



YR ARDD



MAGAZINE FOR MEMBERS ISSUE 32 SPRING / SUMMER 2019

Researching
the pollen
of grasses



Trawscoed
meadow
awash with
orchids



A Welsh
welcome for
the Japanese
ambassador

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This year at the RHS Cardiff show our amazing Gardd Lles was so popular there were people queuing for the privilege of enjoying it! Designed by one of our trainees, put together by our horticulture team and supported over the three days of the show by the GtF team, Gardd Lles and its popularity reflected the growing interest in benefits of gardens to health and well-being, as well as an increasing understanding of the vitally important research, conservation and education work undertaken by the National Botanic Garden of Wales.

Over the past year the Garden has delivered 27,000 educational engagements, launched the National Seed Bank of Wales, propagated some of the rarest Welsh plants for eventual re-introduction into the wild, participated in international conservation programmes and continued our ground-breaking pollinator research. The income we generate from our commercial activity and the 163,000 visitors we welcomed to the Garden in the past 12 months, the highest number since the year the Garden opened, helps support our extensive education, conservation and science programmes, but there is always more we would like to do.

Our fundraising efforts continue, to support the amazing work done by our staff and volunteers. You may well have noticed the new contactless donation points at the Garden, but we are also securing sponsorship and other income from working with local and international companies who support what we do. Thanks to all members, visitors and partners, this world-leading centre of excellence in science, horticulture and conservation will continue to do Wales proud on the world stage.

Mint: healthy, tasty and inspirational 🌿



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Highlights

Catch up with the news and events in the Garden



Bees and DNA barcodes

Flowers on the roadsides are a common and welcome sight, proof that councils in many parts of the UK are intent on helping pollinating insects to thrive in urban areas. However, planting flowers which bees and hoverflies will favour is vital, and recent research at Bournemouth has been fascinating.

Researchers collected the pollen from bees which were visiting flower patches. Bees were caught and temporarily held in a tube before release, the pollen that had fallen or rubbed off then being used for DNA analysis to find out which flowers the bees had visited. This DNA meta-barcoding has

been made possible because of work done here at the Garden to create a database showing the DNA of all the flowering plants in the UK.

The results proved that bees are indeed using the floral patches provided for them in cities – but these areas alone are not enough. Some of the bees' favourite flowers in the Bournemouth sample area were purple tansy (*Phacelia*), chrysanthemums (*chrysanthemum*), poppies (*Papava*), cornflowers (*Centaurea*) and viper's bugloss (*Echium*). Among garden plants, lupins (*Lupinus*), hydrangeas (*Hydrangea*),

buddleja (*Buddleja*) and privet (*Ligustrum*) were popular, as were wild plants like brambles (*Rubus*), sow thistles (*Sonchus*) and wild lettuce (*Lactuca*). Bees obviously travel around the urban environment to find what they need, and don't just rely on the small floral strips planted for them. Not surprisingly, different bees like different things, depending on their size. For example, small solitary bees are restricted to more open flowers like daisies, while bumble bees have long tongues and can therefore reach into deep flowers. Clearly, gardeners need to cater for all tastes if we hope to support bee diversity.

THE DOORS OF PLAS PILIPALA ARE OPEN



Following months of essential maintenance work, our wonderful butterflies and moths now have a refurbished tropical house to enjoy. Members and visitors alike are glad to wander once again among tropical beauties, newly emerged from their chrysalises, like this glamorous Blue Morpho. When it stops to feed, wings folded, the brown undersides of its wings means it's cleverly camouflaged – and a challenge to spot!

YOUNG HORTICULTURIST OF THE YEAR 2019

Will it be our very own Mark Matthews? As we go to print we all have fingers crossed for Mark who has come through the two preliminary rounds with flying colours in order to compete in the final round held at Kew Gardens on May 11th. The questions asked of him then will cover all sectors of horticulture, so every scrap of knowledge and experience this young man has will be vital. The winner receives the £2,500 Percy Thrower Travel Bursary, provided by the Shropshire Horticultural Society and the Percy Thrower Trust, to fund a horticultural trip anywhere in the world. The second place winner goes home with £950, third with £550 and the runners-up all receive £200.

