# Cupressaceae identification

On 18 November 2021, a keen group of dendrologists eager to learn more about conifers met at Kildown Village Hall for a morning of presentations by Tom Christian that were followed after lunch by a walk around Bedgebury Pinetum, led by Curator Dan Luscombe. **RODERICK WHITE** writes about the highlights and some of the knowledge gained on the day.

This was my first study day with the IDS and so I was eager to see how the day might progress. We were welcomed on arrival by S&E chairman Antonia Johnson, given a name tag and refreshments so the day was off to an enjoyable and sociable start.

### The presentation

182

Tom Christian introduced himself explaining his love for conifers and telling us of his role as assistant editor for IDS TSO. For those readers who haven't had a

### WHAT ARE CONIFERS?

They are:

- Vascular plants (they have plumbing)
- Seed plants (they reproduce sexually and produce seeds)
- Plants whose seeds are not enclosed by a fruit (cf. the angiosperms, whose seeds are enclosed in this way)

Hence, along with Cycads and the Ginkgo, they are called: Gymnosperms–from Greek *gumnos* (naked) and *sperma* (seed).

look at treesandshrubsonline.org recently, a read through the entries for *Abies*, *Araucaria*, *Fitzroya* and *Metasequoia* will give a better understanding of Tom's expertise than I can convey. Not one to miss the opportunity of promoting IDS TSO, Tom explained that the rewriting, updating and expanding of the existing entries is only possible through sponsorship.

Tom gave a helpful overview of conifers, their botany, their diversity, their ecological and economic importance; all fascinating. There is even a parasitic conifer, *Parasitaxus usta*, that Tom had the privilege of seeing during an IDS tour to New Caledonia.

We then moved on to the main topic, Cupressaceae. A slide showed all the genera of this family; the next slide showed the important and sometimes unique features of the family.

The next part of the morning was more challenging as it required us all to

participate! We were divided into groups of five and each group was given five specimens collected from the Pinetum. The task was to produce our own dichotomous key, picking out characteristics that differentiated one specimen from the next, for instance branchlets flat or not; stiff or floppy; leaves awllike or not, etc. The discussion within each group was very interesting and stretching. Once the exercise for the first five specimens was completed a group was selected to present their deliberations and questioned on their reasons for how and why they had divided their specimens, which was illuminating. Although there was a common thread to division, differing reasons were given, bringing home the often-held view that taxonomy is a matter of opinion. Tom said conifer taxonomists are notoriously argumentative and can't agree on the colour of an orange!

From a personal point of view it was very interesting to have my 'vision' challenged by looking for and explaining the difference between specimens when already being able to identify them through familiarity. Conifers as a group have been a keen interest for 40 years.

**RELATIVE DIVERSITY OF CONIFERS** 

We continued to assess specimens, being advised to repeatedly question and

AND THEIR ALLIES	
GROUP	APPROXIMATE SPECIES COUNT
Flowering plants	250–300 (–400?)k
Ferns and fern allies	10–13k
Gymnosperms (conifers, cycads, etc.)	ca. 930 (ca. 650 conifers)
Mosses and liverworts	14k
Lichens	13–17.5k
Fungi	>5mn
Algae	350k?
Bacteria	100k?
Viruses	>300k

evaluate our judgements, particularly when using keys drawn up by others. As an interesting note, trying to record the difference between *Taiwania* and *Cryptomeria* or *Thujopsis* and *Fokienia* was difficult even if you are familiar with them. More difficult still was describing the difference between *Chamaecyparis lawsoniana* and *Chamaecyparis formosensis*. We were also reminded that other characteristics are important when endeavouring to make an identification. Habit of the plant in question being perhaps obvious but perhaps the smell of

# **DIVERSITY OF CONIFERS**

- Approximately one third of all conifer genera are monospecific
- Approximately half of all known species occur in only four genera: *Pinus – ca.* 120 species; *Podocarpus – ca.* 105 species; *Juniperus – ca.* 60 species; *Abies – ca.* 60 species.
- Conifer taxonomists are notoriously argumentative, with different treatments often recognising conflicting numbers of species and even genera (more on this soon!)
- Ecologically, a significant proportion of conifers are relict species occurring naturally only in a narrow area. Only a handful of species have truly vast ranges.

