



9-16.09.2018

**BGCI's 10th International
Congress on Education
in Botanic Gardens
WARSAW | POLAND**

Organizers:



UNIVERSITY
OF WARSAW
BOTANIC GARDEN



200 YEARS
UNIVERSITY
OF WARSAW
BOTANIC GARDEN

Co-organizers:



Sponsors:



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w Warszawie)



Media partners:



Pierwsze
Rajło
Informacje



WELCOME

We are honoured to welcome you to the University of Warsaw Botanic Garden for the 10th International Congress on Education in Botanic Gardens. Our small garden is situated within an ecological corridor in the city, which stretches along the banks of the Vistula, our country's main and largely still wild river. This corridor is a unique wildlife niche in which survivors have found their refuge – representatives of disappearing and endangered plant species. Our Garden is a peaceful haven, which puts the Congress motto *Bringing nature to the city* into everyday practice.

We meet at a special moment for our Botanic Garden. This year we celebrate the 200th anniversary of its founding. Our chosen motto *Two Centuries Young* reflects that botanic gardens do not get old. Age adds to their glow and over time they absorb the life energy of those dedicated to their upkeep, which they then share with all those who hold nature and conservation at heart. This is the common heritage of humanity.

The University of Warsaw Botanic Garden is a special place in the city. Its history mirrors that of the capital and the University, bound together in prosperity and demise. Overcoming hardship, it continues to draw strength from past success, and looks with hope to the future.

The people meeting here today are so wild about nature, they have dedicated their lives to sharing their passion and engaging others. We hope that, during this week, we can work together to seek inspiration, share ideas and build determination and energy to work for the survival of nature, against all odds.

This we wish for all Congress participants and for ourselves,

University of Warsaw Botanic Garden

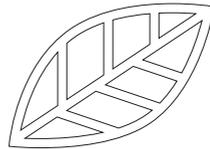
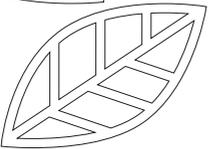
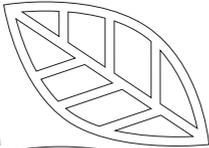
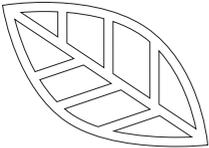
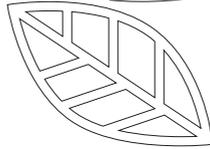
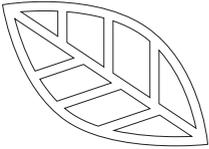
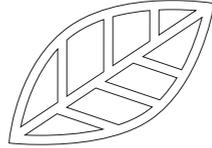
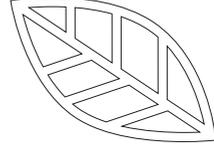
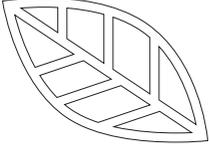
Botanic Gardens Conservation International

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TSOBA





ABOUT BGCI

Botanic Gardens Conservation International (BGCI) is a membership organisation, linking botanic gardens around the world in a shared commitment to save threatened plant species and raise awareness about the importance of plants. With approximately 500 member organisations, BGCI is the world's largest plant conservation network. BGCI's mission is 'to mobilise botanic gardens and engage partners in securing plant diversity for the well-being of people and the planet'. BGCI has played an essential role in the development and ultimate adoption of the Global Strategy for Plant Conservation (GSPC), which has changed the political face of plant conservation and transformed the way biodiversity targets are set at the international level. Networks supported by BGCI now exist in all regions of the world, bringing together botanic gardens with an astonishing wealth of knowledge and experience to share. BGCI runs a unique database of plant collections, which has documented over 115,000 species in cultivation in botanic gardens – one third of total known plant diversity. More than 10,000 of these species are under threat of extinction in the wild. BGCI's highly regarded education programme has been running for over 20 years. Its activities focus on information sharing, knowledge transfer and capacity building for plant conservation and sustainability, working closely with research organisations to improve learning and knowledge management. With its publication *Roots* and its triennial International Education Congresses, BGCI builds botanic gardens' capacity in public engagement around the world. In recent years, BGCI's education programme has been coordinating an innovative programme 'BigPicnic: Big Questions – engaging the public with Responsible Research and Innovation on Food Security which brings botanic gardens together with the public, scientists, policy-makers and industry to help tackle the global challenge of food security.

ABOUT THE CONGRESS

Global estimates show that by the year 2050 almost $\frac{3}{4}$ of the human population will live in cities. This means that an increasing number of people will not have the opportunity to experience truly natural environments. With huge declines being observed in biodiversity worldwide, we therefore have to find new places for vanishing plants and animals to thrive, we have to bring nature to the city.

Modern day botanic gardens play an important role in conserving biodiversity, but they also provide an essential link to the public, able to promote the importance of the protection and sustainable use of our natural resources. Botanic gardens can therefore act as a bridge between scientific knowledge and the role that society has to play in the protection of our planet. Through social education, botanic gardens can share with city dwellers the unique values of nature, the ways in which we can protect them and how we can utilise nature's resources with care and respect.

In many cities, alongside botanic gardens, there are a growing number of community gardens. These gardens form a new space to explore how we can live in big cities. Organized by local communities, these areas are a way of experiencing nature and biodiversity and they serve as important educational centres for topics such as health and nutrition.

Held in 2018, the 10th International Congress on Education in Botanic Gardens "Bringing nature to the city. Celebrating the 200th anniversary of the University of Warsaw Botanic Garden" will offer an opportunity for practitioners and theorists from around the world to discuss how we can effectively provide modern nature education, especially in a big city environment. It will also be an occasion to celebrate the 200th anniversary of the foundation of the University of Warsaw Botanic Garden.

ABOUT UWBG

The University of Warsaw Botanic Garden was founded in 1818 by the renowned botanist, Professor Michał Szubert. The Garden initially occupied 22,5 hectares and was located in the former Royal Gardens in the northern part of Royal Łazienki Park. It had several greenhouses including the Old Orangery. The Garden's founder divided it into three parts: the first for research, devoted to plant systematics; the second for pomology, where a collection of fruit trees was established to educate future gardeners; and finally a leisure garden for public use. The *Index Plantarum* was published in 1824 and included over 10,000 species and varieties found in the Garden, among them around 1000 representatives of Polish flora.

Unfortunately, following the November Insurrection in 1831, expansion of the Garden was halted; its area was reduced by two thirds and for many years all managerial posts were held by tsarist officials. In 1916 the Garden once again became a part of the re-established University of Warsaw and soon regained its former scientific and educational glory.

The Second World War dealt another significant blow to the Garden. During the Warsaw Uprising in 1944 all its buildings and greenhouses were destroyed and the park became a cemetery for the once rich plant collections. Nevertheless, after the war the Garden was rebuilt with renewed hope and great enthusiasm.

All the buildings and greenhouses were quickly rebuilt in the post-war years and work began to reconstruct the collections. In 1965, the University of Warsaw Botanic Garden was listed as a heritage site. However throughout the 1980's the Garden suffered from a lack of funding and experienced a period of steady decline until the appointment of a new director, Dr Hanna Werblan-Jakubiec. Thanks to her enthusiasm, many new projects were launched.



The Garden's activities are now focused on its most important function, namely the protection of plant biodiversity. To this end, new fields of research have been developed, including plant reproductive biology and ethnobotany. We combine classical field experiments and observations with modern laboratory techniques (molecular phylogenetics, electron and confocal microscopy, chromatography, etc.) to explore the diversity of plants' pollination systems and breeding strategies. Furthermore, the Garden has been continuously expanding its educational programmes: from simple information boards and educational trails to developing inquiry-based workshops. We will soon be opening a new Education Centre. In recognition of the Garden's expanding educational work, we are hosting BGCI's 10th International Congress on Education in Botanic Gardens.

Our resources can also be accessed on the Internet. The most prominent is FLORATHECA, a database with thousands of botanical illustrations from our archives, all of which are open to the public. These include 19th and 20th century photographs, graphics, drawings and press cuttings that have been digitalised and described by art historians and biologists.

Today, the University of Warsaw Botanic Garden is a department of the Faculty of Biology. It is one of the oldest and the smallest institutions of its kind in Poland, and is firmly established in the heart of the capital. Combining plant conservation, research and education in a vigorously developing institution with a 200-year history, we work with all nature lovers for a better future for both people and plants.

The Missouri Botanical Garden

congratulates the **University of Warsaw Botanic Garden** on its celebration of its 200th anniversary, and **BGCI** on the organization of the 10th International Congress on Education in Botanic Gardens.



“The Missouri Botanical Garden is honored to support the 10th BGCI International Congress on Education in Botanic Gardens and sends its good wishes for the success of the meeting. The worldwide challenges faced by the planet to stem the loss of biodiversity, while at the same time achieving sustainability for ourselves and future generations, requires all of us to continue to achieve excellence in environmental education through botanic gardens. We greatly welcome the collective approaches developed, supported, and sustained through botanic garden partnerships at all levels and by BGCI. We pledge our continued support for these endeavors in the years ahead.”

Dr. Peter Wyse Jackson

President of the Missouri Botanical Garden



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is proud to sponsor the

BGCI 2018 International Congress on Education in Botanic Gardens



The Morton Arboretum's education programs range from an immersive nature play garden for children to rigorous tree research experiences for undergraduates.



Sue Wagner



Carissa Dougherty

Arboretum leaders Sue Wagner, vice president of education and information, and Carissa Dougherty, head of knowledge management, will present throughout the congress on the following topics:

- Nature-based learning
- Leading organizational change
- Conservation education
- Program design and measuring impact

As a world-class arboretum and education leader, The Morton Arboretum, near Chicago, USA, is the champion of trees. Visit mortonarb.org.

Science

The Morton Arboretum, including the Center for Tree Science, advances science, conservation, and horticulture with a team of 92 experts, including 26 PhDs.

Conservation

The Arboretum plays a leading role in restoration and tree conservation in the Chicago area and around the world through its Global Tree Conservation Program.

Collections

The Arboretum's 685 hectares include 365 hectares of managed natural areas and living collections.



The Morton Arboretum is the Host and Facilitator of Arbnet

A global, interactive community of arboreta that supports the common purposes and interests of tree-focused public gardens to advance the planting, care, and conservation of trees. arbnet.org



Proud Partner of the Global Oak Conservation Partnership

A program of the Global Trees Campaign. globaltrees.org



Naples
Botanical
Garden

GARDENS with LATITUDE®



OUR MISSION

To develop and conserve collections and habitats representative of the flora and cultures between the 26th latitudes. To discover, research and share knowledge about these plants and their gifts to us of beauty, tranquility, sustenance and well being. And to engage and inspire everyone to care for the plants around them and become stewards of the environment.

NAPLESGARDEN.ORG



VENUES

1 / Faculty of Biology University of Warsaw

ul. Ilji Miecznikowa 1, 02-096 Warsaw

Campus Ochota

Access via public transport, go to page....

Rooms:

- 9B – ground floor, entrance from the main hall
- 102B – entrance through the stairs from the main hall / entresol
- 103B – entrance through the stairs from the main hall / entresol
- 6B – ground floor, slide room – entrance from the main hall
- 13D – ground floor, wing D
- 314D – third floor, wing D
- 55A – ground floor, wing A
- 301A – third floor, wing A
- 401A – fourth floor, wing A
- Library – second floor

2 / University of Warsaw Botanic Garden

Aleje Ujazdowskie 4, 00-478 Warsaw

Access via public transport, go to section [Transportation](#)

3. Faculty of Sculpture Academy of Fine Art

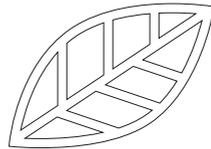
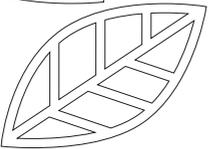
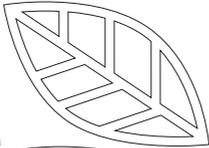
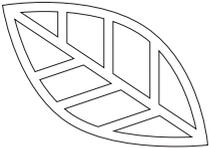
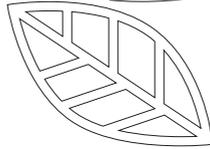
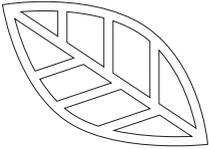
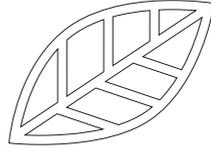
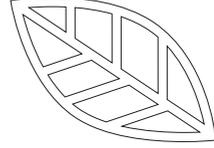
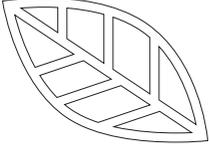
Wybrzeże Kościuszkowskie 37/39, 00-379 Warsaw

Access via public transport, go to section [Transportation](#)

- Auditorium and foyer – second floor



AT A GLANCE



CONGRESS TIMETABLE

09.09 / Sunday

University of Warsaw Botanic Garden

- **From 16:00** – pre-registration in the Botanic Garden
- **16:30 and 17:00** – garden guided tours
- **18:00** – Welcome Party in the Botanic Garden / *included in the fee*

10.09 / Monday

Faculty of Biology

- **07:00 – 17:30** – Registration
- **09:00 – 10:30** – Ceremony of the Congress opening, Official addresses
- **10:30 – 11:00** – Coffee break
- **11:00 – 12:30** – Sessions
- **12:30 – 14:00** – Lunch
- **14:00 – 15:30** – Sessions
- **15:30 – 16:00** – Coffee break
- **16:00 – 17:30** – Sessions
- **17:30 – 19:30** – Poster session / *drinks and snacks included*

11.09 / Tuesday

Faculty of Biology

- **08:00 – 17:30** – Registration
- **09:00 – 10:30** – Plenary
- **10:30 – 11:00** – Coffee break
- **11:00 – 12:30** – Sessions
- **12:30 – 14:00** – Lunch
- **14:00 – 15:30** – Sessions
- **15:30 – 16:00** – Coffee break
- **16:00 – 17:30** – Sessions