Bring your family heirlooms



Join Fiona Bruce and the *Antiques Roadshow* team when they film here at the Garden on Friday July 19, 2019.

A team of the country's leading authorities on arts and antiques will be here to offer free valuations for family heirlooms or car boot bargains. Each Roadshow event attracts around 4,000 people, who come along to find out if they might

own a missing masterpiece and find out the priceless history of their items. Whether they bring a £100,000 painting or a £5 cup and saucer, everyone gets an expert opinion on their treasure.

Antiques Roadshow is one of the BBC's most popular factual programmes and around six million people regularly watch on Sunday evenings. Fiona Bruce has presented the show for the past 12 years: "So much of what you see on the *Antiques Roadshow* is about the story of an object and its owner as much as about its value. We are never short of people bringing along items that tell a hell of a story. I can't wait to see what they pull out of their bags and trolleys in 2019."



A selfie with Katherine Jenkins! 📸



Gardd Lles at RHS Cardiff

At the RHS Cardiff Flower Show in April our beautiful feature garden, Gardd Lles, Welsh for 'Well-being Garden' was warmly received.

Contemporary studies highlight the innate need of humans to have a meaningful relationship with the natural world – often referred to as biophilia. The positive benefits of enjoying your garden can include stress reduction, physical exercise and enhancing or restoring an attention span that is rewarding and fulfilling. The garden, which was created by the Botanic Garden's horticulture team in partnership with the Growing the Future project, was designed to enhance those benefits. It featured two secluded seating areas, private spaces for contemplation and the practice of mindfulness. Visitors found the planting scheme with its calming white and pastel tones, textured foliage and layers of perennials, to be soothing. And naturally, to strengthen the association with nature, pollinator-friendly plants and habitats were incorporated. Elements of Gardd Lles are being gifted to the hardworking NHS staff at Morriston Hospital and installed in a courtyard for the enjoyment of all hospital users.



From Nick Russell's drawing to the living reality above

GROWING THE FUTURE IN NORTH WALES

Growing the Future is pleased to be working with its first partner hub, namely Bangor University's Treborth Botanic Garden, where Busybees and Wild Elements, a social enterprise dedicated to connecting people with nature, enables Growing the Future courses to be run in north-west Wales. The first was held at Pen-y-Bonc in Bangor in April. Tutor Lisa Mundle focused on designing a garden for Growing Organic Foods, a practical session much appreciated by the participants: 'I loved having a stab at designing my own garden ... very informative discussions ... a beautiful day in an inspiring setting.' The follow-on course taps into every gardener's desire – 'Better Yields', while courses in the coming months include 'Miniature Forests' and 'Making the Most of Your Produce.'



For a whole range of exciting courses coming up here at the Garden check out botanicgarden.wales



HARD HAT TOURS

Dams, bridges, lakebeds: this is the kind of engineering that people want to see up close. Many supporters and visitors to the Garden not only want to see the beautiful parkland restored, they want to witness the nuts and bolts actually being put in place. It's no surprise, therefore, that the regular guided walks to key points in the construction site are already popular, and it can only get more exciting as more of the plans and calculations become realities. Check the website or events booklet for dates and times, and have your questions ready for the expert who will guide you.



UNVEILING ALICE

Alice Abadam, suffragist, orator and writer is perhaps the most famous of the Middleton women. The blue plaque mounted in her honour was unveiled at the Garden's autumn conference, dedicated to women connected to the great estates of Wales. by Margaret Vaughan, Alice Abadam's niece, dressed most appropriately in suffragist colours.



Two New Faces in the Team

As work on restoring the parkland progresses dramatically, the arrival of two apprentices has been timely and much appreciated. Manon Williams (left) and Joanne Evans (right) bring different expertise and personal passions to the role of Cultural Heritage Venue Apprentice. Helen John, the Project Manager, is delighted with the impact the new staff have

made already: "Jo and Manon bring an incredible amount of creativity, enthusiasm and flexibility to the team."

Manon's skills include photography and she has been busy capturing some unexpected subjects – fungi and lichen. "I've been using a telescopic lens to capture close-up images of lichen which have yielded really artistic portraits."

Jo meanwhile has enjoyed researching William Paxton's influence on the town of Tenby, discovering how his investment and love of the town shaped its character. "I am excited to be helping with an exhibition about Paxton's influence in Tenby which opens in Tenby Museum this summer."

