

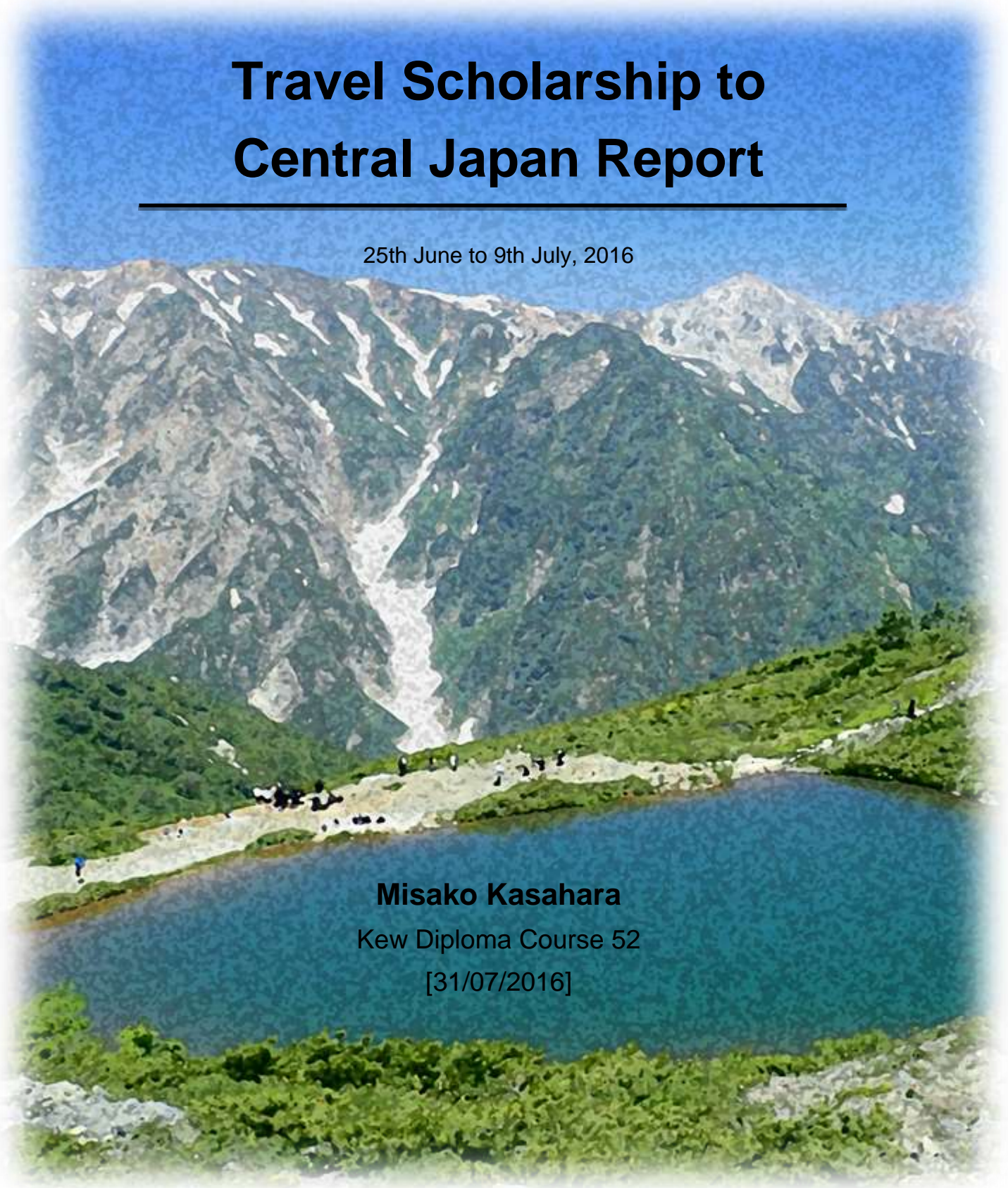
Travel Scholarship to Central Japan Report

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Kew Diploma Course 52

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Introduction

It was an exhausting but most interesting and exciting trip to the country I come from yet a country I had not seen with a horticulturist's mind until recently. My horticultural career has been only in Britain and this visit to Japan, with my advantage of knowing the language and basic geography, was truly an eye-opening event for me. There were a few big differences between Britain and Japan I noticed and these differences mostly come from differences in climate, geology and the range of native or wild plants. Both countries have a long passionate history in horticulture yet the tools, techniques, growing medium, philosophy and current fashion and state are very different. On this trip, I saw many British 'garden plants' or their parents in the wild or semi-wild and I spent a lot of energy trying to remember Japanese common names which are used more widely by people than the scientific names.