#### Cupressaceae genera

Athrotaxis; Callitris; Calocedrus; Chamaecyparis; Cryptomeria; Cunninghamia; Cupressus; Diselma; Fitzroya; Glyptostrobus; Juniperus; Libocedrus; Metasequoia; Microbiota; Papuacedrus; Platycladus; Sequoia; Sequoiadendron; Taiwania; Taxodium; Tetraclinis; Thuja; Thujopsis; Widdringtonia.

184 the foliage less so. Amusingly, later in the day when reinforcing this point, on examining × Cuprocyparis leylandii, Tom informed us that to his nose it smelt like mouldy lemon.

The visit to the Pinetum was eagerly anticipated by all especially as we were to be shown around by both Dan Luscombe and Tom Christian. The accompanying Pinetum staff had been charged with the unenviable task of trying to keep us together as a group. What a splendid job they did. Keeping plant enthusiasts together when in a veritable sweet shop has been likened to herding cats!

Boots on, coats on, cameras at the ready we set off. Wonderful conifers everywhere. Even the plantings through the car park and towards the visitor centre were full of interest, with many carefully selected cultivars such as *Xanthocyparis nootkatensis* 'Green Arrow', *Taxodium distichum* 'Pévé Minaret' and *Metasequoia glyptostroboides* 'Shirrmanns Nordlicht'.

Incidentally for those who are not aware, Bedgebury's website gives a link to their 'Pinetum Explorer'. You enter a genus of choice and get a listing of all the instances of species and cultivars thereof grown at Bedgebury with a location on a map of the site. This is a wonderful facility that greatly enhances the learning and study opportunities when visiting or planning a visit.

As we were led up the right-hand slope when leaving the car park we were able to look back to the Pinetum, over the lake and towards the visitor centre. Dan carefully explained the plantings and thought processes that had

## CUPRESSACEAE

- The largest conifer family in terms of genera (ca. 25)
- Third largest in terms of species
- Contains a significant of monotypic genera (14)
- Includes the defunct Taxodiaceae family (redwoods, Cryptomeria, Taiwania)
- Well distributed in both hemispheres, and in almost all biomes
- · Arguably the most diverse family in terms of morphology
- Taxonomically unstable

led to them, following the disaster that was the Great Storm of October 1987. Much was lost, not to be replaced in our lifetime. But with that change came not only the opportunity to replant, but the chance to complement, add to, and hopefully enhance, the original vision for the Pinetum. We viewed at a distance a wonderful new avenue of Prunus 'Tai Haku'. Even with no leaf it was great to see the ambition of this avenue, its positioning within the wider landscape and the feature that it already is and will be when in blossom. Wonderful. In the area we were viewing this avenue from, Dan explained that the opposing view was designed to give a contrasting vista with the emphasis on autumn/ winter interest. Here, we were amongst Cruptomeria japonica 'Elegans' already purple bronze at this time, contrasting with specimens of Pinus sylvestris 'Aurea'. Further plantings of Lindera, Cotinus, smaller Acer species and Cornus alba cultivars added to the autumn and winter interest. For those without a particular interest in conifers who have read this far it was very surprising to be told that about a third of all the plantings at Bedgebury are not conifers! The overall plant content aims to maintain visitor interest throughout the year.

As we walked further we could see regular patterns of what appeared to be white mushrooms, lights for Bedgebury's 'Glow' winter display, which attracts huge numbers of visitors raising awareness as well as revenue.

Further conifer conversation and interesting facts were presented by Dan and Tom with one occasionally adding to or correcting the other with gentle and affectionate rivalry.

Of great excitement in this area was one plant related to our topic for the day (Cupressaceae) namely *Juniperus bermudiana*, doing well as can be seen and not appearing to suffer any damage from cold. Other treasures in this area were *Prumnopitys ferruginea*, *Amentotaxus argotaenia*, and *Cathaya argyrophylla*. All doing exceptionally well, a real privilege to see.