12.09 / Wednesday

Faculty of Biology

- 08:00 – 13:30 – Registration
- 09:00 – 10:30 – Plenary
- 10:30 – 11:00 – Coffee break
- 11:00 – 12:30 – Sessions
- 12:30 – 13:30 – Lunch
- 13:30 – 22:30 – Sightseeing tours of Warsaw / *tours include barbecue dinner*
+ The Council of Botanical Gardens in Poland meeting

I Sightseeing tour group

Warsaw – Cultural Heritage & city parks –

Wilanów Park (Museum of King Jan III's Palace at Wilanów) and PAS Botanical Garden in Powsin

II Sightseeing tour group

Warsaw – “Nature wonders in the city”– Kampinos National Park

13.09 / Thursday

Faculty of Biology

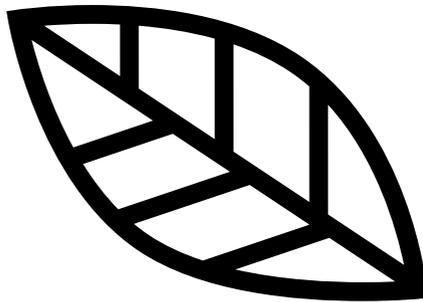
- 08:00 – 17:30 – Registration
 - 09:00 – 10:30 – Plenary / *including a special parallel session*
on UWBG 200 anniversary, in Polish with translation
 - 10:30 – 11:00 – Coffee break
 - 11:00 – 12:30 – Sessions / *including continuation of the special*
parallel session on UWBG 200 anniversary
 - 12:30 – 12:45 – Congress photo
 - 12:45 – 14:00 – Lunch
 - 14:00 – 15:30 – Sessions / *including a parallel session in Polish*
 - 15:30 – 16:00 – Coffee break
 - 16:00 – 17:30 – Sessions / *including a parallel session in Polish*
 - 19:30 – Congress dinner / *additional fee*
-

14.09 / FridayFaculty of Biology &
University of Warsaw Botanic Garden

- 08:00 - 15:30 - Registration
- 09:00 - 10:00 - Sessions
- 10:00 - 10:30 - Coffee break
- 10:30 - 12:00 - Sessions
- 11:00 - Post-congress tours departure / *for registered participants*
- 12:00 - 14:00 - Lunch and BigPicnic Marketplace
- 14:00 - 15:00 - Closing ceremony
- 15:00 - 15:30 - Transfer to the University of Warsaw Botanic Garden
- 15:30 - 17:00 - Exploring the Botanic Garden and its partners
- 17:00 - Farewell barbecue party in UWBG / *included in the fee*

14.09 / Friday - 16.09 / SundayPost-Congress tours in Poland / *additional fee***National Parks of NE Poland**

- 14.09 - Biebrza National Park
 - 15.09 - Wigry National Park
 - 16.09 - Białowieża National Park
-



| | |
|---------------|---|
| 16:00-19:00 | University of Warsaw Botanic Garden |
| 16:30 / 17:00 | Pre-registration Garden guided tours 184 |
| 18:00 | Welcome party 183 |

| Faculty of Biology | | |
|--------------------|--|--|
| Registration | | |
| 07:00-17:30 | <p>Main lecture theatre</p> <p>Plenary</p> <ul style="list-style-type: none"> - Official address 31 - Growing public engagement...31 - Welcome remarks and...32 - Opening keynote - Education in city gardens...32 | |
| 10:30-11:00 | <p>CG</p> <p>Panel session</p> <p>Main lecture theatre</p> <p>City gardens</p> <ul style="list-style-type: none"> - The MUSE vegetable gardens...33 - Living with Trees...34 - Gardening without garden...34 - It's a jungle in here...35 - Historical gardens as part...36 - The Nairobi Arboretum...37 | |
| 11:00-12:30 | <p>NET</p> <p>World café</p> <p>Room: Library</p> <p>Reaching and building alliances with new audiences: how does permaculture farming bring science into one – to one learning? Teaching high school university permaculture groups and community supported agriculture initiatives 37</p> | |
| 12:30-14:00 | Lunch | |
| 14:00-15:30 | <p>NET</p> <p>Panel session</p> <p>Main lecture theatre</p> <p>New educational tools</p> <ul style="list-style-type: none"> - A homemade QR code...40 - Art history, the botanic garden...41 - The Care for the Rare...41 - A virtual and physical mobility...42 - Passion over facts...43 | <p>WT</p> <p>Panel session</p> <p>Room 103B</p> <p>Working together: A US-Russia environmental education exchange 44</p> <ul style="list-style-type: none"> - Presentation 1 44 - Presentation 2 45 - Presentation 3 45 - Presentation 4 46 |
| 15:30-16:00 | Break | |
| 16:00-17:30 | <p>SFE</p> <p>Panel session</p> <p>Main lecture theatre</p> <p>Supporting formal education examples</p> <ul style="list-style-type: none"> - Innovation and botanical garden and its education's...48 - The botanic garden and the city school: more ideas...48 - My tree from the botanical garden. A year round botany...49 - SOS Pollinator's project 50 - The Recycled Discovery Garden...51 | <p>WT</p> <p>Panel session</p> <p>Room 103B</p> <p>Education from experience – adapting values, culture and personal history in building educational programs 51</p> |
| 17:30-19:30 | 1st floor foyer / Poster session 55 | |
| | <p>MI</p> <p>Roundtable</p> <p>Room 401A</p> <p>Communities for conservation: Engaging the public to achieve impactful conservation goals 38</p> | <p>NET</p> <p>Workshop</p> <p>Room 301A</p> <p>Trivial evolution: Plants: a new game to discover plant diversity and evolution 39</p> |
| | <p>MI</p> <p>Workshop</p> <p>Room 13D</p> <p>Clipforbiodiversity: Creating explainer videos in the context of biodiversity education 40</p> | <p>MI</p> <p>Workshop</p> <p>Room 301A</p> <p>What's in a metric? Measuring what matters 54</p> |
| | <p>CG</p> <p>Panel session</p> <p>Room Library</p> <p>Soil and composting education, co-creating engaging soil programmes in Warsaw and Vienna 52</p> <ul style="list-style-type: none"> - Compost 53 - Soil – stand your ground 53 | <p>WT</p> <p>Workshop</p> <p>Room 401A</p> <p>Engaging audiences in curiosity collections cultivates cross-divisional collaboration 46</p> |
| | <p>CG</p> <p>Panel session</p> <p>Room Library</p> <p>Soil and composting education, co-creating engaging soil programmes in Warsaw and Vienna 52</p> <ul style="list-style-type: none"> - Compost 53 - Soil – stand your ground 53 | <p>MI</p> <p>Workshop</p> <p>Room 301A</p> <p>Visitor experience mapping – understanding the connections 47</p> |
| | <p>CG</p> <p>Panel session</p> <p>Room Library</p> <p>Education from experience – adapting values, culture and personal history in building educational programs 51</p> | <p>MI</p> <p>Workshop</p> <p>Room 301A</p> <p>Master class: Aligning learning approaches with audiences and the garden's vision 53</p> |

| Faculty of Biology | | | | | | |
|--|--------------|--|--|---|--|---|
| Registration | | | | | | |
| 08:00-13:30 | | | | | | |
| 09:00-10:30 | | <p>Main lecture theatre</p> <p>Plenary New Educational Tools - Animating the inanimate: engaging new audiences with plants 75 Supporting formal education - Formal learning in botanical gardens, from communicating knowledge on plants...75</p> | | | | |
| 10:30-11:00 | | | | | | |
| 11:00-12:30 | Theme | RNA | MI | WT | RNA | CG |
| | Session type | Panel session | Panel session | Roundtable | Workshop | Workshop |
| | Title | <p>Main lecture theatre</p> <p>The role of public gardens in revitalizing communities 76 - Identifying needs and potential partners 76 - Constructing programs 77 - Funding and sustaining programs 77 - Evaluating effectiveness 77</p> | <p>Room 103B</p> <p>Outdoor spaces and nature-based programming in public gardens: building the evidence base for early STEM learning 78</p> | <p>Room Library</p> <p>The missing piece: developing and maintaining stakeholder relationships through sponsorship and endorsing organizations 79</p> | <p>Room 401A</p> <p>Gaining audience insights through empathy mapping 79</p> | <p>Room 301A</p> <p>Becoming the people's garden 80</p> |
| 12:30-13:30 | | | | | | |
| 13:30-22:30 | | | | | | |
| Lunch | | | | | | |
| Mid-Congress tours / I Sightseeing tour group finishes at 21:30, II Sightseeing tour group finishes at 22:30 / 193 | | | | | | |



CONGRESS TIMETABLE

| Faculty of Biology | |
|--------------------|---|
| Registration | |
| 08:00-17:30 | |
| 09:00-10:30 | <p>Main lecture theatre Plenary: 200th Anniversary of UWBG – part 1 / in Polish with translation 82 - Prof. Clemeych (chair) - Hanna Werblan-Jakubiec - Michael Slawinski - Iwa Kotodziejska - Marcin Zych</p> <p>Room 103B Plenary: Measuring impact panel session - Paul Smith (chair) 82 - Sue Magriner 83 - Irena Janiszewska 83 - Flis Piętk 83 - Ari Nowy 84 - Wanlu Liu 84</p> |
| 10:30-11:00 | Break |
| 11:00-12:30 | <p>EPG Panel session Room 103B Environmental education for a hot and hungry planet...85 - Welcome to the...85 - Anthropocene...85 - Case studies on how to begin the conversation...85 - Using an asset-based community...86 - The earth is our garden...87 - Escalating environmental education...87</p> <p>WT Panel session Room 103B Environmental education for a hot and hungry planet...85 - Welcome to the...85 - Case studies on how to begin the conversation...85 - Using an asset-based community...86 - The earth is our garden...87 - Escalating environmental education...87</p> <p>MI Panel session Room 102B Measuring the impact of environmental education and green spaces - How do green campus...87 - The educational needs...88 - The impact of Royal Botanic Gardens' community...88 - Public profile of arboretum visitors...89 - The biodiversity valley...90</p> <p>RNA World café Room Library Reaching new audiences through nature-based learning experiences 91</p> <p>EPG Workshop Room 301A Edukacja wspólnie tworzona, czyli bardziej angażująca i ciekawsza? Warsztaty o ko-kreacji / held in Polish 168</p> <p>SFE Workshop Room 13 D Explorers of nature 92</p> |
| 12:30-12:45 | Entrance to the Faculty / meeting point Congress photo |
| 12:45-14:00 | Lunch |
| 14:00-15:30 | <p>WT Panel session Room 103B Polish session 1/ held in Polish - Presentation 1 159 - Presentation 2 160 - Presentation 3 160 - Presentation 4 161 - Presentation 3 94</p> <p>EPG Panel session Room 103B Polish session 1/ held in Polish - Presentation 1 159 - Presentation 2 160 - Presentation 3 160 - Presentation 4 161 - Presentation 3 94</p> <p>RNA Panel session Room 102B Pondering new social roles...94 - "Beyond the greenhouse"...95 - Diversity and inclusion...95 - Engaging new audiences...95 - Botanical garden audiences - from segregation...96</p> <p>MI World café Room Library UN: Sustainable Development Goals and botanic gardens: Our global role! 97</p> <p>EPG Workshop / double Room 55A Fotosynteza - łatwy czy trudny temat? Część 1 / held in Polish 162</p> |
| 15:30-16:00 | Break |
| 16:00-17:30 | <p>WT Panel session Room 103B Polish session 2/ held in Polish - Presentation 1 163 - Presentation 2 164</p> <p>EPG Panel session Room 103B Polish session 2/ held in Polish - Presentation 1 163 - Presentation 2 164</p> <p>RNA Panel session Room 102B Learn to Engage multiplier event 100</p> <p>WT World café Room Library Developing partnerships to reach learning objectives and new audiences 101</p> <p>SFE Workshop / double Room 401A Master class: Addressing the UNSD goals through botanic garden learning programmes 101</p> <p>Room 55A Fotosynteza - łatwy czy trudny temat? Część 2 / held in Polish 162</p> |
| 19:30 | Academy of Fine Arts / Congress dinner / for registered guests 185 |

| Faculty of Biology | |
|--------------------|---|
| Registration | |
| 08:00-15:30 | |
| 09:00-10:00 | <p>Main lecture theatre Plenary Reaching new audiences - How to reach new audiences and why this matters 103 - Meeting diverse needs...103 - The BigPicnic project 104 - Announcing the 11th International Congress...104</p> <p>Room 103B Panel Session EPG Polish session 3 / held in Polish - Presentation 1 167 - Presentation 2 168 - Presentation 3 169</p> |
| 10:00-10:30 | Break |
| 10:30-12:00 | <p>RNA Workshop Main lecture theatre Brewing co-created science cafés 104</p> <p>RNA Panel session Room 103B Co-creating the BigPicnic exhibitions 105</p> <p>RNA Workshop Room 401A Fruitful discussion 106</p> <p>EPG World café Room 301A Sezonowość i jej rola w procesie edukacji / held in Polish 169</p> <p>EPG Workshop Room 13D Ucząc się od drzew – edukacja w OD w Przelewicach / held in Polish 170</p> <p>NET Workshop Outside meeting in foyer Bird garden 106</p> |
| 12:00-14:00 | Lunch and BigPicnic Marketplace 107 |
| 14:00-15:00 | <p>Main lecture theatre Closing ceremony 107</p> <p>Transfer to the University of Warsaw Botanic Garden</p> |
| 15:00-15:30 | Tour University of Warsaw Botanic Garden |
| 15:30-17:00 | <p>Tour University of Warsaw Botanic Garden Jazdów – City Garden of the Ujazdowski Castle Centre for Contemporary Art and Open Jazdów Initiative 188</p> <p>Tour University of Warsaw Botanic Garden Royal Łazienki Museum 188</p> <p>Workshop University of Warsaw Botanic Garden An alternative way of visiting the garden – low rope course 188</p> |
| 17:00 | University of Warsaw Botanic Garden / Farewell BBQ 189 |

SESSION FORMATS

/ Panel session

In a panel session, the chair introduces the speakers who then present on a particular topic or theme. A panel session typically includes up to 5 speakers. There will be time for discussion with the participants at the end of the session.