I have been a gardener in Britain for the last eight years. My career as a gardener / horticulturist started with seasonal lawn mowing in Toronto, Canada then as a maintenance gardener for small private gardens and communal private gardens in London. I then came to a point where I was not learning very much anymore and I took a decision to apply for the PGG traineeship. I spent three wonderful years on the scheme in The Garden House (Devon), The Savill and The Valley Gardens in Windsor Great Park (Berkshire) and The National Botanic Garden of Wales (Carmarthenshire). I completed the scheme in 2014 and I was awarded a Diploma (in practical horticulture) with distinction. I am currently undertaking Kew Diploma at Kew Gardens where I am increasing my understanding and knowledge of plants and wider subjects.

Overview

The aims of this trip were;

To visit botanic gardens in Japan and compare and contrast all the aspects to the ones in Britain. Also to build a good relationships and connections between Japanese and British gardens,

To see native plants in their natural or semi-natural habitats,

To research on the subject 'tree care' which I wish to write my dissertation on.

I have visited four botanic gardens, one retail complex for unusual planting, one nature reserve, two nurseries and four traditional Japanese gardens. I was also curious to see plants in urban situations (street trees, parks and green spaces) and in the countryside (natural and semi-natural vegetation, farmland and roadside) so travelling between the places I visited were also opportunities to see more plants.

There have been slight changes to my proposed itinerary. There was a communication problem with Hanau, a nursery in Hyogo Prefecture and it was not possible for me to visit there. Instead I contacted and visited a nursery in Ibaraki Prefecture called Yazawa nursery. In Kyoto, Ms Kawasaki, a Bonsai researcher took me to Syo-sei En, a Bonsai nursery not open to the public, which was not the one listed on my itinerary. I was able to visit a few more gardens in Kyoto which are included in this report.

I met and interviewed many gardeners and arborists as a part of my dissertation research. I have also been shown gardens, parks and mountains by these very kind and helpful people but the details of these activities are not included in this report as it is still in progress. These people are listed in my acknowledgement.



Figure 0.1 indication of places visited on this trip (image produced using google map)

1. Institute for Nature Study (自然教育園), Meguro district, Tokyo

It is a nature reserve situated in the very centre of Tokyo's 23 districts. Green spaces are scarce in this area of Tokyo. Some wilderness especially, such as this nature reserve, are very rare indeed. It is open to the public but it is limited to maximum of 300 people at any time in the reserve and the visitors are asked to stay on the paths.

The area covers 2 hectares (5 acres), preserving original Tokyo natural habitats such as forests, marshes and ponds. Wild fireflies have been observed in this site for many years. The insect is known to only live only where clean water and little disturbance (air pollution etc.) are present.



Figure 1.1 Entrance to the visitor centre



Figure 1.2 Information board in the visitor centre explaining history and the aims of the institute

The history of the place goes back a long time, but it's been running as a nature reserve open to the public for the last 70 years. Previously, originally it was a temple ground, then it was owned by the Emperor before it became a Natural Monument and Historic Site (as an ex-imperial garden). Currently it is a part of National Museum of Nature and Science (国立科学博物館) and partly funded by the government.

There are weekly notes on 'plants of current interest' made by the botanist who works there. Visitors can pick these up for free.

There are fixed regulations how this place should be kept. These were set when it became the Natural Monument. The regulations need a lot of interpretation to suit the current situation and this is one of the big challenges they are facing. It seems that their main aim is to encourage biodiversity by minimum maintenance to keep certain habitats (such as marshes and grass fields) intact.



Figure 1.3 With Mr Yoichiro Ohsawa, an employee, backed by large Shii tree (*Castanopsis* sp.)