Which grass pollen gets up your nose?

With 25% of the UK population living with either asthma or hay fever, the Garden's research on airborne grass pollen will have far-reaching benefits.

The Garden is proud to be part of a major three-year project to analyse airborne grass pollen, working in partnership with scientists at the universities of Bangor, Aberystwyth, Exeter, New South Wales, Queensland, Worcester, and in collaboration with the UK Met Office. The team, collectively known as PollerGEN, has already discovered that it is not just the overall 'load' of grass pollen in the air that could cause those particularly bad days for asthma and hay fever sufferers. Days which see increased asthma attacks or intense hay fever could be related to the release of pollen from particular grass species.

Current pollen 'counts' and forecasts assess the whole load of pollen in the air and, while scientists can distinguish between the pollen created by individual tree and weed species, it has proven virtually impossible for the current forecast methods to visually identify different grass pollens.

METABARCODING

The technique of metabarcoding has dramatically changed the way in which pollen is analysed. The technique, pioneered by the team at the Garden, enables scientists to automatically identify any fragments of material caught in a sample of air, water or soil, by recognising and matching its unique DNA 'barcode'. Crucial to this is the DNA barcoding of all the flowering plants native to Britain; a project which was led by the Garden's Head of Science, Dr Natasha de Vere.

Dr de Vere said: "Wales was the very first country in the world to DNA barcode all its flowering plants and we then rolled this out to include all UK plants. The vital techniques and bioinformatics used in this latest grass pollen project were perfected here in West Wales."



For the first time, grass pollens collected over the course of one season have been analysed using this high-tech method. This has enabled the research team to start investigating links between certain pollen types and those days on which pollen-allergic individuals and people with asthma are most affected.

Prof Simon Creer, of Bangor University, who is leading the research, explains: "I'm a hayfever sufferer myself and I know that, on some days – despite a high pollen forecast – I can be less affected than on other days when the forecast appears to be lower. This led me and others to wonder whether it is the high load of pollen alone that causes the problem or whether the different grass pollens cause different levels of reaction."

ALLERGIES

Georgina Brennan, who analysed the aerial pollen's "environmental DNA" at Bangor University, added: "Bringing a range of specialists together has enabled us to find initial answers. Our task is now to develop a clearer picture of where the pollen comes from, how it moves through the air and how different types of pollen can be linked to allergies."

At the University of Exeter they are now investigating datasets for GP visits, hospital admissions and spend on certain pharmaceutical products to identify correlations between healthcare data and increases in particular grass pollens. The grass flowering season, which in the UK currently runs from the end of May to September, can lead to billions of pounds' worth of loss of quality of life, time off work, GP and hospital visits or admissions and monies spent on pharmaceuticals. It is therefore a project that offers far-reaching insights, of benefit to individuals and to the health service.

Celebrating our Japanese Garden

On June 4 2019 we are celebrating the newly restored Japanese Garden and are honoured to have as our special guest the Japanese Ambassador, Mr Koji Tsuruoka. He will be formally welcomed by Lord Elis Thomas AM, in an event where east and west truly meet. There will be talks and tours, an introduction to Chadō, the Japanese Tea Ceremony, and a chance to hear The Aber Taiko drummers as well as Celtic harp music. Come and join us for these very special celebrations.

From the outset, this has been a gift of a garden. Its name, 'Sui ou tei', refers to the national flowers of Japan and Wales, the cherry blossom and the daffodil, and the link between east and west is one of which The Garden is particularly proud. Sui ou tei actually started life as a show garden at the RHS Chelsea Flower Show in 2001, winning a gold medal and coveted 'Best in Show' award for its designer, Professor Masao Fukuhara. As part of the Japan 2001 festival, the Japanese government had co-sponsored the garden with *The Daily Telegraph*.

After Chelsea the National Botanic Garden of Wales, newly opened, was delighted to be given the chance to offer this exquisite garden a permanent home, with Professor Fukuhara and his team of Japanese gardeners undertaking the installation.

By 2017 renovation work was needed and with the help of the Japanese Garden Society a restoration programme was begun, part-funded by the Japanese government. Repairs to the building, wall, paths and bamboo fence, extensive pruning and replanting were completed in spring 2019, with Graham Hardman of the Japanese Garden Society providing diligent guidance all along the way.