/ Workshop

This type of session is structured for in-depth exploration of one topic. The session is practical, interactive and actively involves all the participants. The workshop can be a science demonstration, a game, a show or a short training course.

/ Roundtable

This session has an extended number of speakers (from four to 20). Each speaker sits in a roundtable and presents their idea. This is followed by an in-depth discussion on each table. Time is left at the end to bring together all the different ideas discussed in each table. This session also requires a chair to coordinate how it is run and bring the ideas together.

/ World Café

Participants are seated around tables and a series of conversational rounds begin. At the end the whole group gathers to share outcomes.

/ Master class

A master class is a session of tuition by an expert in the topic field.

/ Project poster

This is a showcase of education projects and other public engagement activities each described in a poster format.

CONGRESS THEMES

The 2018 Congress has 7 themes which reflect universal priorities botanic garden educators share, regardless of their size, resources, or geographic location.

CG / City Gardens

NET / New Educational Tools

WT / Working Together

SFE / Supporting Formal Education

RNA / Reaching New Audiences

MI / Measuring Impact

EPG / Education in Polish Botanic Gardens

/ City Gardens

City gardens all over the world have much in common. What do they offer to their audiences? What kind of difficulties do they face, what is specific for such gardens and how do they answer the challenges and advantages of their location in educational programmes?

/ New Educational Tools

This session is dedicated to practical tools and solutions used in education in botanic gardens – from inexpensive homemade tools to more sophisticated technologies used in education and its evaluation. Presentations should be focused on the design of the tools which might be copied in other gardens

/ Working Together

Challenges can often arise from the presence of and interaction between different groups of employees within the garden (gardeners, curators, educators, etc.) who may have different backgrounds, perspectives and priorities for their work. This session is dedicated to sharing good practice on developing cooperation and problem solving, with the aim of realizing

a garden's mission and ensuring the support and involvement of staff of the garden within educational initiatives. In addition this session will also look at how gardens work outside of their own organisation, building networks to support their work. Botanic gardens have great potential for linking people and organisations – acting as important hubs in the vicinity but there are important challenges that need to be addressed to successfully achieve this.

/ Supporting Formal Education

How do botanic gardens work with partners that represent formal education systems (schools, teachers, etc.)? Do they influence curricula and governmental educational policies? This session is focused on nature based tools, methods, inspirations and innovations in the field of formal education.

/ Reaching New Audiences

This session focuses on the importance of reaching new audiences and will share case studies of projects that aimed to develop relationships with new audiences, discussing successes and lessons learnt. This will include new and creative ways of working with new audiences, effective ways to reach audiences and important lessons from less successful projects. This session will also look at why some audiences are harder to reach for the botanic garden sector.

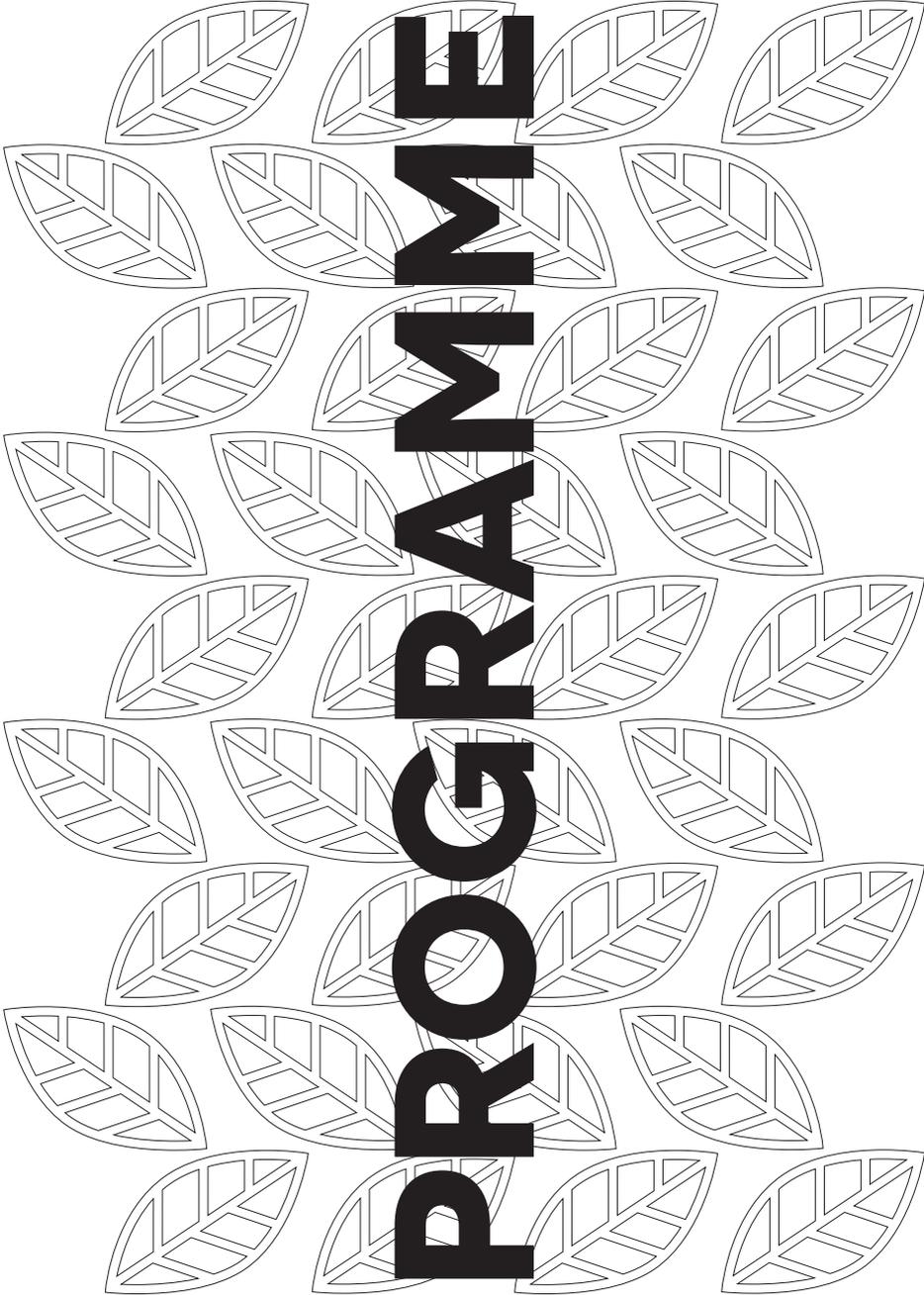
/ Measuring Impact

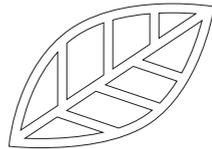
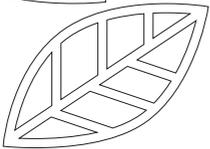
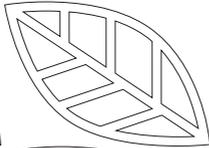
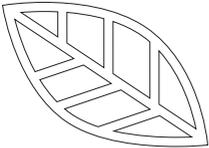
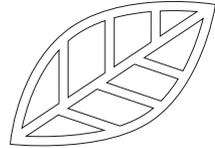
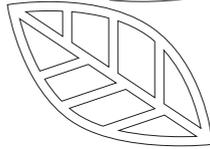
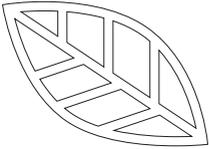
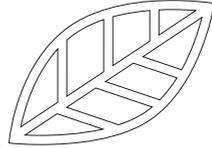
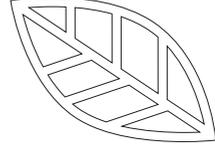
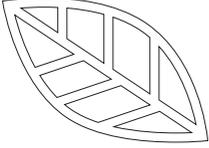
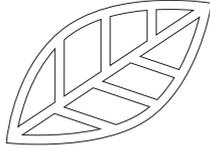
Objective 4 of the Global Strategy for Plant Conservation asks that “Education and awareness of plant diversity, its role in sustainable livelihoods and importance to all life on earth is promoted”. The education and public engagement work of botanic gardens should aim to address this objective as well as the Aichi biodiversity targets (specifically target 1) and the Sustainable Development Goals (primarily 4, 11, 12, 13 and 15). But how do we know if we are meeting these aims, what is the impact of the education work that is being delivered and how is this contributing to key issues such as sustainability, climate change and biodiversity conservation? This session will explore the work of educators to address these targets and focus on the ways in which impact can be measured.

/ Education in Polish Botanic Gardens

The session is dedicated to the challenges Polish botanic gardens face in their educational activity. The sessions will be held in Polish.

PROGRAMME





① **Session capacity** – parallel sessions

Within the programme we have put together an exciting range of parallel sessions for you to choose from, this includes panel sessions, World Cafés, roundtables and workshops. We have provided capacity numbers for each session listed – these numbers are based on the available room capacity and/or the requirements of the session chair. Volunteers will be located in each room to help manage these requirements and will be able to direct you to an alternative workshop should your first choice be full. Delegates will be able to attend sessions on a first come, first served basis. Please arrive at sessions in good time to avoid disappointment.

10.09 Monday

7:00–17:30

Registration

9:00–10:30

Plenary address

Room: *Main lecture theatre*

Chair: *Paul Smith / Botanic Gardens*

Conservation International

Max capacity: *No maximum*

Official addresses

Growing public engagement impact: opportunities and challenges for botanic gardens

Paul Smith / *Botanic Gardens*

Conservation International

Recent research carried out by the zoo community suggests that simply imparting knowledge has comparatively little impact on changing people's attitudes and behaviour related to the big environmental issues such as loss of biodiversity, climate change and sustainable living. Instead, botanic gardens need to empower and enable visitors to become

involved in conservation or environmental actions. Botanic gardens differ from zoos or museums in that every visitor can potentially get involved with growing plants no matter where they live. With an estimated 500 million people visiting botanic gardens each year, and with the opportunity for the public to get personally involved with nurturing living things, botanic gardens should be at the forefront of changing attitudes about the environment and sustainable living. However, two recent reviews carried out by BGCI suggest that the vast majority of public engagement activities in botanic gardens are still focused on imparting information rather than enabling and empowering people to get personally involved. Furthermore, few gardens measure the impact of their public engagement or education activities. For example, in our study, nearly all gardens measured visitor numbers but only half of the gardens measured visitor attitudes (usually visitor satisfaction) or changes in visitor behaviour following a visit. Examples of botanic garden public engagement activities that both create and measure impact will be given, and opportunities to explore this theme during the conference will be discussed.

Welcome remarks and congress themes

Helen Miller / Botanic Gardens Conservation International

Keynote: Education in city gardens: what do you want to change and how do you get there?

Marianne Krasny / Cornell University

Learning about biodiversity, finding nature in the city, coming together as a community, reducing carbon footprint. These are all potential outcomes of urban environmental education –including at botanic gardens. But the pathway to get to any one of these outcomes differs. In Yunnan, China, visitors to a botanic garden provided with a discovery map of the garden enhanced their knowledge of biodiversity. In New York City, U.S., youth who participated in community gardening and other civic ecology activities realized that nature could be found not far from the high rise apartments in which they had grown up. And in small towns in Poland, youth who interviewed elders about their past displayed greater place attachment and trust and became interested in civic engagement. Finally, in cities in The Netherlands and the U.S., messages meant to convey that pro-environmental behaviors are the norm led people to reduce littering and water and energy use. Using these and other examples, we will explore promising and creative paths to achieving and assessing different environmental education outcomes in cities.

10:30–11:00

Break

11:00–12:30

Panel session (CG)**City gardens****Room:** *Main lecture theatre***Chair:** *Costantino Bonomi**/ MUSE - Museo delle scienze***Max capacity:** *No maximum***Presentation 1: *The MUSE vegetable gardens: engaging different audiences in the city of Trento, Italy.*****Costantino Bonomi** / *MUSE - Museo delle scienze*

In 2013, MUSE (Trento Science Museum, Italy) moved into purpose-built new premises designed by renowned architect Renzo Piano, enjoying a tenfold increase in size and visitor figures. The proximity to a 16th-century palace with extensive grounds, offered the opportunity to develop an exhibition linked to Expo Milan 2015, on traditional agriculture that could extend into the public grounds between the museum and the palace. A total of 6,000 sqm were redeveloped by the museum botanists and horticulturalists to include extensive vegetable gardens in raised beds, arable fields, an orchard and a vineyard. The display highlights landraces, local cultivars, neglected and underutilised crops, cornfield flowers and native species. A section is re-developed annually and so far hosted a legumes display in 2016 for the IYP, the

regional Italian landraces in 2017 and chili peppers in 2018. It also includes a greenhouse, a workshop area and a living lab, catering for many audiences and uses, aiming at being inclusive, accessible, engaging and open for everyone. The project is linked with the European campaign Let it Grow and with the EU project NASSTEC promoting the wider use of native species for habitat restoration. The new display was a success and raised the interest of the city of Trento, paving the way to many new initiatives. The gardens linked to Trento city council community vegetable gardens scheme and with the regional initiative to promote vegetable gardens in local schools that MUSE supported since 2009. In 2017, a school vegetable garden contest was run at MUSE with 10 schools developing a thematic garden in MUSE grounds. New interpretation regularly runs at MUSE vegetable gardens with interactive guided tours for kids, action dramas, and summer evening appetisers to present unusual vegetables and taste related dishes jointly presented by a botanist and a chef.

Additional author: *Serena Dorigotti**/ MUSE - Museo delle scienze*

Presentation 2: Living with trees: Urban firewood forested compounds & community woodlots – prospects & challenges

Benjamin Serkfem / People Earthwise

As part of the Rainforest Project between 1980 and 1986, various species of timber trees were introduced in schools and communities for agroforestry trials in the SW region of Cameroon by Janet Ades Cundall, a rainforest conservation and social forestry campaigner from Canada. Mrs Cundall is an active Bahai environmentalist and teacher and left Cameroon in 1986.

With the establishment of People Earthwise (PEW) in 2002, by Shey* Benjamin Serkfem and associates, as an indigenous Cameroonian education civil society organisation, the urban tree planting practice was developed into the Living with Trees programme and the specific project of 'Urban firewood forested compounds and community woodlots' (FFCCWL).