Trachycarpus fortunei, which is not native in this area of Japan has spread in the reserve (three in 1965, 2,324 in 2010). This is thought to be because of warm winters. They remove most of them near the paths as these palms are not meant to be in the landscape, except a few kept to show the visitors with an interpretation board.



Figure 1.4 Protected area where general public are not allowed in

2. Yoyogi Village (代々木ビレッジ) , botanical planting in shopping complex. Yoyogi, Tokyo

This is an unusual planting throughout a modern shopping complex with some botany in mind. The planting was installed by Sora Shokubutsuen, a consultant company led by a botanist / horticulturist. Greening of urban spaces is not normally something commercial companies are deeply concerned about. Retail businesses are commonly 'low cost and maximum profit' minded but seeing this place with many users made me hope that there may be some demand for green space from shoppers.



Figure 2.1 Containers and direct planting



Figure 2.2 Some trees are becoming too big for the space



Figure 2.3 Plant label with Japanese common name, place of origin and interesting stories

There are some trees that have grown nearly out of its space but I could not find out if there is a long-term plan for renewing plants. There are many plant labels (figure 2.3) with interesting stories about the plants. The users seemed to be enjoying the space with more greenery than usual in commercial environment.

3. Nikko Botanical Garden (日光植物園・東京大学大学院理学系研究科付属植物園), Nikko, Tochigi Prefecture



Figure 3.1 Rock Garden

This garden is part of Tokyo University, started in order to grow and keep plants that wouldn't grow well at their Tokyo site (Koishikawa Botanical Garden). These are mostly plants that prefer cooler temperatures. I was lucky to be given a tour of the garden by Mr Masaki Tateno, the curator. The budget comes from the university and the income made from the entrance fee goes back to the university. The budget covers the maintenance and non-permanent employees' wages but not enough for scientific research. They need to seek funding

for research from elsewhere. They grow plants mainly for research purposes but the garden is open to the public and maintained with paths, plant labels and some interpretation boards (figure 3.1 and 3.3). It has about 15,000 visitors a year and the areas showing cultivated ornamentals are popular. There is also a collection of cherry trees. All are species except one Somei-yoshino (*Prunus x yedonensis*).

The garden also holds about 200 endangered Japanese plants as part of the botanical gardens network.

The garden is 647m above sea level, maximum temperature is 30°C, minimum -12°C. Not much snow cover in winter. Soil is broken down volcanic lava and fallen volcanic ash, slightly acid. Deer have been a problem here. Some areas are fenced off and newly planted trees need protection (figure 3.2).



Figure 3.2 Deer protection - plastic mesh and canes



Figure 3.3 Root plate is displayed for education

The garden is natural and wild, a little similar to woodland style gardens in Britain. It is more like a nature reserve than a garden and making it ornamental is not their main concern. However, the site has some historical interest too as the Emperor used to visit here during summer to get some cool air. There is a monument for this and the area around it is kept tidy with short grass (figure 3.5).



Figure 3.4 With Mr Tateno, the curator. in the nursery area



Figure 3.5 There is a highly maintained area around emperor's monument

4. Yazawa tree nursery (矢澤ナーセリー), Ibaraki Prefecture

The nursery is small, run by Mr Kohichi Yazawa. It consists of three polytunnels and an outside standing area on the edge of a family-run farm. He studied Environmental Studies (Afforestation) and was involved in governmental assessment of the environment. Then he became interested in grafting and growing trees and started this nursery. He grows native trees of the area which is used for a project called 'Gobai-midori' (greening five times). These are planted with native plants inside and all the outer sides of the container (figure 4.1). These are mostly grown from seeds or cuttings. The orders for these containers come from urban development companies and councils in order to meet the regulations of greening.

Grafting is used for growing ornamental cultivars (figure 4.2). Variegated and golden foliage seems to be very popular in Japanese ornamental tree market.



