and other closely related botanical species or, indeed, between two monospecific genera is often indicated by the prefix *pseudo-* or *meta-* or by the suffix *-oides*. This is illustrated by the planting in the garden of a young *Pseudolarix amabilis* near an old specimen of *Larix decidua* to allow a detailed examination not only of the latter's resemblance to the former in branching and foliage, though the latter's leaves are stouter and larger, but also of the distinctiveness of its clustered male catkins (solitary in *Larix*) and of the large woody scales of its cone, that falls to pieces when ripe (remaining intact in *Larix)*. A plant in the garden that was received with the same prefix, *-pseudo*, *Pseudochaenomeles japonica*, is a name now considered as a synonym of the common *Chaenomeles japonica*, illustrating the instability of the status of some monospecific genera. That the suffix -oides in *Taiwania cryptomerioides* acknowledges the similarity of its juvenile growth form to that of *Cryptomeria japonica* can be appreciated in another of the garden's plantings. The monospecific *Metasequoia glyptostroboides* boasts a prefix and a suffix. The prefix denotes a resemblance to the nearby evergreen *Sequoia sempervirens* from which it differs in the opposite arrangement of the leaves, buds and branchlets and in the intersecting arrangement of the seed cone scales. The suffix indicates the range of similar details that distinguish it from a deciduous *Glyptostrobus lineatus* in the vicinity. Despite their wide range of forms, the small evergreen tree, *Fatsia japonica*, (referred to in IDS Trees and Shrubs *Online* as 'probably' monospecific), the tall, monospecific deciduous tree, *Kalopanax pictus*, and the monospecific, aralia-like *Trochodendron aralioides* can be seen in the garden to be similar in some of their botanical details such as the arrangement of the leaves clustered at the ends of their stems or branches, their flowers grouped in terminal panicles or racemes and in their following globular, or near globular, berries.

Some geographical regions such as Chile and western China are more fully represented in the collection than others. The Chile forest, for example, boasts four outstanding monospecific conifers. Because of the fact that they sometimes occur together in the wild and of the similarity in their foliage, *Pilgerodendron uviferum* can be confused with *Fitzroya cupressoides*. As a result of their proximate planting in the garden, their details can be readily distinguished, the former having leaves that are four-ranked and tapered to the apex, while the latter has leaves in threes and which are broadest above the middle. Associated also with stands of *Fitzroya* in the wild is another conifer, *Saxegothaea conspicua*. Although related to the *Podocarpus* family, its leaves give it the aspect of a small-leaved

Saxegothaea conspicua is a slow growing tree indigenous to the temperate regions of South America.

yew, evident in its popular name, Prince Albert's-yew. That this is a superficial resemblance can be confirmed by comparing it with the longer leaves and whiter stomatic bands of the *Pseudotaxus chienii* in another part of the garden. The Chilean conifer collection is completed by the elegant *Austrocedrus chilensis*. Its flattened foliage sprays, fern-like in their ultimate divisions, can be contrasted in the garden with the coarser branchlets of the Japanese *Thujopsis*

dolobrata, though the latter is nonetheless celebrated for the unparalleled intricacy of the white stomata on the leaf undersides. A collection of smaller evergreen, broadleaved trees and shrubs, with a similar concentration in the same South American region, is also grown. That *Berberidopsis corallina*, *Mitraria coccinea*, *Pitavia punctata* and *Laureliopsis philippiana* are all characterised distinctively by their dark green, leathery, glabrous leaves, some aromatic, is evident here. The similarly characterised *Blepharocalyx cruckshanksii*, a slightly marginal species for inclusion here as it is, of the three species, the only one known to be in cultivation, is also grown.

The geographical region of East Asia is a second focus of the collection. Most remarkable are plants such as the allied *Trochodendron aralioides* and *Tetracentron sinense* which, although unalike in foliage and inflorescence are not only monospecific but also mono-generic, in that they represent a lone genus in their plant family. *Ginkgo biloba*, also growing in the garden, is now mono-generic in that other genera of the family have become extinct through long-term climate change and are known now only through fossil remains. The close affinity, the degree of which is now contested, between *Abeliophyllum distichum* with its abelia-like leaves and a large *Kolkwitzia amabilis* nearby can be verified, as can the affinities of three of the many Chinese monospecific members of the witch hazel family. Characterised as having flowers with no petals, or in some instances vestigial petals only, are the petal-less *Sinowilsonia henryi*, *Disanthus cercidifolius*, its foliage, as its name suggests, Judas tree-like in form but its flowers with narrow, apparently shrunken petals and *Loropetalum chinense* with many but slender petals.