There have been prospects and challenges, which we would like to share with other interested environmental professionals for potential development and promotion of the idea of trees tempering the negative impacts of green less urbanisation.

The demonstration of the FFC component has resulted in an oasis of greenery which is an urban bird refuge, micro-climate moderator, source of firewood, medicinal plants, tree vegetables and gnetum domestication trials. Neighbours contest trees growing in boundary

areas close to constructions in abusive occupation of limited urban spaces. Shade in the sunny seasons is much appreciated.

Can the promotion of FFC contribute to climate change challenges and green cities? Yes

Additional author: *Janet Cundall (Bahai Community/Maria Montessori School)*

Presentation 3: Gardening without garden – new facilities and new possibilities for education at Vilnius University Botanical Garden

Rasa Ryliškienė / Vilnius University Botanical Garden

In 2013-2016, the laboratory building of Vilnius University Botanical Garden underwent a major renovation. During this reconstruction, the exterior structure of the building was newly designed. Original green installations of the building exterior were created using native flora of Lithuania. In addition, new spaces for educational and cultural activities were built. Thus the educational programme "Green House" was born. The aim of this educational programme is to introduce the society with ecological challenges, to develop the sensation of human-nature proximity, as well as creative projects and the possibilities of their implementation in urban conditions. The programme is suitable for kindergartens and seniors. Green pillars of the house include more than 30 different names of natural flora, flowering mature fruits, while also gathering

a plethora of birds and even other animals. The construction process of 176 columns, which surround the building are detailed: the structure of the columns, process of setting them up, watering, fertilization, removal of dead plants. The aim of this educational programme is to introduce the society to ecological challenges, to develop the sensation of human-nature proximity, as well as creative projects and the possibilities of their implementation in urban conditions. The visitors are able to learn of the intricacies of vertical planting, problems in the Lithuanian climatic conditions and acquaint themselves with natural flora objects. Activities are arranged outdoors, the participants have the opportunity to improve their creativity and initiative skills, as well as general competences such as native and foreign languages, mathematics, natural sciences, technologies, social sciences, culture and arts.

Additional authors: *Darius Ryliskis, Raimonda Simenaite (Vilnius University Botanical Garden)*

Presentation 4: *It's a jungle in here: Reimagining the role of botanic gardens in contemporary urban Malaysia*

Benjamin Ong / Rimba Ilmu Botanic Garden

Botanic gardens are often a gateway to the exotic, a means for people to experience distant natural environments. But in a country like Malaysia, with rich and lush rainforests merely hours away, botanic gardens and urban nature

are often side-lined. And yet, urban nature conservation is essential because 75% of Malaysians live in urban areas. The traditional role of European-inspired botanic gardens must, therefore, be reimagined. Using Kuala Lumpur's Rimba Ilmu Botanic Garden as a case study, this paper presents two insights: firstly, that botanic gardens can be a catalyst for restoration ecology and reconciliation ecology. Rimba Ilmu is unusual in that it is both an ex situ and in situ conservation site, being hewn out of a former rubber plantation that is now a 50 year old regenerating secondary forest. Here, the "wild space" is not a feature in an otherwise manicured and landscaped botanic garden; it is the botanic garden. This provides opportunities to encounter plants and wildlife on their own terms and in their natural environment, creating a unique space for immersive education and reconnection to nature. Secondly, this paper considers the strategic role of botanic gardens in addressing emerging urban conservation issues in developing countries. Through its support of the Rimba Project, a conservation initiative that is challenging paradigms of land use and nature in the city, Rimba Ilmu is reaching new audiences in conservation, health and sustainability. Botanic gardens are therefore, ideally placed to facilitate and interface with these new social ecological dimensions, providing a conducive space for interdisciplinary research. This is particularly important in developing countries like Malaysia, where the discourse on nature conservation and the environment tends to

attract a primarily scientific audience. The paper concludes with a reflection on the challenges that accompany these opportunities, and their implications on Southeast Asia's postcolonial, mega biodiverse and developing economies.

Presentation 5: Historical gardens as part of irreplaceable presence of nature in large cities – Warsaw

Barbara Werner / *The Royal Łazienki*

Museum in Warsaw

Warsaw, similarly to other cities in the world, can boast the presence of its historical gardens. Not only do they make the city attractive and beautiful but they also constitute an integral factor of its environmental and consequently its ecological value.

Over the centuries, the city and the peripheral magnate mansions have comprised gardens, which have served not only for leisure activities but also included unique collections of attractive plants both indigenous and introduced. It was in Italy where the famous renaissance “Giardino segreto”, which was a part of a palace garden, due to its owners, was allowed to enrich the knowledge and multitude of nature.

One should remember that the city public parks, which served the city community, are not an invention of contemporary times. Beginning with ancient “Sacred groves”, throughout medieval “prato comune” to specially adopted areas and arranged city parks and gardens of the 16th and 17th centuries and later times, the role of gardens and shaped urban green areas

has been of growing concern artistically, environmentally and socially.

18th century Warsaw can serve as a great example of a European city full of urban green areas. It is due to private but also public gardens and parks. On 27th May 1727 Warsaw Saxon Garden was opened to the public. The following gardens were opened to the public in the second half of 17th century. The Royal Łazienki has also been made accessible to the public. These examples depict the social role of historic gardens, the rising awareness of their environmental value and their great influence on the improvement of life in urban areas.

The 19th century was a particular time – the time of demographic revolution and urbanisation, a “century of hygiene”. It is worth mentioning city promenades which were established in Europe at that time along city walls and whose new role contributed to improving the quality of city life, due to the environment, and enhanced new social thinking. The beginning of the 20th century brought about a new great idea of establishing “garden cities” whose intention was to improve the quality of city life along with changing the attitude towards life by bringing people closer to the nature. Significant examples of these are Żąbki or Konstancin in the outskirts of Warsaw. Contemporary historical cities such as Warsaw, rich in gardens and parks, constitute an outstanding value, where environment is not only the quality of life, but is a guarantee of life itself. City gardens such as Łazienki Gardens

are also a great educational space, which we use for conducting various activities. Currently, the nature education centre and sensory garden with elements of hortitherapy are also being created.

Presentation 6: *The Nairobi Arboretum: a green beauty amidst the grey concrete*

Purity Wajohi / *Friends of Nairobi Arboretum*

Nairobi City, at 1700m, is located within the Southeastern part of Kenya. It is the capital city of Kenya, and has grown to become one of Africa's largest and most interesting cities. With over 3 million people today, it is hard to believe that it barely existed a hundred years ago. Right in the heart of the Capital is the Nairobi Arboretum Forest, one of the major green spaces in Nairobi. Occupying 30.4 hectares, it is located 3 kilometres from the CBD and borders Nairobi State House. It was established in 1907 as a species trial location with seed brought by sea and rail. In 1928, the policy of "making as complete a location as possible of indigenous shrubs and trees with a collection of ornamental exotics" was pursued. Today, it boasts over 350 well-labelled, species of trees. It is a green refuge of fresh air, a lung for a city grappling with air pollution. It is a place of praying, relaxing, exercising and gathering. The living trees provide a home for other plants and creatures- from tiny beetles, beautiful butterflies, colourful birds and monkeys. It also serves as an excellent outdoor classroom popular with schools and a research space for

students and researchers. It is ideal for events and videography where cherished memories are made. However, the Arboretum faces challenges mainly a) our carrying capacity is limited especially during the weekends and holidays leading to noise pollution and pressure in handling of waste and b) limited resources both financial and human. To address these challenges, we have improved infrastructure and manpower during peak times, introduced a nominal entrance fee and employed an Education Officer who is at hand to teach and organize courses. In all we do, our goal is to keep the Arboretum, "the place of trees...for nature...for people".

World Café (RNA)

Reaching and building alliances with new audiences: how does permaculture farming bring science into one-to one learning? Teaching high school university permaculture groups and community supported agriculture initiations

Room: *Library*

Chair: *Melike Muezzinoglu / Malva Permaculture Farm, Bogazici Institute of Environmental Sciences*

Max capacity: 35

What we do in the next ten/twenty years will determine how much wilderness will be left. Younger generations need to be provided with opportunities to rediscover their own affiliation to nature. According to research, of those who

do grow up to devote themselves to the protection of the environment, or the study of nature, 77% identified that either they had positive childhood experiences that inspired their life's work, or a family role model demonstrated a love of nature (Chawla, 2002).

Botanic gardens are now mobilizing to integrate systems to bring science to new audiences.

Their important role in conserving biodiversity and linking this to the public may be enhanced through permaculture, which is a system of ecological design that teaches us how to create systems that can meet human needs while regenerating the environment around us.

Developing holistic models may help combat agricultural crop biodiversity loss and climate change. A global shift to organic, localized agriculture could solve thirty percent of carbon emissions and one sixth of the world energy use (Ho and Ching, 2007).

Recent research states that, organic agriculture could feed the world (Muller, 2017). Malva Permaculture Farm's education programme incorporates ecology theory from an academic perspective. Case examples include alliances with high school permaculture clubs, an Erasmus+

project focusing on "climate change and its consequences" – a seminar series with at-school and on-site education on plants and climate change and sustainable food systems. Other case examples include community supported agriculture teachings and practices and university community gardens workshops.

It is well observed that an open-air classroom

under forested canopy improves mutual interaction (Kohn, 2013). One-to-one learning is the basis for appreciating nature as a whole.

These tools develop the attitudes, behaviour and skills necessary to solve environmental problems. Constraints on possibility emerge with our distinctively human ways of thinking.

In this session, we will talk about the interaction between permaculture, biodiversity, and school/ university using several theoretical and practical experiences examples. The participants will be asked to write and present a project, working in groups of 4-5.

Roundtable (MI)
Communities for conservation: engaging the public to achieve impactful conservation goals

Room: 401A

Chair: Sue Wagner / *The Morton Arboretum*, Amy Padolf / *Fairchild Tropical Botanic Garden*

Max capacity: 38

Botanical garden programs are addressing the need to communicate the importance of plant diversity to life on earth, and inspire learners to direct efforts in productive ways to mitigate the effects of a changing climate. Botanic gardens have the ability to amplify their conservation efforts by engaging their communities and constituencies to assist in their research, restoration, and outreach. By mobilizing visitors, members, students, and volunteers, botanic gardens can move beyond simply building awareness of the importance of plants and

healthy ecosystems, to mobilizing communities to assist in restoring and maintaining regional habitats. Enlisting these visitors and constituents in our science and restoration efforts can help achieve our conservation goals in micro and macro scales in a variety of contexts. Fairchild Tropical Botanic Garden, through their orchid conservation program, takes an innovative education approach to not only building awareness of the importance of plants, but allowing the community to actively contribute to restoring and maintaining plant diversity. At the Morton Arboretum, the natural areas restoration blended learning program supports agencies and individuals through volunteer training. Volunteers learn to manage and restore natural areas including woodlands, prairies, wetlands, and other habitats of the Chicago region and more recently, global locations. This discussion explores how to engage our audiences to amplify our conservation efforts and meet Objective 4 of the Global Strategy for Plant Conservation and meet Aichi Biodiversity Target 1 to address people's awareness of the values of biodiversity and the actions they can take to conserve it. Wagner and Padolf will introduce the programs and how they are contributing to key issues such as sustainability, climate change and biodiversity conservation by exploring examples of innovative volunteer conservation programs, discussing benefits and challenges in involving volunteers in conservation efforts and considering opportunities for sharing/collaborating on programs.

Workshop (NET)

Trivial evolution: Plants: a new game to discover plant diversity and evolution

Room: 301A

Chair: *Magali Stitelmann / Conservatoire et Jardin botaniques de la Ville de Genève*

Max capacity: 32

Would you like to know more about plant evolution and classification? It is now possible with the game Trivial Evolution: Plants! This game enables players to run through the evolutionary tree of land plants in order to place a species on its position into the tree. To move on from one branch to the next, one has to throw the dice and answer questions about evolution, genetics, botany or history of science. Many people are fascinated by the vast diversity of life. But how to apprehend the way biodiversity developed to the present state? "Trivial Evolution: Plants" makes it possible to grasp this diversity and understand what laws modelled it. This game is an excellent asset for outreach and informal education activities bridging the gap between our scientific missions and the public, including children. It addresses many issues such as biodiversity, species description, classification and conservation. This is why all the plants included in the game set are also cultivated in the botanical garden, to allow players to see them alive. The game was launched on May 18th 2015, during the European event 'Fascination of Plants Day' as the product of a fruitful collaboration

among the Ecole de l'ADN in Nîmes (France), the outreach structure BiOutils (University of Geneva) and the Conservatoire & Botanical Garden of Geneva.

The participants of the workshop will be invited to play and there will be time for questions and answers on how this new educational tool has been used up to now.

Additional authors: *Louis Nusbaumer, Danile Jeanmonod, Yamama Naciri / Conservatoire et Jardin botaniques de la Ville de Genève, Karl Perron / BiOutils - Université de Genève, Stéphane Theulier / Ecole de l'ADN de Nîmes*

Workshop (NET)

Clipforbiodiversity: creating explainer videos in the context of biodiversity education

Room: 13D

Chair: *Ute Becker / Green School at Johannes Gutenberg-University*

Max capacity: 24

Explainer videos are ideal to combine the use of multimedia tools in order to explain complex contents for everyone with the development of various competences of the clip producing persons. And even better: they can be produced by almost everyone. Explainer videos provide a simple basic understanding of facts, even beyond age limits or cultural boundaries. We used this method that is also professionally distributed (e.g. named simplishow) during a training programme for biodiversity education in the context of Education for Sustainable

Development (ESD) initiated by the German Association of Botanic Gardens in botanic gardens throughout Germany. From there the method is being distributed and adapted to work with other audiences, e.g. teenagers. All that is needed is a Smartphone (or better a tablet), creative ideas and somebody who likes drawing. In the workshop, we will introduce the method first theoretically in order to be able to develop concepts and to produce our own small videos in the end. You will work in groups of 4-5 people and you will be able to reflect and sum up your ideas about biodiversity education in the concept of ESD.