Our tour continued, taking us through a most interesting feature that I had not been aware of. It was a vast, tall × *Cuprocyparis leylandii* hedge which I had wrongly assumed was of no interest. As can be seen when walking inside it, it



Above, two members of the Cupressaceae: left, the critically endangered Juniperus bermudiana; right, the spectacular  $\times$  Cuprocyparis leylandii tunnel. **Opposite**, top, Amentotaxus argotaenia, a member of the Taxaceae and vulnerable in the wild is marginally tender.

Below and opposite, bottom, Prumnopitys ferruginea, the Miro, is a rare endemic of New Zealand from the family Podocarpaceae.

186



was quite a spectacle. Interesting side conversations took place regarding future possibilities of inter generic hybrid conifers for use in commercial forestry but also speculative ideas for ornamentals. Further on, the subject of the controversial leylandii arose and Dan was asked if he had any advice. The reply was 'don't plant it as a hedge!'

As we dropped down into the valley before crossing the outfall from the upper lakes one of the Pinetum staff noticed a sport on a branch of a recent introduction of Fitzroya cupressoides which we had been admiring. It was a good yellow! It was duly noted with a view for propagation. Some may recoil in horror at the thought of a potentially yellow Fitzroya, but we do have

yellow Metasequoia 'Gold Rush' which makes a wonderfully interesting hedge if you can afford that many plants, and a beautiful free-standing specimen.

To our right was Reflection Lake showing autumn colour from Taxodium distichum, Taxodium distichum var. imbricarium 'Nutans' and the rarely seen Glyptostrobus pensilis, all great choices for wet to very wet ground. Towards Marshal's Lake were fine stands of Taxodium, Metasequoia, Liquidambar, Nyssa sylvatica and Quercus palustris. Further on into the Pinetum we observed a lovely blue foliaged selection of Sequoia sempervirens 'Henderson Blue', unfortunately on this occasion I did not have a chance to compare it to the other blue foliage selection Sequoia sempervirens 'Simpson Silver'. There are many interesting selections of well-known conifers planted around the Pinetum. The greatest concentration is around the visitor centre/car park but an older



planting of smaller varieties with some dwarfs is to be found near the facilities just up from Marshal's Lake (see Bedgebury's website map). This area has many old historic cultivars.

Further on yet more delights, established plantings of Athrotaxis, all three species, all wild collected by Dan and the staff. Interestingly, re the uncertainty surrounding Athrotaxis laxifolia being possibly intermediate between Athrotaxis selaginoides and Athrotaxis cupressoides, Dan reported that no Athrotaxis laxifolia had been

187



The group paused beside Xanthocyparis vietnamensis among other members of the family Cupressaceae.

raised from wild collected *Athrotaxis cupressoides* seed but sometimes *Athrotaxis selaginoides* had been raised from *Athrotaxis laxifolia* seed.

The Cupressaceae theme of the day led us on to *Chamaecyparis formosensis*, *Thujopsis dolobrata*, *Cryptomeria japonica*, and *Taiwania cryptomerioides*. These last two were in close proximity and Dan told us that the *Taiwania* (the oldest in the Pinetum) had never set seed and given its size in the wild had not made great progress here. However, around this area were seedlings which caused some debate. The normal way of distinguishing the difference between the two when just examining foliage is the distinct, sharp, spiky nature of the juvenile growth of *Taiwania*. By comparison *Cryptomeria* is soft to touch.

The light was now fading so we headed back towards the entrance. Two more items of relevance to Cupressaceae still awaited us, the first was a plant of the first introduction of *Xanthocyparis vietnamensis;* is this the tallest in cultivation? It certainly impressed us all and provided an excellent opportunity for a group picture. The happy smiling faces give testimony to the pleasure enjoyed by all. A little darker still and further on more recent plantings of wild collected *Taiwania* showing really good growth and hopefully destined to become giants and recreate the maturity lost 35 years ago. One final treasure before the light faded was *Pinus devoniana;* young, but looking superb.

This is just a tantalising glimpse of the coniferous treasures that are all around; Bedgebury is a must for any dendrologist. We only regretted failing to formally thank Tom Christian and Dan Luscombe, together with the Pinetum staff who had been so patient with us and enthusiastically shared their knowledge with us all.