

With an average age of over 65, ten IOS members from eight countries took part in the 2007 tour to Japan from October 5<sup>th</sup> to 19<sup>th</sup>, completed at a cost below budget! The tour was instigated and administered by Anke Mattern from Germany. At a meeting in Tokyo Professor **Hideaki Ohba** of Tokyo University (who revised the Quercus section, among others, of the *Flora of Japan*), had agreed with her to personally show us all 15 native species of oak found in Japan. He arranged the complex logistics necessary for such a wide-ranging but perfectly targeted tour, and his unrivalled contacts ensured that at each venue we were warmly welcomed immediately on arrival and expertly guided thereafter.

As a glance at the map will show, Japan consists of a long group of islands stretching from the cold temperate climate of Hokkaido in the northeast to a series of sub-tropical islands leading towards Taiwan in the southwest. Our travels took us from the northwest of Honshu, the main island, through ten degrees of latitude south to the small island of Amami Oshima in order to see every oak species. Japan's oceanic situation gives it a **moist climate**, areas receiving 'only' 1000mm (equating to nearly 40 inches) of annual rainfall are referred to as 'dry', whilst some places soak under 3000mm or more. However, its position on the east side of a continent in a cold sea current makes winter temperatures much colder than the same latitude in Europe/Africa or west coast USA, and more comparable to the US east coast. Man's influence has ensured that very little primary forest still exists, but latterly the use of petroleum fuels instead of wood and charcoal has allowed greater regeneration of secondary forest despite the widespread planting of Cryptomeria. Equally, little natural wetland exists due to the cultivation of rice.

All the participants agreed to arrive a day early in Narita City near Tokyo to acclimatise to the time change. Our first introduction to one of the practical uses of oak came on our evening venture to give what was, for several participants, an introduction to Japanese food. Our chosen restaurant was opposite a shop selling beautifully finished but very expensive traditional drums constructed from oak in two methods: either from staves like a barrel or alternatively as a cylinder carved from solid wood, in both cases with a cowhide drumskin. Price peaked at an eye-watering 120,000 euros for a 180cm (6 foot) drum.

The next day, October 5<sup>th</sup>, saw us travelling into Tokyo to meet Professor Ohba before catching the Shinkansen, the Japanese high speed or 'bullet' train, to our most northerly venue at the city of Sendai. Inauspiciously, we lost one of our participants in the maze otherwise known as Tokyo Station, but everyone was eventually reunited in Sendai, to be greeted by Professor Mitsuo Suzuki, Director of the Sendai Botanic Garden of Tohoku University, and his team: Assistant Professor Motonari Ohyama; expert taxonomist Dr. Koji Yonekura; and Dr. Akihiro Yoshida. The garden is in the border region between the warm and cold temperate climatic zones and contains microclimates of each, but sadly there was time only for the briefest of walks before dusk to see evergreen Quercus species such as *Q. acuta*, *Q. glauca* and *Q. myrsinifolia* near their northern limit, mingling with deciduous species – *Q. serrata* is actually the most numerous tree of over 10cm diameter in the garden, with 5,155 of them counted, followed by *Pinus densiflora* and *Abies firma*. In the evening Professor Suzuki took us to a superb seafood and sobha (noodle) restaurant, where, under the guidance of the two Professors and replete with Sendai oysters, we happily undertook the first of many trials of Sake, the Japanese rice wine. Throughout our tour Professor Ohba ensured that we experienced to the full the wealth of Japanese cuisine.