TAKING TEA AND AWAKENING THE SPIRIT

Rocks, moss, gravel, a tea-house: these are the details we have learned to expect in a Japanese garden, thoughtfully made and intended to prompt mindful, purposeful attention. As Monty Don says in a recent *Gardeners' World* magazine article, 'The whole point is to focus all your attention on these details and, in the process, slough off all the cares and business of the outside world.'

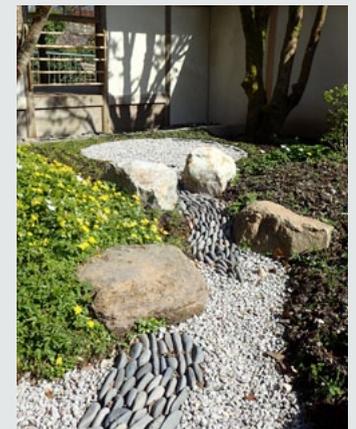
Looking at our Japanese garden and its *yori* or tea-house, you are sure to enjoy it more if you have some understanding of the significance of certain shapes and ideas. A large circle of gravel is a pleasing symmetrical shape, but it's also the moon, and it's a pool of water reflecting the moon. Notice the trickle of stones emanating from it and it becomes a source for a river of stones flowing into the dry garden – which itself is, paradoxically, the life-giving water of a lake or the sea. It takes concentration and imagination to appreciate that all elements of the natural world are represented here in a simple, minimalist layout.



The building upon which you first focus represents a *yori*, a rustic retreat where a hermit might live, far away from the bustling world. In the 17th century, such buildings were seen as an ideal setting for a tea ceremony. This is an old Japanese custom in which a host prepares guests a cup of powdered green tea, whisked with boiling water.



The signpost or *michishirube* which you can examine closely from the path, is in the form of a small stone pillar. Such signs were placed along the former Tōkaidō road connecting Edo (modern-day Tokyo) with Kyoto, Japan's ancient capital.



Orchids

Our Welsh native orchids are bursting into flower on our Waun Las National Nature Reserve meadows and pastures.



OUTDOORS ...

During two weeks in May, (May 20-24 and 27-31) volunteers will be busy recording the wildflowers that have arrived naturally on our meadows, and native orchids will surely be among them. A spring beauty, the early-purple orchid *Orchis mascula* should still be in flower for the recording weeks, and can be found close to the path along Llyn Uchaf. The lovely greater butterfly orchid *Plantanthera chlorantha* will not be in flower until the end of June, so come back then to see thousands of them in our Trawscoed Meadow. The farming techniques used here in the Garden encourage wildflowers to thrive, and the recording helps us to notice and monitor the increased diversity and number of wildflowers on our farmland. Wild orchids have underground tubers which produce new stems, leaves and flowers every year. The common spotted-orchid *Dactylorhiza fuchsia* is one you might expect to be readily recognised but because the flower spikes vary greatly in colour, height and morphology, it's not as easy as it sounds to recognise them, though they can be found right across the hay meadows of Waun Las National Nature Reserve.

The heath spotted-orchid *Dactylorhiza maculata*, on the other hand, prefers the damper soils and there is an expanding colony to be found on Cae Brwyn, the area where Carmarthenshire's county flower, the whorled caraway, is also to be found in abundance.

The broad-leaved helleborine *Epipactis helleborine* sometimes pops up as a weed in the Boulder Garden, so volunteers need to recognise these little beauties when they're tidying up.

AND INDOORS

Meanwhile, in Plas Pilipala, the tropical house where there are stunning butterflies and moths to marvel at, the tropical orchids actually grow on other plants. They absorb their water and nutrients from specially made liquid food mixes – a process which can be replicated at home using commercial orchid food. *Aeranthes grandiflora* is one such tropical orchid, a warm-growing epiphytic orchid from Madagascar which grows in humid rainforests at an altitude of up to 1200 metres. Its fragrant flowers are semi-translucent and are one of the favourites of our Plas Pilapala horticulturist Carl Holmes. He advises to never cut off the dead flower stems as they can surprise you with new blooms from seemingly dead stems.