Additional author: *Marina Hethke (Tropengewächshaus-University Kassel)*

12:30–14:00

Lunch

14:00–15:30

Panel session (NET)

New educational tools

Room: *Main lecture theatre*

Chair: *Pawel Pstrokoński (University of Warsaw Botanic Garden)*

Max capacity: *No maximum*

Presentation 1: *A homemade QR code system for university education*

Yu Ito / Setsunan University

QR code is a two-dimensional barcode first designed for the automotive industry; it is now

ubiquitously used in our lives including gardens/arboreta. While a number of services to order plant QR codes are available worldwide, I chose a low-cost homemade method of using QR codes that are best suited to small-scale facilities, such as our university garden's greenhouse.

I have prepared QR codes for each species and printed-out in 45mm x 55mm (width x height) to fit the size of a sealed vinyl bag of 50mm x 70mm. This waterproof code cost ca. \$0.03 USD and can easily be attached to plants using wires and, in most cases, requires no maintenance.

The contents linked to the QR code are written by myself as a part of "today's pick up" series opened in our garden's official website. For plants which are too small to flower or where the species are monoecious (requiring male and female individuals), flowers/fruits' images are taken at other gardens and used along with plant descriptions.

Expected merits of using this system include:

- i) showing flowers/fruits in all season;
- ii) providing unlimited plant information online;
- and iii) b required minimum space for setting.

In this talk, I will provide preliminary results of introducing this system to our university education students and discuss points to be improved for long-term usage.

Presentation 2: *Art history, the botanic garden, and an open-source mobile web-app*

Hussein Keshani / *The University of British Columbia*

In relation to the New Educational Tools theme, this paper will show the results of the Evolving the Botanic Garden Project for the forthcoming Aga Khan Garden at the University of Alberta Botanic Garden in Edmonton, Canada. The project entailed the development of a low-cost open-source mobile web software to deliver educational content in outdoor botanic garden settings. This case study shows how the platform has been employed to teach about basic plant knowledge and Islamic world garden design and art history using multimedia content in the context of a new Mughal-inspired addition to the University of Alberta Botanic Garden. The presentation will discuss the pedagogical and interpretation principles adopted for the project, the technology employed, the requirements needed for implementation, as well as the workflow process to develop content. This project will be of special interest to gardens with limited resources to implement costly interpretive technology solutions.

Presentation 3: *The Care for the Rare mobile app*

Abby Meyer / *Botanic Gardens Conservation International*

For some people, public gardens can be their closest link to the natural world. Engaging

visitors on the importance of plants and empowering people to take action to conserve plants are among the greatest impacts gardens can have on their communities. An app can reach extremely broad and diverse audiences, however developing and maintaining an app can be technologically challenging and financially unsustainable for many gardens. This year, an innovative multi-site app was launched by BGCI-US, which allows any garden to offer app tours to their visitors. As part of the “Care for the Rare” interpretation resources offered by BGCI, this app aims to demonstrate the conservation value of public gardens, tell meaningful stories of plants, and provide links and suggestions for ways individuals can contribute to saving and understanding plant diversity. Download the “Care for the Rare Tours” app from the App or Google Play stores and see a demonstration of the app functionality, learn how we collaboratively build tours with gardens, and see preliminary results of the pilot phase among 10 gardens across the U.S.

Additional author: *Helen Miller / Botanic Gardens Conservation International*

Presentation 4: A virtual and physical mobility learning programme for Higher Education Innovation in Plant Diversity: the pilot Erasmus+ project “HEI-PLADI”

Paola Fortini / University of Molise

The promotion of “education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on earth” together with the “establishment and strengthening of institutional networks and partnerships for plant conservation at national, regional and international levels to achieve the targets of the strategy” are fundamental objectives of the Global Strategy for Plant Conservation. The project HEIPLADI (Higher Education Innovation in PLAnt Diversity: flexible learning paths for emerging labour market), funded by the Erasmus+ K2 strategic partnerships (2015-2018) is in line with the objectives of the Global Strategy for Plant Conservation and follows the priorities of 2011 EU Modernization Agenda “to equip young generation with transversal skills for new emerging green labour markets related with environmental protection and conservation”. Throughout a strategic partnership across botanic gardens and Germplasm Banks from 5 UE universities, i.e., Molise (IT), Cagliari (IT), Lisboa (PT), Malta (MT), Sofia (BG), and 2 research institutes, i.e., Mediterranean Agronomic Institute of Chania (GR), Centre

for Biological Diversity Conservation in Powsin (PL), the project implemented and tested a higher education programme on plant biodiversity evaluation, conservation and management. The programme integrated ICT technologies in a blended path of virtual (e-learning) and physical mobility. Main results of the project are:

- (i) a set of “open learning objects” available on Moodle and, thus, usable by a large number of different stakeholders;
- (ii) the increase of courses on plant biodiversity evaluation, conservation and management to be included in the HE curriculum and/or develop new joint international Master and PhD programs;
- (iii) the increase of number of students interested in plant biodiversity issues;
- (iv) the exchange of the best practices and the enhancement of cooperation and integration between European Higher Education Institution, botanic gardens and Germplasm Banks in the field of plant diversity and higher education.

Additional authors: *Gabriella Stefania Scippa, Simone Scalabrino, Rocco Oliveto / University of Molise*

Presentation 5: Passion over facts! Teaching children to love nature at Durban Botanic Gardens

Jody Fuchs / eThekweni Municipality

The Durban Botanic Gardens (DBG) is Durban's oldest public institution and is managed by the

City's Parks, Recreation and Culture Unit. The wellbeing of today's youth is being compromised by an endless barrage of information. They have lost touch with nature.

The Durban Botanic Gardens Education Centre (DBGEC) runs an outreach programme that aims to reconnect youth with nature through a value-based experience. The DBGEC is mandated with the cultivation of a sense of citizenship in learners of eThekweni, which it does by teaching learners to love nature through semi-structured contemplative nature-based practices. Emerging research demonstrates how contemplative practices like those practiced at the DBGEC can shift learner consciousness and promote positive changes in behaviour.

One important practice at DBGEC is a child-centred climate change adaptation game.

WESSA's Climate Change Picture Building Game was introduced into the DBG because of the threat that climate change poses to plant biodiversity as well as the need to increase climate change awareness amongst learners of the eThekweni Municipality. The aim is that the games contemplative nature will help learners develop the necessary competencies to confront a future with a changed climate.

The game is played outdoors with two large teams, a facilitator and two supervising adults. There is a game board, sixteen facilitator cards with pictures and text and two sets of sixteen playing cards with pictures only. The cards are arranged in four themes being: thinking about climate change, causes of climate change,

effects of climate change, and mitigating activities for climate change. Each theme has four cards. During the game the cards are presented at random and there is much excitement about who will win the challenge. At the end there is a reflective discussion where the cards are arranged into their broad themes and this builds a picture of climate change in the minds of the learners.

Additional author: *Basheshile Thusi / eThekwin Municipality*

Panel session (WT)

**Working together:
a US-Russia environmental
education exchange**

Room: 103B

Chair: *Anthony Allison / EarthCorps*

Max capacity: 100

Russia, the largest country in the world, currently has a relative lack of broad-based environmental education programs. Eastern Siberia and the Russian Far East comprise a vast area of particular environmental challenges, some of them inherited from the Soviet era.

It is also where many of the country’s most spectacular natural areas and richest resources are located. In this setting botanical gardens such as those in the cities of Vladivostok, Irkutsk, and Yuzhno-Sakhalinsk (Sakhalin Island), represent uniquely suitable sites for environmental education programs: these well-established institutions contain world-class native and international flora collections, have existing

physical infrastructure and well-qualified staff, and are located in major urban areas that can provide large-scale public access to programs. The city of Seattle, USA, located directly across the Pacific Ocean from eastern Russia, is home to a diverse array of environmental education organizations. In 2009, Tony Allison, a Seattle-based environmental educator with long-term ties to Eastern Russia, initiated a Russia-US environmental education exchange between Vladivostok Botanical Garden and several Seattle-area organizations, including the University of Washington Botanic Gardens. Participating educators on both sides noted clear benefits, including exposure to innovative approaches and new perspectives, and Vladivostok Botanical Garden saw a substantial increase in its programs. In 2016, the exchange, sponsored by EarthCorps of Seattle, was expanded to Sakhalin Island and Irkutsk (near Lake Baikal). Russian and US educators have now traveled to each other’s countries nine times since the program began in 2009 with funding from private donors, foundations, and government grants.

Presentation 1: *Anthony Allison*
/ EarthCorps

Anthony Allison will provide an overview of the history of the exchange. He will explore the potential for the exchange to grow further, current and potential sources of funding, and how this example of working together across borders and cultures could serve as a model for botanical gardens in other geographic

areas. The exchange has facilitated an expansion of programs at Russian botanical gardens, and has enriched the knowledge and experience base of both US and Russian educators. Participants from Russia and the US have gained valuable training and exposure to new ideas and techniques, and have also formed a network of ongoing communication and information-sharing that enriches their daily work. In August of 2018, exchange participants took part in a large-scale regional conference on environmental education in Irkutsk, near Lake Baikal, which was inspired by the exchange. Future exchange plans will be discussed.

Presentation 2: *valentina Kalinkina*

/ Vladivostok Botanical Garden

The Far Eastern Branch Botanical Garden-Institute of the Russian Academy of Sciences (Vladivostok Botanical Garden), founded in 1949, is located on the Muraviev-Amursky Peninsula within the city of Vladivostok. Its area is 169.5 hectares, of which 90% consists of native conifer-broadleaf forest. Collections comprise over 4,000 species and sub-species grown in both nurseries and natural conditions. Before the US-Russia exchange environmental education at the Garden consisted of tours, classes and lectures for audiences of various age categories, and “Rhododendron Day,” an ecology-botany festival for schoolchildren. The exchange program gave a powerful boost to the environmental education in the garden, resulting in an annual “Environmental Education

Week” for schoolchildren, seminars for teachers, thematic festivals for garden visitors, and new master-classes and programs for preschool and school-age children, and for adults. These new methods and approaches have increased the volume of visitors to the garden, and stimulated interest from local tour agencies.

Presentation 3: *Svetlana Chabanenko*

/ Sakhalin Botanical Garden

The Sakhalin Branch of the Far Eastern Botanical Garden-Institute of the Russian Academy of Sciences, located in the city of Yuzhno-Sakhalinsk, serves as a scientific center for the introduction of plants and botanical and conservation expertise on Sakhalin Island.

The garden, established in 1991, occupies 40 hectares and contains a protected preservation zone, an arboretum, nurseries, exhibits, and collection displays. The garden serves as an excellent base for environmental education activities, including thematic tours and public lectures, with participants ranging from children to retirees, students, and other residents and guests of the city. Since 2016, with support from the US-Russia exchange, the garden has created a Center for Environmental Education which maintains long-term partnerships with local educational, environmental, and cultural organizations, non-profits, and city and regional government offices. New forms of environmental education are being introduced as a result of the exchange, such as eco-quests, master-classes, and open-air environmental events.

Presentation 4: *Svetlana Sizykh*

/ Irkutsk Botanical Garden

The Botanical Garden of Irkutsk State University, established in 1940, is the largest botanical garden in Eastern Siberia. It comprises 27 hectares, and contains an arboretum, natural areas, collections of tropical plants, display gardens, an ethnobotany center, medicinal garden, Korean garden, and Japanese Garden. Environmental education is a top priority. The garden conducts tours for visitors, exhibits, programs for schools, environmental festivals, and art classes. Participants include schoolchildren, university students, families, and tourists. Special attention is paid to partnerships with the local community, the city administration, educational, cultural, and environmental organizations of the Lake Baikal region, and with other regions in Russia and abroad. For the past several years the US-Russia environmental education exchange program has been successfully implemented, and has included working visits by garden staff to US organizations in the Seattle area. The exchange has also led to an environmental education conference conducted in Irkutsk in August 2018.

Workshop (WT)

Engaging audiences in curiosity collections cultivates cross-divisional collaboration

Room: 401A

Chair: *Jennifer Wolff / Missouri Botanical Garden*

Max capacity: 38

Throughout history, mankind has demonstrated a drive to collect. Some collectors seek out objects they can study, others for historical significance, and still others for emotional value. Whatever the reason, whatever the objects, collecting is a natural part of the human experience. The disciplines and practices of modern science began with collecting. Before any of us can ask the questions that form the foundation of scientific thinking, we first have to have experiences that pique our curiosity and encourage us to wonder. Natural items that are interesting and unusual have historically been called ‘curiosities’ for just this reason.

The Missouri Botanical Garden was designed not only to represent a showcase of rare, unusual and beautiful plants and displays, but also as a center of botanical research. Since its opening, the garden has become one of the top centers for plant science and conservation, and houses some of the most impressive collections in the world. In this session, we will share the garden’s Collection of Curiosities experiential learning opportunities that engage teachers, students, and visitors in digging deep into the fascinating world of everyday natural materials. From seed pods and cones to leaves and lichens, natural

curiosities come to life with the help of audience imagination and digital media. New connections are made as they discover what lives on garden grounds, what's living in their neighborhoods, and what plants garden scientists are studying and working to conserve around the world. Session participants will explore aspects of the garden's program. We will use the grounds outside of the session space to take a 15 minute "collecting trip" to find a few curiosities. After regrouping, we will discuss some of the objects gathered and ways in which colleagues can engage audiences in collections at their gardens as well as potential challenges they may experience.

Additional author: *Jennifer Hartley / Missouri Botanical Garden*

Workshop (MI)

Visitor experience mapping – understanding the connections

Room: 301A

Chair: *Chuck Lennox / Lennox Insites*

Max capacity: 20

Taking a modern technique from user experience design (technology), this workshop will introduce participants to visitor experience mapping – what it is, why engaging in visitor experience mapping is valuable to garden settings, its applications, and how results can be used to drive visitor outcomes and accomplish a site mission.

In the experience business, there are many different ways to evaluate a program or product – typically involving a survey instrument,

specialized knowledge and often a lot of time before analysis, results and recommendations. Evaluation has value, especially in demonstrating growth from a benchmark or in providing feedback around a specific issue.