Figure 4.1 'Gobai-midori' containers



Figure 4.2 Grafted ornamental cultivars

The very noticeable thing is that growing media used in Japan is very different from ones commonly used in Britain. The 'Compost', made from broken down organic matter is rather rare in trade in Japan. Natural soils such as Kanuma and Akadama are often used to grow plants. Kanuma is actually stone (pumice) dug from an area in Tochigi prefecture, graded



Figure 4.3 Kanuma (left) and Akadama soils

into different sizes. It is porous but keeps moisture in, slightly acid and highly sterile. Kanuma is used on its own or mixed with other materials. Akadama is graded granules of red soil. It consists of pyroclastic material (from volcanic activities but does not include lava) and other sediment. These are both creations of volcanic activities and have been used in horticulture in Japan for a long time. One of organic materials used in Japan is interestingly, peat. It is mostly imported from Canada and Europe. Another is Fuyo-do, leaf mould (figure 4.4). This is produced in large quantity and widely available in trade and retail.



Figure 4.4 Fuyo-do, leaf mould

There is an artificial soil called 'AQASOIL', produced by a company called Ikegami (figure 4.5). This is lighter than other soils and resists deterioration.

Mr Yazawa mixes these materials to make potting compost. Cuttings are taken in pure (small grade) Kanuma.



Figure 4.5 AQASOIL, made from perlite

5. Hakuba Goryu Alpine Garden (白馬五竜高原植物園), Nagano Prefecture



Figure 5.1 Herbaceous beds at the visitor centre

This is a botanic garden situated on ski slopes. The whole garden is under snow during the winter and a commercial company runs both businesses. The visitor centre is located next to the car park where people purchase tickets for the cable car to get up to the garden. There are many exhibitions and interpretations of plants and gardens in the visitor centre. This space is occupied by ski business and facilities in winter. Just outside the visitor centre towards the cable car, there are ornamental herbaceous beds (figure 5.1). This is at 818m above sea level and one will be taken up to 1515m by the cable car. The main garden stretches from there up to 1676m. The garden focuses on Japanese native alpine plants but there is an area with Swiss Alps and Himalayan plants.

Mr Tsuboi, the curator of the garden gave me a full tour of the gardens. He was involved throughout the initial building (in 2000) to today's state of the garden so there couldn't be a better person to ask questions and listen to the stories.

The gardens are provided as a place people can enjoy alpine plants without serious climbing needs. This benefits less-able or disabled people and children, as well as the general public who do not participate in such activities. The cable car can accommodate wheelchairs and even though the main garden is on a slope, the major part of the garden is accessible by wheelchairs. The garden offers an opportunity for visitors to understand the importance of protecting nature as well as a nice day out with cool air and aesthetic beauty with plants and mountains.

The most spectacular was *Dicentra peregrina* (Figure 5.2). The garden has a large scree area to show off this plant known in Japan as 'the Queen of the Alpine plants'.



Figure 5.2 *Dicentra peregrina* offers visitors to see this plant without climbing mountains



Figure 5.3 *Lilium leichtlinii* var. *maximowiczii* is common in mountain areas in Japan



Figure 5.4 with Mr Tsuboi, the curator

There were many other plants I knew from gardens in Britain such as *Veronicastrum sibiricum* and *Hydrangea serrata* (synonym of *Hydrangea macrophylla* subsp. *Serrata*). These are not especially alpine plants but native to Japan. It was one of my aims to rediscover plants I knew from garden settings and I have seen many such plants on this trip. My knowledge of these plants has been enriched.

6. Niigata Prefectural Botanical Garden (新潟県立植物園), Niigata Prefecture



Figure 6.1 One of the glasshouses and a pond

I spent 2.5 days here interviewing, touring and doing work experience.

The garden was created by the prefecture and now it is run by an appointed contractor (5-year appointment under specific conditions). In this case, 国際総合学園・都市緑化センターグループ (urban greening company called Toshiyokka Senta- Guru-pu) are the current contractor). It opened in 1998. Outdoor areas (15.5ha) and display glasshouses (0.34ha) are open to the public. Glasshouses have entrance fee and open six days a week. Outdoor areas are free and open 7 days a week. There is a utility area with glasshouses and polytunnels (1ha) which is not open to the public. Car park holds 360 cars and 10 buses.

The land was previously used for building a highway nearby – a large amount of soil was taken away, leaving clay soil with some oil contamination (naturally occurring in the area).

Drainage and soil quality is poor and a large amount of effort has been put in to improve drainage by installing pipes. Soil quality has been improved ad hoc, as when the area is developed or new planting happens.