After a stay in very comfortable student accommodation thanks to Professor Suzuki, the following day, October 6<sup>th</sup>, we set off in two minibuses driven by Professor Suzuki's team to Mount Zao, a winter ski destination where two lifts enabled us to make a final short climb on foot to over 1,700m (5,600 feet). A rich variety of non-oak tree species was reduced to stunted bushes, and autumn colour, three weeks later than usual in Japan in 2007, here provided a multi-coloured tapestry as we looked out on the clouds below. Descending to an intermediate level, we lunched amongst peaty hollows, boggy in places, where *Quercus crispula* and *Q. serrata* grew and fruited in dwarf form with *Pinus parviflora*, *Acer japonicum*, *Fagus crenata*, *Salix vulpina*, *Betula*, *Rhododendron* and even a *Daphniphyllum* amongst a varied herbaceous cover, gentians still in flower. The sub-alpine form of *Q. crispula*, 'a shrub-like tree with bent trunk and branches', leaves 'sharply serrate', has been named var. *horikawae* by Professor Ohba in honour of T. Horikawa, who studied oaks under difficult conditions during the Second World War, and as a consequence died tragically young.

*Quercus dentata* appears naturally but scattered and rare around the foot of Mt. Zao, and our next stop took us to a boundary plantation of this species aged around 50 years. *Q. dentata* becomes more plentiful on the northern island of Hokkaido, as does *Q. crispula*, although in the late 19<sup>th</sup> century much of the latter was cut and exported to Europe as 'Hakodate Oak', in some cases to be re-imported as finished Arts and Crafts furniture. The final stop of the day took us to a streamside near Shirosishi Castle in Miyagi prefecture, where we saw *Q. serrata* in its variable guise, *Q. crispula*, *Q. acutissima* and *Q. aliena*. The latter was more frequent in Japan 10,000 years ago, its numbers having most probably declined due to man's past consumption of the large palatable acorns.

On October 7<sup>th</sup> we flew at midday from Sendai to Nagoya, enjoying en route a wonderful view of the stark black cone of Mt. Fuji backlit against a grey layer of cloud and haze. On arrival we were met by Professor Shoji Hiroki of Nagoya University, who took us through a secondary forest community immediately abutting the University where *Quercus variabilis* and *Q. serrata* formed a cover with *Pinus densiflora*. These two oaks never cross, but *Q. variabilis*, although easily distinguishable by its pale leaf underside, can hybridise with the closely related *Q. acutissima*, however, each has very different germination characteristics – *Q. variabilis* acorns sprout immediately on falling, whereas *Q. acutissima* awaits spring, allowing the latter to establish also in colder climates to maintain a wider range in Japan.

Professor Hiroki gave us a lecture and copies of his Fagaceae-related studies containing a breadth of information which space will not allow here, but, for instance, *Castanopsis sieboldii* has a double thickness of epidermal cells, *C. cuspidata* only one, giving the former a greater tolerance of drought and the latter of shade. Hybrids between the two vary chimeraally in epidermal thickness.

October 8<sup>th</sup> began with a visit to Sanage Shrine near Toyota City, Aichi Province, where we saw *Quercus glauca* and *Castanopsis cuspidata*.

Next, an unusual entrance through a graveyard to a wood offered one of the conundrums of the trip – *Quercus serrata* ssp. *mongolicoides*, newly described by Professor Ohba. The tree formerly known as *Q. mongolica* var. *grosseserrata* is now referred to as *Q. crispula*. The true *Q. mongolica* is now thought to occur only on the Asian mainland, not in Japan, but, to quote the *Flora of Japan*, 'the putative hybrid between *Q. crispula* and *Q. dentata* especially in Hokkaido, and this subspecies [*Q. serrata* ssp. *mongolicoides*] are mistakenly treated as *Q. mongolica*'. It then continues 'This subspecies is similar to *Q. crispula*, but differs from that in having longer leaves with coarsely and interruptedly crenate-dentate margins'. It occurs at much lower elevations than *Q. crispula*, and DNA analysis revealed the close relationship to *Q. serrata*. However, the acorns we saw here were larger and squarer in profile than either of those two species, and were already germinating strongly.

We could not resist a quick photo-stop at a rice field whose bordering banks were thickly ornamented with the red *Lycoris radiata* in full flower, on our way to the nearby type locality of *Q. serrata* *mongolicoides* where now we saw only *Q. serrata* in its normal incarnation with *Q. glauca* in attendance.