Why not volunteer and help record our wildflowers?

To find out more please contact Manon Williams:

manon.williams@gardenofwales.org.uk or 01558 667178



Dactylorhiza fuchsia



Plantanthera chlorantha



Aeranthes grandiflora

Left: *Dactylorhiza praetermissa* – Southern Marsh-orchid on Trawscoed Meadow.

It's your day!

Our annual Members' Day, held this year on Friday 17 May, is a great chance to catch up on what's new at the Garden and what plans we have for the future. It's a sociable and inspiring menu of events, with a choice of talks and tours, including a presentation by Lucy Witter on 'Wildflower Research into Seed Mixes for Pollinators'. If you want to entice the bees and hoverflies, come to learn which flowers they favour.

Be sure to have space in your boot for the botanical bargains because it's also the first day of the two-day plant sale. It's a wonderful opportunity to acquire new, healthy and often unusual plants grown by volunteers, members and horticultural staff. The preparation has been painstaking – now all visitors have to do is browse and buy.



A CHOICE OF GARDENS



Your membership gives you a range of excellent garden attractions all year round, free of charge. This year, however, there is **one change** to note. Our reciprocal arrangement with Picton Castle & Gardens in Pembrokeshire has come to an end. It has been decided that the proximity of the two venues and the disparity in membership prices means that the arrangement is no longer commercially sustainable. Do make the most of other lovely locations such as Westonbirt Arboretum (left), and be assured that we are always looking to add to your list of benefits. We hope to have good news in that regard very soon.

Members' patch



An expanding library

If you love books, perhaps their design and tactile qualities as well as their content, then on Members' Day on Friday 17 May be sure to take a group tour around the library in our Science block. There are 5,300 books there – possibly a small number by library standards but all are on botany, gardens, horticulture and associated topics, and all are donations. According to the early volunteers we have met, botanical books were being donated to the Garden even before it officially opened. The library is staffed by trained volunteers who tidy and catalogue and support visiting researchers. Major donors have been career botanists who have given us their very significant private libraries – donors such as Professor Charles Stirton, formerly the director of the Garden, and most recently Quentin Kay who was a lecturer in botany at University College Swansea.

Tours for visitors and researchers can be arranged at other times by contacting the library on 01558 667129 or emailing library@gardenofwales.org.

We would like to express our appreciation for the kind legacy donation to the Garden made by the recently deceased naturalist Mervyn Howells in his will. Mervyn was a highly respected Welsh naturalist whose active involvement in nature conservation and particularly his knowledge and enthusiasm for mycology has left a long lasting legacy across south Wales. As one of the Garden's earliest supporters, Mervyn was well aware of our need, as a charity, to receive both financial and practical help to achieve our mission.



Meet a member

LILIAN BEVAN

The Garden is just a short ride from Lilian's home in Johnstown, Carmarthen, so she is a frequent visitor in every season, making the most of her membership to attend coffee mornings, talks, craft fairs and holiday events. As a keen flower arranger, she is always on the lookout for new ideas for foliage and statement plants. Currently chair of the Carmarthen Floral Art Society, she has enjoyed being part of many ambitious flower-arranging projects over the years, including a floral commemoration of the Second World War which was held at Margam Park in November 2018. Several of her friends in the Society are also members of the Garden – it's a complementary passion!

Favourite Things

Meirion Owen's Quack Pack does a star turn at the Garden on high days and holidays – always raises a smile.

Also loves visiting other gardens – a member's privilege. Westonbirt Arboretum and Ryton Organic Gardens in Coventry stand out.



Help save the threatened plants of Vietnam

Vietnam is home to an amazing diversity of plants but many are vulnerable to extinction due to ecological pressures such as habitat loss and climate change. Conservation action is urgently needed. The National Botanic Garden of Wales aims to help by working in collaboration with other UK-based botanic gardens and local partners, an expedition to the region being planned for later this year. Sustainable collection of seeds will support the development of an ex situ collection at the Garden.

The project has already been generously supported by the Royal Horticultural Society and Spencer Environmental Care but the Garden needs your help to sponsor our curator Will Ritchie's participation in the trip.

To find out more and make a donation, visit the [National Botanic Garden of Wales JustGiving page](#).



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