The largest glasshouse houses tropical plants. It is a dome shaped building, 30m high and 42m wide (figure 6.1 and 6.2). The other two are used for temporary exhibitions and introducing plants for general public gardening interests. There is an area of under water gardens (aquarium) displaying aquatic plants.

Day1: Yuji Kurashige (vice curator) kindly showed me around in the morning then I joined the staff pruning potted Rhododendrons in the nursery (figure 6.10).

Day2: Helped watering in the polytunnels in the morning then joined tying Dahlia to stalks with a staff and volunteers. In the afternoon I joined Mr Kurashige and Ms Tsutsumi from Tsukuba Botanic Garden collecting samples of Rhododendrons (Satsuki and Tsutsuji) for DNA analysis (figure 6.11). She is trying to clarify the grouping of Rhododendrons.

Day 3: Helped in the nursery area watering and tidying in the morning. Mr Kurashige took me to show wild plants in nearby fields and mountains in the afternoon.



Figure 6.2 View from inside the dome



Figure 6.4 Ethnobotany display of dye and plants in a corridor between glasshouses



Figure 6.3 Educational display of carnivorous plants, using large models of the plants



Figure 6.5 Aquatic plants display explaining different habitats



Figure 6.6 Recently donated and transplanted *Rhododendron* collection. Shading is essential for the plants' establishment



Figure 6.8 Nursery area is called 'back yard'



Figure 6.7 'weed' orchid, *Spiranthes sinensis* var. *amoena* (synonym of *Spiranthes sinensis*)



Figure 6.9 Close-up of one of the plastic pots used. better drainage than ones previously used here.



Figure 6.10 Pruning potted *Rhododendron* with Ms. Wakatsuki

The glasshouses are arranged so that visitors follow one route starting with some educational displays (figure 6.3 and 6.4). The glasshouses do not have permanent misting equipment and Mr Kurashige told me that there is normally no need to bring humidity up. It is watered by hand in the morning and in the afternoon, before and after the opening hours. The aquatic plant display (figure 6.5) shows many aquatic plants, explaining different habitats and ecosystems. It was originally without fish but now houses many fish which is popular with young visitors. There is a tank showing semi-aquatic plants that grows very different forms of leaves depending on if the leaves were under or above water. I thought it was a very interesting and educational display.

Outside the glasshouses, the garden shows many plants from Japan and the world. They source a lot of plants from local area because Niigata has a long tradition of growing and selling potted plant materials. Apart from that, the garden holds a large collection of *Rhododendron* subgenus *Azaleastrum*. These are commonly called Azalea, Satsuki or Tsutsuji. This collection was introduced and developed by Mr Kurashige. The collection consists of many species from Japan and other Asian countries and many old cultivars. I had the pleasure of being involved in pruning of these cultivars using Japanese pruning scissors (figure 6.10).

Newly transplanted plants are often protected from strong sun in summer in Japan (figure 6.6). Tree trunks are often wrapped with jute cloth and whole plants are sometimes wrapped loosely in shading materials.

The nursery has many glasshouses and polytunnels. There were overhead irrigation systems in most of them but these were used by hand (not timed). Watering was done either by hand or using these irrigation systems. They have a no-chemical herbicide policy and some polytunnels and standing-out areas have quite a significant amount of weed and debris on the floors.

It was really interesting to join the workforce there and also working with volunteers. I had an opportunity to work with Mr Kurashige and Ms Tsutsumi, helping Ms Tsutsumi collect samples of *Rhododendrons* for DNA analysis (figure 6.11). She works for National Museum of Nature and Science (国立科学博物館). Talking to her, I understood that there was a good connection between botanic gardens, gardens and scientific research institutes just like in Britain.

Mr Kurashige showed me around in a few areas nearby for wild native plants (figure 6.12 – 6.15). There were plants I had not known before such as *Cardiandra* sp. (figure 6.14) and plants I was familiar with as garden ornamentals in Britain such as *Stachyurus praecox* (figure 6.15).