Our last visit of the day was to the grounds of an Edo period castle near Nagoya, where much *Q. acutissima* was planted about 60 years ago, and copious seed soon had the group in the traditional IOS stance – bottoms up filling collection bags.

The next day, October 9<sup>th</sup>, found us once again airborne, leaving the main island of Honshu for the first time on our way to Kochi on Shikoku, where we were greeted by Drs. Shiro Kobayashi and Kazumi Fujikawa from the Kochi Prefectural Makino Botanic Garden. The late Tomitaro Makino, perhaps the most famous Japanese botanist, by and for whom many Japanese plants were named, was based here, and the arboretum still contains his library along with an amazing 1,700 originals of his beautiful botanical illustrations.

We stopped on the way to the garden to walk through an area of evergreen secondary forest, and already several tropical elements intruded, including several species of *Symplocos*, notably *S. glauca* with long, arrow-shaped leaves. Now bamboo is no longer used for construction, it is becoming abundant and invading the forest. Here we saw again the ubiquitous *Quercus glauca*, and a heavily-fruited *Lithocarpus glabra*.

On reaching the Makino garden we lunched outside near a tree I think we all fell in love with – the beautiful orange- and white-barked evergreen *Prunus zippeliana*. Although we were remarkably lucky with the weather on the tour, it rained on our afternoon parade, and we embarked under umbrellas to see firstly an eight year old plantation of non-Japanese oaks raised from seed from other botanic gardens, and thus, sadly, in many cases clearly of hybrid origin. The collection of native evergreen oaks, however, more than made up for this, and included the large-leaved stable hybrid *Quercus x takaoyamensis*, a cross between *Q. acuta* and *Q. sessilifolia*, leaning in character more towards the former.

October 10<sup>th</sup>, the sixth day of our tour, took us first to another Shinto shrine, Matsuo Shrine near Kitahara. High quality rice requires a diurnal temperature contrast, and thus is best grown further north than this latitude (33.5 degrees), instead the paddy fields by our parking spot were planted with ginger. Entering the shrines precincts another beautifully-mottled bark belonged this time to *Podocarpus* (now *Nageia*) *nagi*, but, once we had ascended the many steps, we saw for the first time *Quercus hondae*. The areas around Shinto shrines and Buddhist temples, with their great antiquity, provide perhaps the nearest approach in Japan to primary forest. Although possibly even here man may in the past have influenced which trees remained, time and time again we were to see the most dramatic trees in these situations. But do we put 'wild-collected' against the collection number? A hard call. And seed there was, although sparse and possibly immature, by dint of an ingenious tool constructed by Dr. Kobayashi to collect herbarium specimens – a hooked blade inserted in the end of a long rigid telescopic sea-fishing rod. Every home should have one, and many times subsequently we longed for the same implement, as so often the dense canopy of the evergreen forest was far out of reach, making photography impossible, and we began instead to identify trees by their bark. Our second venue was a temple peopled with fierce sword-wielding stone spirits. In the grounds we had our first glimpse of 'wild' *Quercus gilva*, with its very distinctive pale bark flaking into loose plates, often marked with wavy parallel striations almost in the manner of bark beetle galleries. The matt leaves have pale distinctly-veined undersides. *Q. salicina* put in an appearance, and the startlingly mottled brown and cream bark here belonged to *Litsea coreana*.

The final stop of the day was within sight of the sea, where a line of *Q. phillyreoides* planted by an embankment had been drawn up to 8m (25 feet) or so, forcing some of our number into spectacular seed-gathering antics suspended over the side of the embankment – evidently a good deal of mutual trust had developed by this stage! The group of four trees showed marked variation in leaf, from a narrow serrated inrolled form with a pale underside to a wider, darker leaf more green underneath.