Visitor experience mapping takes a different approach to evaluation in part because it's introspective and provides the opportunity to engage all staff and visitors resulting in multiple points of view and a unique perspective to build from. Visitor experience mapping can be used at an entire site or for a single exhibit and has the potential to bring increased value to ensuring a well thought out and reviewed experience from entry to exit and beyond.

Have you ever wondered how you might better define and refine the visitor experience at your site? Or wanted a tool that engages your entire team AND visitors to allow them to work together effectively to identify opportunities for improvement? Come and join us for an interactive presentation of visitor experience mapping - a tool adapted from the consumer business industry to provide benefit and insights for visitor driven sites.

Participants will have the opportunity to ask questions, participate in a hands-on activity and discussion using visitor experience mapping tools, and will be given access to an e-toolkit to take back to their sites.

15:30–16:00

Break

16:00–17:30

Panel session (SFE)
**Supporting formal
 education examples**

Room: *Main lecture theatre*

Chair: *Hong Wu / Shanghai Botanical Garden*

Max capacity: *No maximum*

**Presentation 1: *Innovation
 and botanical garden and
 its education’s sustainable
 development***

Hong Wu / Shanghai Botanical Garden

With the development of the economy and the society, the city becomes more modernized and more commercial. While the populations in cities grows fast and centralized, the nature space and the average green occupancy for each citizen is decreased. The botanical garden will have a very good chance to take advantage and to devote its special values and play an important role in the city’s sustainable development, biodiversity conservation, environment and nature protection, and public education.

In recent years, economic restructuring in the global range and the imbalance of regional economic development have meant that the cities face many challenges. The botanical garden is the same.

Many botanical gardens face the big challenges of insufficient financial support, insufficient space, diversion of visitors, customer’s continuous demand change, etc.

Located in Shanghai downtown, Shanghai Botanical Garden also faces the same challenges. Through continuous innovation, cooperation and sharing in recent years, it succeeds in servicing the city, attracting visitors and self-development. In 2017, it planned and hosted more than 100 events to attract visitors and education, such as Shanghai International Flower Show, International Flower Arrangement Art Show, a series of Fairy Summer Campus, etc. More than 5 million visitors were attracted, including 100+ thousand students. Over 10 thousand applicants were trained in different courses and programmes, 100 of which come from Germany, New Zealand and other countries and regions. In 2017, it got the first prize for the Shanghai Popular Science Innovation Award and the National Outstanding Popular Science Education Base.

For sustainable development, botanical gardens need to keep on innovating and integrating their advantages with scientific research, the multidisciplinary, industry, new technology, brand and culture to meet the demands of the scientific research, city development, economic development, urban ecology and citizens.

**Presentation 2: *The botanic
 garden and the city school: more
 ideas – more opportunities for
 interaction – more activities***

Alla Andreeva / Botanical Garden of M.V.

Lomonosov Moscow State University

For many years, Moscow State University’s

Botanic Garden (“Apothecary Garden”) has been developing formal and informal education programmes for schools. Participation in the EU INQUIRE project in 2010-2014 helped us to apply IBSE-based approaches to a new pilot project between the garden and the Moscow school. This provides teachers with opportunities to enhance their professional skills through consultations and themed workshops run by garden specialists (more than 36 hours so far), while students use the garden’s resources for extracurricular activities such as devising quests for children in different age groups, video filming, publication of video tours on the garden’s YouTube channel, and research projects on various topics in the fields of biology, ecology and horticulture, as well as sociology and journalism.

Students who have completed these programmes are now tending garden plots in the grounds of their school and its winter garden, while also conducting master classes for younger pupils. Teachers have noted that the students are more motivated and have expanded their range of skills.

The garden has also benefited through new ways of working with schools, help in the garden and interesting results from the students’ projects. For example, students learned about planting by creating a new shrub bed in the garden and organised a quest in which over 200 visitors took part during the garden’s Science Festival 2017. The students are actively publishing information about their activities on their Internet pages,

the school website and the Garden’s video channel, thereby attracting the attention of the wider child and teenage audiences to all events in the Garden.

This project has demonstrated that contracting with individual schools opens up a wider range of activities and can involve, for example, changes to the school timetable, inclusion of garden-based classes in the lesson plan, scoring of students on their project work, etc. We aim to extend this experience to other schools on a contractual basis in order to expand the number of children and teachers engaging with the garden.

Additional author: *Nadexhda Lazareva*
/ *Botanical Garden of M.V. Lomonosov Moscow State University*

Presentation 3: My tree from the botanical garden. A year round botany intensification programme

Vanina Gabriela Salgado / *Carlos Thays Botanical Garden*

Carlos Thays Botanical Garden is located in the neighbourhood of Palermo, in Argentina’s largest city, Buenos Aires. There are 70 primary schools in Palermo; more than 75% of them have visited the garden at least once in the past 5 years. Although the number of schools per year is increasing, the continuity of each school is highly variable, mainly because visiting the garden is a decision made by the teachers and not a school policy.

Having this in mind, we designed “My tree from the botanic”, a programme for schools in the garden’s influence area. It is a year round intensification in botany that schools adopt as a permanent part of the curricula for either the 2nd, 3rd or 4th grade.

Students follow the changes of a tree through the school year, visiting the garden three times. In the first visit (autumn), a guide presents four Argentina native trees and accompanies the group to register the presence of leaves, flowers and fruits in an activity sheet provided by the garden.

The remaining two visits (winter and spring) are self-guided. Teachers accompany students to complete the activity sheet registering changes in the selected trees. Teachers are given a theory background and complete didactic sequences to do before and after each visit.

As a secondary objective, we encourage the participation of families in our activities in the summer as a follow up of the school programme. This year we selected 15 schools located in walking distance from the garden to participate. To evaluate it we will use four success indicators:

1. Completion of three visits
2. Teacher surveys
3. Family participation in activities
4. Continuity in the programme

In the future, we hope to extend the programme to other schools in Palermo and develop year round programmes for kindergarten and secondary schools.

Presentation 4: *SOS Pollinators project*

Clara Vignolo / Royal Botanic Garden – CSIC

In recent years, numerous threats have been described that affect pollination, such as habitat fragmentation, intensive agricultural, diseases (e.g. of the Varroa mite), the abuse of phytosanitaries, the introduction of exotic species and climate change. Numerous scientific studies alert us to the decline of pollinators and its serious consequences. Aware of this environmental problem, several European countries have promoted the founding of the Coalition for the Conservation of Pollinators during the celebration of the XIII Conference of the Parties of the Convention on Biological Diversity in Mexico in December 2017.

SOS Pollinators is an educational project that seeks to encourage teachers and students to gain knowledge on pollinators in the green areas of the city: parks, botanical gardens, etc. In addition, it seeks to encourage the use of these spaces for teaching science, promoting the observation of urban biodiversity and natural processes.

This project was implemented in eight schools in Madrid during spring 2017. Throughout this period, students took data from pollinating insects in the green areas closest to their educational centres: gardens, parks, etc.

Observations were registered in the citizen platform Natusfera. This platform was a fundamental tool that allowed them to share their observations and receive help and feedback

in the identification of the species. Through the analysis of the data obtained, the students gave answers to their initial questions, that is: Which pollinators visit our green areas? Which are the most visited plants? Are different plant species pollinated by different pollinators?

Finally, we encourage other educational centres to implement this project as a tool for raising awareness and engaging students in the pollination crisis. All information required is provided in the teacher's guide: SOS Pollinators. This guide describes all the activities that can be carried out for primary and secondary education.

Presentation 5: The Recycled Discovery Garden, a living classroom and outdoor learning space

Michael Connor / Wollongong Botanic Garden

The Recycled Discovery Garden. The garden and activities within it aims to encourage a human connection with plants, by establishing spaces that are alive with useful plants (fruit, vegetables and herbs). This living classroom is a special outdoor learning space made from recycled pallets, old furniture and living plants. The pallets are used to create no dig gardens and garden walls. The plants are grown out of, and over recycled structures including an old bath tub, a bicycle and an old bird cage. Plants can even be grown in an old boot or car tyre. This exciting discovery garden is a great play area, learning sight and performance space.

The Recycled Discovery Garden activities encourage children to spend more time learning outdoors, away from their mobile phones and screens, and to give them an opportunity to grow their own food. They will gain an improved knowledge and understanding of the natural world and to enjoy, and be inspired by plants. It will help them to develop an understanding of sustainability and plant conservation, and the important role of botanic gardens in this area. But most importantly the children and their families will be encouraged to be innovative and creative and to enjoy themselves. In doing this there is every chance that they will learn and establish a lifelong connection with plants.

Panel session (WT)

Education from experience – adapting values, culture and personal history in building educational programs

Room: 103B

Chair: Tzvia Adler, Ayat Idrees / Jerusalem Botanical Gardens

Max capacity: 100

What is the best approach for education in an outdoor and public garden? I am not sure we know the answer, but we do know that there are a few and that most of them work. Here, at the Jerusalem Botanical Gardens (JBG), we are two educators, and we each have our own way and our own approaches for environmental, outdoor and public garden education. We are

both trying to bring to life part of our childhood experiences. In some ways, we are similar; in others we are very different;

As a child Ayat spent lots of her time with her grandparents in Chevron, helping in their fields and harvesting the olive trees and then sitting under one of them for lunch with her family. In her work at the JBG this is only one of the many experiences that informs her work. Others will be gained from her connection to the Islam and Koran, and from her work as a school teacher. For Ayat, pedagogical processes and professional educational models are one of her key notes in her work as an educator at JBG.

Tzvia grew up on a Kibbutz, an agricultural community with a social system as a way of life. Tzvia grew up working with animals, climbing trees, and walking barefoot anywhere and anytime, she could. Hiking was part of her daily activities and environmental issues were her main objective. For her, kids as well as adults should be able to feel nature with their hands and feet as much as possible, believing that nature has so much to give us that to educate about it, all we need is our surrounding without any accessories.

Ayat and Tzvia come from two different cultural backgrounds, and yet both of them as strong women and educators are able to combine their defenses and weave together unique and interactive programmes that connect culture and nature together. In our session we will present our work together, our success and where there is still work to be done.

Panel session (CG)
Soil and composting education, co-creating engaging soil programmes in Warsaw and Vienna

Room: *Library*

Chair: *Izabella Mier / University of Warsaw Botanic Garden*

Max capacity: 30

Soil erosion and soil contamination are currently at the forefront of the scientific and agricultural debate. How many harvests do our soils have left? What makes for healthy soil? How do we maintain sustainable soil ecosystems?

This session presents the recently developed soil and composting education programmes of two urban botanic gardens. The programmes include a range of activities: panels, practical workshops, an outreach exhibition taking place in locations in and outside the gardens, and science café with different audiences. Both education programmes were created outside the garden, in co-operation with new audiences and aim to incorporate a wider range of questions and ideas.

In our session we will present our ideas on bringing the soil debate to botanic garden audiences. We will show how we worked together with groups to introduce new and sometimes controversial topics – such as community composting – to new audiences.

We will talk about how our work has encouraged people to care for urban soils, but also to reflect on the impact of agriculture on soil. Finally we will discuss our ideas on pushing the Food

Security debate and its broader questions. The gardens have been working together in a joint project “Big Picnic – Big Questions: Engaging the Public with Responsible Research and Innovation on Food Security”.

Presentation 1: *Compost*

Izabella Mier / *University of Warsaw*

Botanic Garden

Autumn in Poland, is a show of black plastic bags filled to the brim with leaves, lining the streets, waiting to be thrown away, and maybe composted somewhere out of sight out of mind. But compost is nature’s black gold, a fertilizer that brings dead organic matter back to use. We are developing an education programme to encourage our audiences to use those leaves: we show how to make compost, how to use compost, what lives in compost and different types of composts, for home gardens and larger communities. We also aim to show how compost is an important part of the food cycle, and how it can be used for sustainable agriculture. The programme was created working with different communities: a social media composting group, a Warsaw food cooperative, a local housing community and Warsaw urban gardens.

Presentation 2: *Soil – stand your ground*

Birgit Schlag-Edler / *Botanic Garden*

of the University of Vienna

Our exhibition brings new perspectives to what is actually the foundation of life.

It is meant to emphasize the importance of soil health for food security.

The Botanical Garden of the University of Vienna working with students of HLUW Yspertal co-created materials for an outreach, travelling exhibition as well as manuals for teachers. The exhibits include games and experiments. The first exhibition took place during a plant fair where children, as well as adults, took part in conducting experiments and playing games. A range of activities encouraged visitors to grow vegetables at home. The initial exhibit is the basis for a science café on the topic soil within the EU project Big Picnic. Together with experts, the participants discuss the importance of healthy soil and gain knowledge for becoming empowered, responsible citizens.

Workshop (Master class) Aligning learning approaches with audiences and the garden’s vision

Room: 401A

Chair: *Julia Willison / Royal Botanic Gardens, Kew, Jennifer Schwarz Ballard / Chicago Botanic Garden*

Max capacity: 40

With so many learning approaches to choose from, how do you decide which are the most effective to use with your audiences? Does it really matter? Join this master class to examine how practice is related to theory and review the implications there may be in selecting one approach over another. You will then have

the chance to apply that new knowledge to one of your own learning programmes making explicit the underlying approach and connecting it to your goals for learning outcomes.

Learning outcomes

- Review a selection of learning approaches and consider how they support educational and environmental aims
- Analyse different learning approaches delivered through botanic gardens
- Identify your garden’s key audiences for learning and learning approaches.
- Create a rationale for your learning approaches matched to your garden’s mission and vision for communicating internally within your garden and externally to audiences.

Workshop (MI)

What’s in a metric?