Figure 6.11 Mr Kurashige and Ms Tsutsumi taking samples



Figure 6.12 Mr Kurashige and I visited Shiratamano-taki (waterfall) area to see plants in natural habitats



Figure 6.13 *Callicarpa japonica*



Figure 6.14 *Cardiandra* sp. (Hydrangeaceae)



Figure 6.15 *Stachyurus praecox* with unripe berries

7. Kyoto Botanical Gardens (京都府立植物園), Kyoto Prefecture



Figure 7.1 The display glasshouses

These were the first public botanic gardens in Japan, opened in 1924. They were forced to close for 12 years after the World War II but reopened in 1961. The current display glasshouses were built in 1991, their shape reflects the mountains in the distance (figure 7.1). The garden has 24 hectares (60 acres) of land and hosts 12,000 species and cultivars. There are many areas such as 'Rose Garden', 'Camellia Garden', 'European Style Garden', 'Hydrangea Garden' and 'Japanese Native Plants Area'. I was fortunate to have a tour in the display glasshouses, nursery glass-

houses, and an interview with the director Mr Junichi Nagasawa. Mr Nagasawa emphasised the value of the gardens as a recreational green space for the local people as well as their educational, historical and scientific value.

The glasshouses had areas such as 'Wet Tropics', 'Orchid and Bromeliads' and 'Alpine (cooled with air conditioning)' but most interesting room for me was called 'Night Garden'. This is an inverted day/night room which is dark with minimum light so that the visitors can see night flowering plants in flower during the day and full light is artificially given during the night. This is a great way to show night flowering plants and to educate the visitors. These plants are grown normally in a designated nursery glasshouse and acclimatised as they are about to come into flower over a few days. They are then brought into this room to be shown.



Figure 7.2 'Night Garden', an inverted day-night room showing plants which flower at night

I had some free time to explore by myself and I found the 'Japanese Native Plant Area' very exciting. The 'Wild Garden' was a little surprise for me, consisting of bright coloured annuals and herbaceous perennials including some cultivars. This didn't look very wild or natural to me but considering that traditional Japanese gardens consists of a few symbolic trees with not much colour, I imagined this looks somewhat more naturalistic. I found an unusual mushroom shown with a temporary interpretation board. It is called Kinugasa-take, *Phallus*



Figure 7.3 Bamboo fungus (*Phallus indusiatus*) in Bamboo Garden. Interpretation board is not included in this picture

indusiatus, also known as bamboo fungus (figure 7.3). It is very labour intensive task to show this fungus with interpretation as this fruiting body only lasts for a day and one never know where they might come out. Fungus is a very important part of nature, often strongly associated with plants therefore the effort, if justifiable, is well worth making for the enjoyment and educational purposes.

I was shown the nursery glasshouses area which was large and impressive. The newest house was dedicated to endangered Japanese natives including a large *Asarum* collection. Commonly in Japan in Summer, glasshouses get too hot and often require air conditioning. This house had a special glass that cuts out the rays which produce heat therefore reducing the need for air conditioning. There also was a facility for very fine misting to keep the house cool.

There are watercourses and ponds in the gardens and one of these ponds is called 'Lotus Pond'. It is not clear whether or not *Nelumbo nucifera* is native to Japan but it certainly grows well and it was a spectacular view over the pond (Figure 7.4).



Figure 7.4 *Nelumbo* cv. in 'Lotus Pond'



Figure 7.5 *Leonurus japonicus* in 'Japanese Native Plants Area'

8. Syo-sei en (松清園) Bonsai nursery, Kyoto Prefecture



Figure 8.1 Ms Kawasaki and Mr Ohmizo at Sho-sei en, Bonsai nursery

I was allowed in this nursery thanks to Ms Hitomi Kawasaki, a Bonsai researcher who knows the owner very well. Bonsai is a large subject with a long history and I was very privileged to be there. However, I wished I had known the subject better. The owner, Mr Ohmizo explained the history of his business, general care for the Bonsai, and answered all my questions with great patience. What I was most interested in was his view of using Bonsai techniques for potted trees in Britain. In my experience, often trees in containers such as standard or shaped trees are potted

up to bigger pots and eventually discarded and replaced because the tree becomes too big or their health declines. Bonsai involves a lot of manipulation, both top and root growth. Mr Ohmizo thought the root pruning is very important to keep the plant in the same size pot for a long time. Most of his Bonsai are root-pruned and repotted at least every two years. With regular top and root pruning, it is possible to keep trees in the same pot for a long time, but it is questionable whether it makes economic sense to do it for ornamental potted trees as opposed to an old Bonsai which is highly valuable and often a piece of art on its own.