Day 7, the 11<sup>th</sup>, took us first to Mt. Yokogura-yama, near Ochi town, up to nearly 800m (2,600 feet), where venerable *Quercus acuta* gave way on the dryer thinner soils of limestone ridges to *Quercus salicina*, with its distinctive bark banded horizontally in brown, green and grey – in older trees cream and almost black – and its delicate leaves with paler undersides. The markings may be caused by lichen colonisation, but were nevertheless characteristic of all trees we saw. Everyone had their own favourite experience of the tour, but this was certainly one of mine, as, after wandering through these wonderful oaks, we reached an intricately carved wooden temple complex deep in the shade of a group of enormous *Cryptomerias*, one measuring 9m (30 feet) in girth. After lunch, our next stop was just as spectacular – Nisho Shrine, near Niyodo-gawa town, where, after a climb through a wood of *Q. gilva*, we emerged by the shrine, in front of which was the largest *Q. sessilifolia* that even Professor Ohba had ever seen! To my chagrin, I was a late-comer, having been mesmerised by the *Q. gilva*, and what little seed there was had already disappeared into other pockets.

Our return drive showed that *Q. glauca* was also happy to perch on these limestone crags, and a final unscheduled riverside stop on our return to admire more *Q. gilva*, whilst completely mystifying a passing Japanese policeman, completed a marvellous day. We sadly had to say goodbye to our Japanese hosts, one of whom had actually taken leave in order to accompany us to the two days.

On October 12<sup>th</sup> we had a morning appointment with Professor Tatsuya Okamoto of Kochi University, who took us by rail to brightly-painted Asakura Shrine, the only other location of *Quercus hondae* in Kochi. Seed of this tree was not expected to mature until December, but he had some dry acorns from the previous year to give us as mementos, before we journeyed to catch an afternoon flight, via Fukuoka, to Miyazaki on the island of Kyushu.

The following day, the 13<sup>th</sup>, we set off by bus with our guide, Masami Seito, northwards from the city firstly to the Takanabe wetland, one of the few remaining natural wetlands in Japan, where *Lithocarpus glabra* and *Quercus glauca* mingled with *Castanopsis*, *Albizia*, *Mallotus*, *Ficus*, *Rhus* and other genera in this interesting ecosystem. The roadside nearby yielded an attractive variant of *Q. acutissima* with narrow crimped-edged leaves, which would have made an ornamental cultivar had we had the means to propagate it.

We continued north to Cape Gongenzaki, 48 kms from Miyazaki, where we walked through an enchanted forest of *Castanopsis sieboldii*, trunks twisted by sea winds into extraordinary contortions for those normally placid trees, their roots also exposed and snaking across the path under our feet.

After lunch we set off westwards for Mt. Mukabaki, 12 kms west of Nobeoka City. En route we male members of the group were delighted to see a woman labouring manually in a field whilst her grandson watched and her husband played on his tractor. The mountain has two peaks, and adept Japanese mountain-sexers have in the past deemed that one is male, and the more north-easterly is female. I found it hard to tell, as mountains do not appear to work. Our eventual stop was amongst huge old-growth *Quercus gilva*, some to 35m (110 feet) or so (its Japanese name means Number One Oak!), growing amongst *Cryptomeria* and other *Castanopsis*. Seed and photographs were gleamed in equal measure, although we were exhorted not to push too far into the undergrowth in case we frightened the poisonous snakes, a sin in a National Wildlife Refuge.

The final stop of another superb day took us to the Hukuse Shrine, where the 'biggest in the world' of the Japanese endemic *Quercus hondae* is situated. And big it certainly is, 300 years old, 40m (130 feet) in height, its buttressed trunk 5m 30cm in girth. But not an acorn in sight. It is perhaps symptomatic that the otherwise superbly illustrated book 'Woody Plants of Japan', generously donated to each of us by Prof. Ohba, does not have a photograph of *Q. hondae* fruit!

October 14<sup>th</sup> again started early with a drive northwestwards to the Aya Gorge, where the spectacular Teruha pedestrian suspension bridge gave us a bird's-eye view of massed evergreens on this steep-sided gorge in the largest virgin forest in Japan. Continuing by bus up the valley, we came to more *Quercus gilva* and *Q. salicina*, our bark-identification skills again called into use on these 25 to 30m trees.