Measuring what matters

Room: 301A

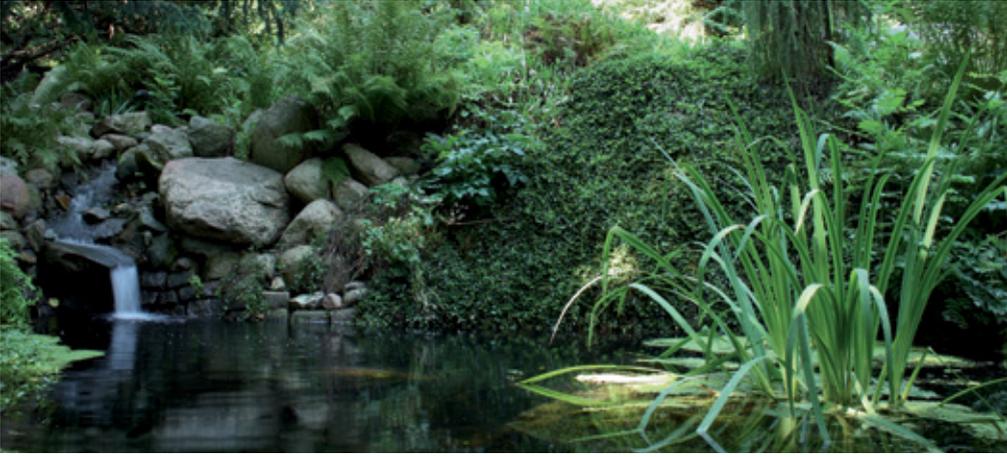
Chair: *Sheila Voss / Missouri Botanical Garden*

Max capacity: 30

Ascertaining how exactly our people, programs, and practices are influencing others continues to be the elusive “holy grail” for many botanic garden educators. While simple measures of engagement - attendance, participation, demographics, and similar data - can serve as basic, baseline indicators of relevancy and reach, it’s more important than ever to set our sights on more meaningful metrics. Such metrics must go beyond subject matter knowledge gain, and focus on attitudes, emotions, affinities, values,

practices, and behaviours of the people with whom we interact. Meaningful metrics must also reflect the gaps and omissions, showing where we are falling short: Who are we not interacting with and why? Whose voice and perspectives are we not hearing and learning from? What obstacles and barriers exist between us and them? For those who are coming to us, does their experience lead to a greater love and advocacy for plants and the living world? Are citizens seeing themselves as stewards? Are teachers embracing the power of nature-centric learning in their local outdoors? Are teens more confident and empowered to act as environmental leaders, connectors, synthesizers, and problem-solvers? Are communities embracing plant-based solutions to improve resiliency and quality of life for all? It is in these messier, harder-to-measure realms where real impact and real change happens. In this participatory workshop, educators from Missouri Botanical Garden will share their honest struggles, successes, processes, and pains as they evolve their own pursuit of meaningful measures of impact. Specifically, participants will be challenged to: 1.) share, hone, or develop their own “top ten” meaningful measures; 2.) inventory and cluster their own activities, programs, and projects that contribute to these measures; 3.) work with peers to identify and prioritize a set of common questions and measures that work across multiple audiences.

Additional author: *Betsy Crites / Missouri Botanical Garden*



17:30–19:30

Poster session

1st floor foyer

Posters on display in the 1st floor foyer.

Food and drink will be served in the main exhibition foyer and the 1st floor foyer.

To find abstracts see [Poster abstracts section](#)

Prizes

Best poster: *judges vote*

The judging panel will be made up of BCGI and University of Warsaw Botanic Garden representatives. The winner will receive a prize of £200 kindly provided by Plants, People, Planet

Best poster: *public vote*

Delegates are invited to vote for their favourite poster. The winner will receive a University of Warsaw Botanic Garden giftset.

Both prizes will be presented during Thursday's Congress dinner.

11.09 Tuesday

8:00–17:30

Registration

9:00–10:30

Plenary**Room:** *Main lecture theatre***Chair:** *Marcin Zych / University of Warsaw
Botanic Garden***Keynote (CG)****Bringing nature to the city,
a designer's perspective****Nico Wissing** / *NL Greenlabel*

Nico Wissing's landscape designs strengthen architectural quality and extend the value of the buildings for which they are made, combined with a greater sense of easy living and matching the owner's lifestyle.

His philosophy is based on sustainability and 'green'. Applied to a great variety of disciplines, like architecture, spatial planning and urban development. Expressed in landscaping, public and private parks, the public space (healthcare, educational and leisure settings), but also private gardens.

Responsible use of existing materials like concrete, steel, glass, ecoplastics and wood.

Finding new ways of integrating these in innovative products and designs. With 'green' and sustainability as guiding principles; not for decoration, but a valid contribution to both people and planet.

Keynote (WT)**Kew in the 21st Century,
how do we engage the public
with biodiversity?****Richard Deverell** / *Royal Botanic Gardens, Kew*

What is the role of a botanic garden in the 21st century in engaging the public with the role of plants in providing solutions to some of the critical challenges facing humanity? How might this be achieved in a way that sparks, ideally, a life-long desire to learn more and to get engaged? What is the role for digital assets and how might botanic gardens hook the interest of those who do not visit? Drawing on examples from RBG Kew I will outline Kew's current approach and our future aspirations in this important area.

10:30–11:00

Break

11:00–12:30

Panel session (SFE)

Addressing the role of botanic gardens in formal education

Room: *Main lecture theatre*

Chair: *Jennifer Hartley / Missouri*

Botanical Garden

Max capacity: *No maximum*

Presentation 1: Urban schoolyard familiarity survey – acquainting teachers with their local landscapes to promote outdoor learning

Jennifer Hartley / Missouri Botanical Garden

As American society has become increasingly indoor-focused, those living in cities and suburbs have few inducements to interact with nature except by personal choice. The ease of purchasing food from stores, traveling by car or bus, and relying on electronics for entertainment has disconnected citizens from the natural world around them. As a result, many struggle to identify even the most common trees, yard weeds and soil organisms in their landscapes, leading to apprehension about safety and poorly-informed decisions about treatment of nearby natural spaces.

This unfortunate phenomenon affects schools as well. Despite a wealth of emerging research suggesting that learning in natural settings carries both academic and emotional benefits for students, many teachers – particularly in urban schools – hesitate to embrace this practice.

Some cite practical reasons for this – lack of time, lack of green space, etc. However, even when these obstacles are not a consideration, the aforementioned lack of familiarity makes teachers hesitant to take students outdoors even for site-relevant lessons in ecology and life science.

Over the past five years, the Missouri Botanical Garden has partnered with more than 60 schools to promote the inclusion of outdoor learning in teachers' work with students. We have found that the most effective way to persuade teachers has less to do with providing lesson plans or strategy suggestions than it does simply acquainting teachers with local plants and wildlife. To this end, we have created a survey tool to evaluate teachers' familiarity with their local landscape. Using this tool, we are able to evaluate our programs' effectiveness in addressing this important issue. The survey also serves as a diagnostic tool that helps us tailor our programs to participating teachers' needs. In this session we will discuss the survey rationale and scoring rationale, as well as how results are evaluated and used to inform decision-making.

Presentation 2: *Improving the educational programme of the Royal Botanic Garden of Córdoba through new trends in formal education curriculum*

Bárbara Martínez Escrich / *Royal Botanic Garden of Córdoba*

Since its opening in 1987, students from primary schools have participated in the educational programme of the Royal Botanic Garden of Córdoba. However, visits from secondary and A-level students are not so active, and have even gradually decreased in recent years. This is why this study has been carried out, to examine possible causes of this decrease and analyse current needs and interests of these students when visiting a Botanic Garden. A qualitative research project was proposed, based on a series of interviews with teachers from seventeen educational centres in the city of Córdoba (Spain). All of them referred to the continuous changes experienced by the educational curriculum, as well as the limited role of botany in all the academic years of these stages.

Interviewed teachers provided valuable information about many and varied didactic aspects: interesting topics to work on, predilection for certain types of activities, possible combination of disciplines, joint work with other centres, preference for certain teaching materials, etc. They also pointed out which should be most effective communication channels between schools and the botanic

garden, as well as which is the role that teachers should play in it.

After the subsequent treatment and analysis of data, the conclusion was the necessary adaptation of activities addressed to these level students. Thus, two new activities were designed, taking into account the multidisciplinary character and those contents, methodologies and materials suggested by teachers.

The Royal Botanic Garden of Córdoba stresses the need and importance in the field of schools, to reach new goals in education in Botanic Gardens.

Presentation 3: *Putting the power of nature into teachers' hands*

Mine Yılmaz / *ANG Foundation Nezahat Gökyiğit Botanik Garden*

Informal teacher-training education about nature is needed to enable teachers to develop professionally and plan more effective lessons by experiencing nature-related concepts. Generally in Turkey, awareness of nature is low including that of teachers. Nezahat Gökyiğit Botanic Garden (NGBB) plays an important role in supporting formal education in schools by providing informal learning facilities for teachers.

The botanic garden provides a crucial nature learning environment for everyone, especially in such a densely populated residential area in the centre of İstanbul which has very few open spaces.

The training programme has been carried out since 2013, supported by the Ali Nihat Gökyiğit

Foundation (ANG). Each group of teachers has 20 participants and we have reached 408 teachers since we started the programme. It's a full day schedule consisting of the following;

- Group greeting
- Introduction to NGBB and the kingdom of plants
- Basic principles of ecology
- Games about biodiversity
- Nature conservation
- Perception and sensory games
- Classroom training within the scope of science lesson
- Seed-sowing methods

With assessment methods we have evaluated that this course has increased nature awareness, ecology, environmental literacy, biodiversity and nature conservation. The aim of the project is to encourage the application of environmental education in schools by utilising school gardens and open spaces as effective learning spaces.

Additional author: *Fatma Nuray (ANG Foundation Nezahat Gökyiğit Botanik Garden)*

Presentation 4: *Herbarium as a backbone to science outreach school programme*

Magali Stitelmann / Conservatoire et Jardins botaniques de la Ville de Genève

As a town institution, CJBG's support of formal education unfolds within the field of non-formal education. With its three collections – living plants in the Garden, the Herbarium and the Library – and the research activity lead by its

scientists, this institution is a real treasure for the education officer's activities.

The herbarium theme offers a wide range of possibilities for school visits and workshops and teachers' ongoing training, as well as longer-term school projects. It favours a multidisciplinary approach such as art and science, field trips and data collection, by which pupils not only acquire specific knowledge about plants and nature, but also “transversal competencies” which are needed in all areas of learning and living. For example: collaboration, communication skills, learning strategies, creative thinking and reflexive processes.

Those are part of the Swiss curricula “Plan d'études romand”.

Our current activities involving the herbarium theme will be presented, including visit and workshop content, project planning, method and inspiration. We will also talk about how we collaborate with colleagues from the three main activity areas of CJBG (Garden, Herbarium and Library).

Presentation 5: *'The Journey of Aromatic Plants', a most popular activity of the summer camp of botanical garden*

Yalong Qin / Nanjing Botanical Garden Mem. Sun Yat-Sen (NBG)

The Nanjing Botanical Garden Mem. Sun Yat-set (NBG) is a nationally-popular science education base. In the last decade, a variety of summer camp activities have been carried out in NBG.

Among them, 'the journey of aromatic plants (JAP)', which has been carried out in recent years, is most popular for young people. In previous years, we just explained what aromatic plants are, or let young people observe, touch and smell aromatic plants. Now, we have developed a complete popular science education activity as follows:

1. Young people learn what aromatic plants are
2. They join in the plant-seeking game we have designed, looking for specific aromatic plants in teams and write down their answers on the answer sheet through close teamwork
3. They collect materials of aromatic plants and obtain the aromatic essential oil from aromatic plants by Soxhlet extraction
4. The aromatic essential oils and aromatic plant petals are used to make bath salts

Through the JAP activity, youths can obtain and improve on their knowledge of aromatic plants. Firstly, they use multiple senses to observe and recognise nature through JAP, and their enthusiasm to participate in the activity is significantly increased. Secondly, their hands-on, communication and team cooperation abilities can be improved through JAP. Thirdly, they can learn how we make full use of nature and how nature benefits us. Last but not least, JAP plays positive roles in improving young people's scientific literacy and learning interest. Above all, the popularity of JAP has a direct connection with the richness of these activities and their scientific and systematic nature. This research also provides guidance for the planning

of popular science education activities in botanical gardens.

Additional authors: *Lijuan Hu, Zhanhui Jia, Mei Li / Nanjing Botanical Garden Mem. Sun Yat-Sen (NBG)*

Workshop (NET)

A gentleman botanist; Sir Joseph Banks' world voyage in 1768 – a gentleman's grand tour or a serious scientific expedition?

Room: 103B

Chair: *Michael Connor / Wollongong Botanic Garden*

Max capacity: 100

What would you ask Sir Joseph Banks if you could meet him? Now is your chance, because the famous botanist is visiting Poland to appear at the BGCI Education Congress in Warsaw September 2018.

Sir Joseph is a bit pompous, but will be immaculately dressed in eighteenth-century costume. He was born in 1743, making him 275 years old this year! But don't worry - you will meet him as a sprightly 60-year-old patron of the Royal Society of Great Britain, and self-proclaimed authority on anything to do with New South Wales. He has a touch of gout, but is not confined to a wheelchair just yet. Banks made his name on Cook's voyage of exploration on the Endeavour in August 1768, 250 years ago. The voyage offered great possibilities for a gentleman naturalist to

discover whole new genera of plants and animals that were brand new to science. Plants such as eucalyptus and banksia were collected and strange new animals such as kangaroo and platypus were discovered, eventually to be brought back to the cities of eighteenth-century Europe.

In this workshop you are invited to take part in Banks's maiden world voyage. You will meet some of his scientific retinue and the crew of the Endeavour. You can question the man himself and discover what motivated this gentleman botanist. This is also a great opportunity to be part of an interactive heritage theatre experience in a Botanic Garden. Then you will also be in the perfect position to answer the question:

“Was Sir Joseph Banks a serious student of plants or simply an eighteenth-century gentleman on a grand tour?”

Workshop (WT)

Asian Mountain Garden: dialogue between townspeople and plants

Room: *Library*

Chair: *Kunduz Adylbekova & Dmitry Vetoshkin / “Archa Initiative”*

Public Foundation, Bishkek Botanical Garden, named after E.Z.Gareev and part of the National Academy of Sciences of the Kyrgyz Republic, is a scientific institution, which was established in 1938. Bishkek Botanic garden is the largest botanical garden in the territory of the Central Asia occupying area of about 150 hectares.