Many monospecific genera being, as one might presume, restricted in the wild to small areas, it is unexpected to find in the garden East Asian examples with a wide native range. *Idesia polycarpa* is native as far as western China and as far south as Taiwan, yet it was first introduced to cultivation from Japan. However, its fleshy-fruited ally, *Poliothyrsis sinensis*, is restricted to central China. Also with a wide distribution, native to northern China and Korea but not to Japan, is *Poncirus trifoliata*. It is allied sufficiently closely to *Citrus* that bi-generic hybrids have been raised, but differs from it in its crooked

branchlets, its prominent spines and its free stamens. Also distributed in China and Korea is *Hemiptelea davidii*, with formidable thorns, though not allied with *Ptelea* as its genus name and winged seed would misleadingly suggest, but rather allied in its many-toothed leaves with members of the Ulmaceae family such as *Zelkova*. More expected of the monospecific genera with their usually restricted occurrence in the wild is the umbrella-pine, *Sciadopitys verticillata* 'Pendula', obelisk-like in the garden, a native of Japan where it is restricted in the wild to just two small areas in Central Honshu. Even more confined is the population of *Xanthocyparis vietnamensis*, now reduced in the wild, it is thought, to not much over 500 trees in a single location on a mountain range in North Vietnam.

The monospecific trees and shrubs from North America grown in the garden derive generally from the western and southern regions of the United States. Most prominent from the west coast comes *Sequoia sempervirens* (standing in also for its near relative *Sequoiadendron giganteum* that was, in the past, long included within its species) and the evergreen *Heteromeles arbutifolia*, included by some as within the otherwise Asian *Photinia* genus. Now endemic to the Santa Catalina archipelago off California is *Lyonothamnus floribundus*

Opposite
Austrocedrus chilensis, a member of the Cupressaceae from Chile and into Argentina.

Right
The distinctive foliage of *Sciadopytis verticillata* 'Pendula', in which the leaves are in whorls at the end of the shoots, hence the common name umbrella-pine. The cones also have spirally arranged woody scales.

Above left, distinctive lenticels on *Oemleria cerasiformis* and **right**, the characteristic bark of *Lyonothamnus floribundus* var. *aspleniifolius*.

which in this garden is the variety *aspleniifolius* on account of its fern-like lobed, rather than entire, leaves. Originating in the American South but now growing, either naturalized or planted, further north are the suckering *Franklinia alatamaha*, well-known, sadly, for its probable extinction in the wild, and *Oxydendrum arboreum*, its pleasantly acidic leaves to be chewed but not ingested. Other denizens of the American South in the garden are the single extant species of *Zenobia pulverulenta*, related to *Andromeda* but now separated from it on molecular rather than morphological grounds, and *Maclura pomifera*, its natural distribution extending upwards to the centre of the country.

The misleading practice of naming newly-discovered plants in honour of an individual is exemplified in the naming of two Australasian monospecific plants and one American example in the garden. *Lagarostrobos franklinii* is named for a nineteenth-century governor of Tasmania, Sir John Franklin, *Acradenia frankliniae* named for his wife while *Franklinia alatamaha* is named after the eighteenth-century American statesman, Benjamin Franklin. An examination of the three genera in the garden shows, that in spite of their allied names, there is no obvious physical commonality. The New Zealander, *Chordospartium stevensonii*, is like *Carmichaelia* in that the part played in the economy of most plants by leaves is, as in many brooms such as *Spartium junceum* (also monospecific) largely performed by the flattened, green stems.

Eurasia provides the garden with two trees with edible fruits, the medlar, *Mespilus germanica*, separated from its allied genus *Crataegus* by its large solitary flowers, and the quince, *Cydonia oblonga*, distinguished from the Japanese quince by its large white flowers and pear-shaped fruit. An occasional plant of a 'duotypic' genus, that is, a genus of two species, has been smuggled in as a result of an early impatience with the slow pace of the collection. They include *Edgeworthia chrysantha*, differentiated from *Daphne* by its reproductive organs, *Decaisnea fargesii*, *Parrotia persica*, the semi-herbaceous *Romneya coulteri* and *Dendromecon rigida*, the number of its species having been inflated from two to 20 in one interpretation of the genus.

Edgeworthia chrysantha, a smuggled in duotypic species.

In general, the collection underlines the hospitality of the Irish climate, welcoming the successful cultivation of plants from many temperate regions of the world. It also highlights a conservation issue in that many genera are now monospecific due to the extinction of the genera's other species and are now known to us only in fossil form. Of *Pseudolarix*, for example, two species are known to be extinct as well as further species of *Lyonothamnus* and *Metasequoia*. The collection is akin to a living herbarium in that the colour and texture of flower, leaf and seed, not available in a dry specimen, can be examined. It also serves to highlight issues in botanical nomenclature; the natural world does not always fit into the neat categories or schemes of classification invented for its components by humans. This is exemplified by the tortuous arguments of botanists over the monospecificity or not of *Xanthocyparis vietnamensis*. Such matters are, however, constantly subject to confirmation or revision as a result of the discoveries of plant hunters, of the researches of botanical historians and of the creators of intergeneric hybrids such as that between *Franklinia* and *Gordonia*. It is ultimately the persuasive judgement of the individual taxonomist that determine where the lines between families are drawn. Such matters may be more convincingly resolved in the future by the relatively new role of molecular rather than morphological analyses.

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