After lunch we made a brief stop at Lake Miike, one of several lakes in the enormous 30 to 40 km diameter 4,200 year old caldera complex of Mt. Kirishima, which consists also of 23 peaks, some actively volcanic. Then, down a quiet road nearby, we walked again below fine *Q. gilva* in prolific fruit. Several of us managed to bring leeches back to the bus, although to judge by the reaction screeches would be a more apt name. A long climb in the bus took us to the Ebino Plateau at 1,200m (3,700 feet) within the caldera, where *Quercus acuta* grew amongst *Pinus densiflora*, *Sturtia monadelphina* and *Abies*, and even our old friend *Q. crispula* reappeared in the cooler conditions.

On the 15<sup>th</sup>, airline network limitations demanded a drive across south Kyushu to Kagoshima, giving us another chance to see the complex of volcanoes around Mt. Kirishima, in order to catch a flight on a bonsai aircraft, a little Saab, to the island of Amami Oshima, one third of the way between Kyushu and Taiwan. En route we saw steep-sided Yakushima island of *Rhododendron* fame.

Amami Oshima was for many a revelation – at just over 28 degrees north latitude, (the same as the Canary Islands and Orlando, Florida), a Caribbean-like island with Japanese writing and no commercialisation. Our first stop with our guide Takashi Suzuki, after a quick lunch, was to visit a large specimen of the rare endemic *Quercus miyagii*, which few westerners have ever seen. We proceeded with a certain amount of caution up a long flight of steps on a lightly wooded ridge, as Professor Ohba had just informed us that over the years three botanists had been killed on the island by poisonous snakes which here prefer the stratagem of attack to that of retreat. Undeterred, we were soon shuffling through the leaf litter below the boardwalk, looking unsuccessfully for acorns around the deeply buttressed striated trunk of this, the species with the largest acorns in Japan. The few leaves within reach showed their long drip-tips and paler undersides. Younger trees nearby showed a mottling of the bark between grey, yellow-green and brown. Returning down the path, the native fauna finally counter-attacked: several of the party were stung by bees, whose nest had been disturbed by our acorn-hunting.

A scenic seaside walk at sunset, Cycads guarding the rocky cliffs, completed the day.

On October 16<sup>th</sup> a reassuringly wide forest road, past wild *Prunus zippeliana*, *Schefflera*, tree ferns of extraordinary height and other markedly sub-tropical flora, led eventually to another superb *Q. miyagii*, since declared a national monument, 22m (72 feet) tall, 1 metre in diameter, and 150 years old. Once again we saw the characteristic buttressed base surmounted by knots and nodules.

Although worryingly sparse on Amami Oshima, Professor Ohba assures us that in other islands in the group, protected by an even denser population of the snakes, *Q. miyagii* becomes dominant, and is thus not endangered. Reassuringly, he is part of a committee which oversees development on Amami and assesses future impact upon the flora.

On our afternoon visit I was fascinated to see a climbing fern, the extraordinary *Lygodon japonicum*, growing freely by the roadside. Found as far north as mid-Honshu, it must therefore be tolerant of some frost. It was accompanied by a handsome Ash, *Fraxinus tashiroi*, with large fleshy leaves and grey buds, but the object of the stop was to see *Quercus glauca* var. *amamiensis*, a variety endemic to the Ryukyu island string, the most evident difference being the petioles longer than the species.

A visit to a mangrove swamp was the last on the day's agenda, where tiny pop-eyed amphibious fish skittered around on the mud. Originally of one mangrove species only, interestingly, in recent years a second species has appeared.

Returning to the hotel, we stopped to photograph *Pinus lutchuense*, a rare endemic pine.