This nursery, and often many other Bonsai nurseries not only grow and sell Bonsai, but also look after someone else's Bonsai. Really high value ones are traded among people who are not necessarily skilled or have time to look after them. It is like owning of racehorses, Ms Kawasaki explained.



Figure 8.2 Mr Ohmizo showing his Bonsai



Figure 8.3 Work area of the nursery

9. Traditional Japanese Gardens, Kyoto Prefecture

I visited four traditional Japanese gardens in Kyoto. These were Saiho ji (西方寺), Entsu-ji (円通寺), Kennin ji (建仁寺) and Sho-sei en (渉成園). The highlights were Saiho ji and Kennin ji.

Saiho ji (figure 9.1 and 9.2) is known also as Moss Temple. Even though I had visited many temples and shrines in Kyoto before, I had not been to this one and always wanted to. It is a World Heritage site and the garden consists of two types of Japanese garden – one is Karesansui-shiki (dry landscape garden) and the other is Chisen Kaiyu-shiki (style of garden that features a path around a pond). Most of the ground is covered by moss of over 120 species. It was a sunny day and the best time of the year to see the moss in good condition (rain season). All the debris on the moss are meticulously removed. It was beautiful and peaceful but felt somewhat artificial.



Figure 9.1 Lower area with ponds



Figure 9.2 A little stream and ground completely covered by moss

Kennin ji (figure 9.3 to 9.7) is the oldest Zen temple in Kyoto built in 1202. The temple is complex and has a lot of courtyards, gardens seen from the side of the house (en'gawa, a kind of veranda) and gardens around the tea house. Both the temple and the grounds were kept beautiful and up to date – incorporating continuous development in keeping with the original concepts and features. It was an impressive example of showing the historical site with continuous evolution and development. It was well maintained, well presented and well

explained. The place felt alive, unlike some old places where everything is kept exactly as it was at one point in the history.



Figure 9.3 Courtyard garden - titled 'circle, triangle and square garden'



Figure 9.4 New fusuma e (pictures on paper sliding doors) by a contemporary artist



Figure 9.5 Another courtyard garden



Figure 9.6 Gardens around the tea house



Figure 9.7 Gravel garden on one side of the building

10. Conclusion and recommendations

To my surprise, I noticed more differences than similarities. Materials, tools and facilities were more different than I had expected. During my stay, about half the time it was above 30 degrees Celsius and more than 90% humidity. This is very favourable climate for the boost of plant growth and I thought this must be one of the reasons why some Japanese plants do not grow well in Britain. Even lawns in parks and gardens looked very different. I learnt it was because evergreen species used in Britain would not survive the hot summer in Japan.

This trip also made me appreciate how high the standard of ornamental horticulture is in Britain. The industry is certainly a lot bigger in Britain. Generally, in horticulture in Japan (unless one has studied botany or similar scientific subjects), common names were used among staff, not scientific names. This is probably because Roman alphabet is not commonly used in Japan so there is a big step for people to learn scientific names.

For anyone who would like to make a similar trip to Japan, the language would be likely to be a limitation. My trip would not have been possible without my ability to speak the language and I felt very fortunate to have met so many inspiring people and to have understood their explanations. However, there are many places that can accommodate English speaking people, such as Niigata Botanical Garden and many Temple Gardens in Kyoto. Hakuba Alpine Garden is also very keen to make connections with botanic gardens and gardens from abroad. I felt people's passion for plants as much as in Britain and it was a wonderful experience to rediscover the country I come from through my profession.

I saw many plants I knew from working in gardens in Britain in natural or semi-natural habitat. It was somehow slightly strange experience. It is the best way to understand how plants want to grow and the knowledge will help me to cultivate these plants in the future. I will be keenly looking to see more plants when I go back to Japan again.

I have only travelled in central Honshu area on this trip but I believe Japan has a lot more to offer, for example there are subtropical islands in the south and colder climate in the north. There are many live volcanic activities happening in different areas and studying the natural succession or specialised plants in these areas would be very interesting, too.