We were scheduled to fly direct from Amami to Tokyo's domestic airport, Haneda, on the evening of the 17<sup>th</sup> October, which left us the daytime to see more of the island's flora. Our first two stops were at spectacular colonies first of a species of *Musa*, with all stages of flower and fruit, and secondly of *Cycas revoluta*, in each case dense to the exclusion of almost all other plants. The *Musa*'s bananas are not eaten, and its origin and identity is somewhat in doubt. The Japanese say it was introduced from China, the Chinese say it was introduced from Japan. At a later stop, also dense with *Cycas*, their large orange fruits were being harvested in quantity. A visit to a wildlife park showed us we had rivals in the acorn-collecting field – a group of small schoolchildren, immaculate in sunhats and T-shirts emblazoned with their school class, were also thrusting acorns into bags. Future IOS members, perhaps?

A seaside lunch saw two of our number venture into the sea, although sharp rocks underfoot limited their enjoyment somewhat. (Antoine LeHardy & Steve Piddick)

Professor Ohba had business to attend to on October 18<sup>th</sup>, but he led us first across the Tokyo rail system to introduce our guide for the day, Taku Miyazaki, for our visit to Mt. Takao on the city outskirts. We chose to walk up the hill, eventually to catch a cable car down. We saw again *Quercus acuta*, its iron-grey bark characteristically mottled with pale grey and brown, *Q. glauca*, *Q. myrsinifolia*, *Q. salicina* and *Q. serrata*, some of them of enormous size, but sadly *Q. sessilifolia*, which our guide said is known to grow on the mountain, eluded us. Notable also were the very pale lenticelled bark and buttressed roots of tall *Ilex* polycarpa, unfortunately without their scarlet fruits.

Fierce demon statues, fortunately in cages, guarded a shrine and graveyard towards the top of the mountain, from where views of Tokyo appeared far below through the trees.

On the 19<sup>th</sup>, after a short welcoming talk by the present Director, Professor Jin Murata, Professor Ohba led us around Tokyo University Botanic Garden. We saw both *Quercus phillyreoides* and *Q. myrsinifolia* drawn up to an unusual 16m (50 feet) or more, and an intruder, *Q. lanuginosa* from the Himalayas, had reached a similar height. Looking remarkably like evergreen oaks from a distance were broad-crowned *Cinnamomum camphora* of approximately 300 years in age. Space precludes mention of the wealth of other plants which caught our eyes, but eventually we had to leave to travel to Narita. Professor Ohba joined us later for a farewell dinner, giving us the opportunity to thank him for all that he had done for us; for his calm forbearance; for sharing his enormous knowledge of the Japanese flora; and not least for his legendary politeness no matter how provoked by our lack of knowledge of Japanese customs and manners. Several participants had brought him gifts relating to their own countries – Antoine LeHardy even donated his recently-published encyclopaedic two-volume 'Guide illustre des Chenes' – and jointly we gave him a silver cup chased with oak leaves and engraved as a memento. Lastly we were able to give him a Life Membership of the IOS, the latter two gifts sponsored in part by generous members of the society. He is keen to come to the 2009 Conference in Mexico to lecture on the oaks of Japan, where I hope he will get to know many more of our members. It was also our chance at last to thank Anke Mattern for her organisational and logistic skills and her boundless cheerfulness and enthusiasm.

The following day, for the majority, was the day of departure from Japan. And the most lasting memories? First, without doubt, the unfailing generosity and kindness of our hosts and guides throughout Japan, who were so delighted to share with us their deep knowledge and love of the flora. Thanks to the IOS Board we were provided with oak memorabilia which we distributed as some small recompense for their efforts, whilst Anke emptied her once-rich fund of thank-you speeches. Second, the overawing peace and serenity of the shrine and temple precincts, over-arched protectively by the limbs of prodigious trees which so often were oaks.

Shaun Haddock (shaun.haddock@orange.fr)

Participants (in alphabetical order): Shaun Haddock, France; Michiko Hester, USA; Norman Kenny, Netherlands; Ina Kenny-De Leng, Netherlands; Antoine LeHardy, Belgium; Anke Mattern, Germany; Margaret Miles, England; Sten Ridderhof, Sweden; Allan Taylor, USA; Pauline Topham, Scotland.



Fig. 1. Forest zones of Japan and Korean Peninsula (HONDA 1922; slightly simplified).