The Botanical Garden occupies one of the leading places in Central Asia in terms of species diversity.

For the years of independence, the Botanical Garden has experienced a difficult time in its history. For 26 years the Garden staff retained its territory and collections with exorbitant efforts. And the garden has preserved the collection, but the territory has fallen into degradation, the infrastructure has completely collapsed and it was even unsafe in the garden. During this time a whole generation of townspeople grew up not understanding why the Botanical Garden is needed for the city. Some thought it was an abandoned park, others that it was a closed territory. There are a lot of private companies interested in constructing buildings on the territory of the garden every year. But, despite these difficulties, the Garden has survived!

We, the citizens who are inspired by the enthusiasm and wishing to return the Botanical Garden to its former glory, created the “Archa Initiative” Public Foundation, which took on the mission of reviving the Botanical Garden. We started our activities by involving people in the development of the Botanical Garden. We realised that the plants are silent and we started to deliver the value of the Garden to the townspeople with the help of the “plant language”. Our plants “speak” in five languages:

- The language of science: we created the Resource Centre where we bring together townspeople and employees of the Botanical Garden to talk about their scientific work

- The language of ethnicity (ethnobotany): through stories we have collected an amazing traditional knowledge on the use of plants by nomadic people - food, medicine, spices, folk art, and we try to apply this knowledge with our guests
- The language of art: on the territory of the garden we teach painting lessons and hold concerts of classical music, where we chant and paint the beauty and wonderful world of plants
- The language of creativity: we regularly organise creative masterclasses and trainings
- Physical Language: we constantly strive for our guests to contact with living plants.

And the townspeople “heard” the plants.

The Botanical Garden has become a centre of knowledge and an interactive platform.

The citizens actively connected to our work.

Botany became an accessible, interesting and even trendy science among active citizens.

While we have not yet been able to restore the Botanical Garden, the townspeople now need the life of Garden. We believe that our dream will come true! We believe that the garden will be restored in a new light taking into account modern challenges and uniting global programmes and areas of work. It will become a place of applied science and implementation of a global strategy for the conservation of native flora. It will become the unique “Asian Mountain Garden” with a collection of mountain plants, restored by the forces of the townspeople.

In this workshop we will present on how we have worked with citizens in this project. We will then provide a practical demonstration where participants will try tea from mountain plants of Kyrgyzstan, taste different plants and spices, paint felts from vegetable dyes, etc.

Workshop (NET) Choose your own adventure

Room: 401A

Chair: *Adriana Burgos / Jardín Botánico*

Carlos Thays

Max capacity: 30

Inspired by the classic “Choose your own adventure” game-books, we will imagine possible characters, story lines and emotions for our own adventure.

In our story visitors become the main character and decide where to go and what to explore next. They can be a naturalist on a journey, an alien visiting planet Earth, a newly arrived animal in the garden or whatever their imagination creates.

Participants will choose the target audience and the topic and theme for the visit based on interpretation principles. Having all this in mind, possible stops for the trail will be selected. By the end of workshop each participant will take home a new, low-budget and versatile activity that requires minimum staff to be carried out. Please bring a map of your garden and your enthusiasm for adventure!

Additional author: *Vanina Salgado / Jardín Botánico Carlos Thays*

Workshop (NET)

Floral diversity and
pollination – how to briefly
introduce such a broad topic?

Room: 314D

Chair: Katarzyna Roguz / University
of Warsaw Botanic Garden

Max capacity: 16

Flowers are beautiful and very diverse; we all know it, but what else do we exactly know? Are the flowers all built according to the same plan? Do the flowers have any specific sex? Finding answers for these questions with the use of fresh plant material and stereoscopic microscopes is not only very informative, but also very exciting. Moreover, it helps us to understand how important the role of live flowers is in plants. They are the plants' answer to the immobility problem, not only producing and protecting the generative organs, but also attracting pollinators.

With the use of a light microscope and fuchsin jelly blocks we will study flowers' reproductive parts – anthers and styles. We will also try to catch plants *in flagrante* watching germinating pollen tubes.

Additional authors: Justyna Ryniewicz, Mateusz Skłodowski, Anna Szaciłło (University of Warsaw Botanic Garden)

12:30–14:00

Lunch

14:00–15:30

Panel session (WT)

Working together

Room: Main lecture theatre

Chair: Katarzyna Roguz / University
of Warsaw Botanic Garden

Max capacity: No maximum

**Presentation 1: *Chequered
biodiversity – from scientific
projects to exhibition***

Katarzyna Roguz / University of Warsaw
Botanic Garden

Botanical gardens are very often part of universities and, therefore, are very often involved in scientific activity.

As they are usually visited by many people, they give a unique possibility to introduce science to broader audience.

'Biodiversity of charads' was an exhibition based on a PhD project being carried out at the University of Warsaw Botanic Garden. As the project was conducted in our garden from the very beginning, all workers were acquainted with it. This resulted in a very good understanding of the study and successful co-working of various employees of the Garden - gardeners, curators, educators and scientific workers.

A combination of different backgrounds, perspectives and priorities resulted in a multilayered approach to the question of how to bring the results of scientific studies to a broader audience. As a result, we prepared an exhibition of pictures and plants, showing the

diversity of *Fritillaria* L. genus, supported with texts describing the experiment and results.

Additional authors: *Dorota Szubierajska, Krystyna Jędrzejewska-Szmek / University of Warsaw Botanic Garden*

Presentation 2: *CodeMyPlant: a new citizen science project to trigger questions about speciation, evolution and the role of science*

Louis Nusbaumer / Conservatoire et Jardin botaniques de la Ville de Genève (CJBG) & Laboratoire de Systématique végétale – Université de Genève

Biodiversity assessment and preservation are among the major challenges of the twenty-first century. They require good species knowledge as well as awareness campaigns for an efficient commitment of citizens.

Those challenges have been addressed by means of a project named CodeMyPlant (2016-2018), aimed at drawing up a genetic inventory of the flora of the Geneva Canton (Switzerland) with high schools students, the future policy makers for nature. Since spring 2016, dozens of high school students have already been mobilised alongside researchers from the CJB, the Bioscope and SwissBOL to fill in the national and international barcode reference databases for biodiversity.

In addition to documenting the vegetal diversity of the Canton, CodeMyPlant aims to trigger more general questions about speciation, evolution

and the role of science at the present time.

Researchers in education sciences are also interested in the project to evaluate the evolution of students' perception of science.

Additional authors: *Candice Yvon, Romain Dewaele / Bioscope – Université de Genève, Sofia Wyler / SwissBOL – Swiss Barcode of Life – Université de Neuchâtel, Yamama Naciri / Conservatoire et Jardin botaniques de la Ville de Genève (CJBG) & Laboratoire de Systématique végétale – Université de Genève*

Presentation 3: *Collection of native flora for education in the Botanical Garden of M.V. Lomonosov Moscow State University “Apothecaries’ Garden”*

Alexey Filin / Botanical Garden of M.V. Lomonosov Moscow State University

Over the past 30 years, due to changes in human economic activity, the European part of Russia has experienced widespread degradation of natural communities and as a result, the disappearance of many rare and decorative species.

Plants that grew massively are now in a critical condition, because the communities in which they live are subject to irreversible changes.

In this connection, the problem of environmental education for all groups of citizens is important. For the first time in Moscow, an ecological display of the natural flora of Central Russia has been created, featuring the most significant trees, shrubs and rare herbaceous plants. The collection

provides an introduction to these species and facilitates conversation around natural habitats, study, reproduction and possible reintroduction. This display will enable more effective use of the “Apothecaries’ Garden” for environmental education activities, including classes for Moscow schoolchildren and university students, as well as special tours for garden visitors. In the future the project will help to develop productive activities in the following priority areas:

- Work with visitors;
- Close cooperation with schools (teachers and schoolchildren)
- Participation in the creation of a common information space with other botanical gardens for exchange of environmental education information and work experience;
- Further development of the methodological framework for effective and up-to-date environmental and educational activities.

This display, in conjunction with creation of a micro-propagation laboratory and the resources of the Botanical Garden, will enable the future development of a model project for the reintroduction of rare local flora with the involvement of schoolchildren and university students. It will also be used as a basis for acquainting school and university students with the full range of plant protection problems.

Presentation 4: *Quality matters: educators’ training on ESD in German botanic gardens*

Marina Hethke / *Tropengewächshaus-Kassel University*

Education has become a considerable task in German Botanic Gardens. We realise our part as formal, informal and non-formal learning sites to implement the German National Action Plan on Education for Sustainability (ESD). ESD calls for a reorientation of the garden’s programmes: a global perspective in the curriculum, interdisciplinary cross looks and new methods and ideas of learning and teaching. The German Association of Botanic Gardens (GABG) started an initiative to train its gardens’ educators: two long-term courses took place with a total of 14 seminars with 50 participants from 38 German gardens, among them gardeners, biologists, agriculturists, technicians and freelancers, as well as employees. The emphasis of the courses rested on interactive learning and took into account environmental issues as well as the implications of social, economic and political factors of plants. The courses comprised lectures, workshops and practical activities, all as a ground for discussion and reflection. They offered time to exchange varied experiences and to develop new strategies. Participants developed an ESD-relevant programme for a selected audience group in order to receive a quality badge as “Qualified ESD Trainer on Biodiversity in Botanic Gardens”. According to

evaluation, participants developed a growing professional reputation and confidence.

The German Federal Environmental Foundation funded this capacity building programme to enhance ESD in non- and informal learning sites. Kassel University managed the project, Mainz and Dresden Universities were part of the leadership team.

As a means of consolidation the third course starts in May 2018. This is the very first time GABG offers a professional development course. It is a crucial step to make the gardens prepared for the future.

The talk will discuss the challenges and chances of ESD-concepts in education in gardens' daily routine.

Additional author: *Ute Becker / Green School at Johannes Gutenberg University Mainz*

Workshop (SFE)

The value of virtual learning for evolving education programs

Room: 103B

Chair: *Heather Drzal and*

Sarah Cathcart / Longwood Gardens

Max capacity: 50

Longwood Gardens is the living legacy of Pierre S. du Pont, inspiring people through excellence in garden design, horticulture, education and the arts. The Education Department's mission is to provide curricular and extracurricular instruction, including the library services and archival resources to support education and research, in the science and art of horticulture

and their contribution to health and wellness, for people of all ages.

The Education Department provides instruction to internal and external audiences including K-12 students, professional development for teachers, Continuing Education courses for all ages, Professional Gardener college level training, domestic and international internships and the Longwood Fellowship. Additionally, Longwood Gardens hosts many professional events including horticultural society and garden association symposia, research seminars, alumni association symposia and more.

As part of our mission, Longwood is looking to excite young people about plants and to support career paths in horticulture. This workshop will portray how Longwood Gardens developed virtual learning programmes to support formal education. Two initiatives will be highlighted:

- 1) virtual field trips for K-12 classrooms around the world and 2) a fully online series of free, open courses designed for all levels.

The speakers will outline the objectives, benefits and challenges of implementing curriculum in virtual formats to support formal education. Discussion points will include the design process, timeline, resource management, and partnerships. Participants will have the opportunity to experience a virtual field trip and to engage in an online course showcase. The workshop will conclude with the audience evaluation of their experience and a discussion

of future directions and how virtual learning can impact horticultural education at our institutions and beyond.

Speaker 1: *Heather Drzal / Longwood Gardens*

In this day and age it can be very difficult for teachers to plan field trips for their students. The barriers to field trips range from cost, to arranging bussing, to working around state testing schedules. So how can a Garden spread their message of education if on-site field trips are not an option? Virtual Field Trips is the answer!

Virtual Field Trips allow students, regardless of where they live, to experience learning come alive in the Gardens. Longwood Gardens offers interactive videoconferencing lessons for K-12 students. Our Educators deliver these curriculum-based lessons through Zoom or H.323 technology. Prior to the Virtual Field Trip, teachers receive a variety of interactive tools to use with their students before, during and after their virtual visit to Longwood.

Participants will be able to take part in a Virtual Field Trip and analyse how virtual learning may help them to meet their strategic goals.

Speaker 2: *Sarah Cathcart / Longwood Gardens*

In 2016, Longwood Gardens undertook the development of a new programme that would allow us to share our expertise and promote best practices in horticulture, provide an extraordinary virtual guest experience, and expand our impact by leveraging online learning

technology. The program was designed as a series of fully online, self-paced courses to complement the five seasons at Longwood.

The first two courses offered in 2018 were “Everything about Orchids” and “Everything about Aquatics”. The courses were delivered in a non-facilitated, free-access format, providing flexibility for participants. Free access helps to build a community of learners, expand our impact beyond the on-site experience, and provide incentive to explore other learning opportunities. Learn how Longwood is expanding its global reach and how new audiences are using this course to supplement horticultural education. Course evaluation survey results will be shared and we will discuss how the feedback informs future offerings.

Additional author: *Susan Caldwell / Longwood Gardens*

Workshop (double) (MI)

Theories of Change: learn how to design programs with impact

Room: 401A

Chair: *Susan Wagner / The Morton Arboretum*

Max capacity: 38

 **Please note this is a double session**

and will last three hours

Is your program impactful? How do you know? Botanical garden programs are addressing the need to communicate the importance of plant diversity to life on earth, and inspire learners to direct efforts in productive ways to mitigate the effects of a changing climate.

Botanic gardens have the ability to amplify their efforts by engaging the public in their missions. But how do we know the programs we deliver to the public are inspiring, or engaging, or even catalyzing the public to take meaningful action? Is our work making a difference?

Sue Wagner, Vice President of Education and Information at The Morton Arboretum, Lisle, IL, USA will take participants on a journey to develop institutional and/or program Theory of Change: defining long-term goals, mapping the intended outcomes, and evaluating impact.

The workshop is designed to give participants the tools to amplify our programmatic and conservation efforts and meet Objective 4 of the Global Strategy for Plant Conservation and meet Aichi Biodiversity Targets.

The workshop will:

- Engage gardens with a range of needs and evaluation capacity
- Review program design good practices and case examples
- Apply this information to each garden's work
- Identify opportunities to improve participants' current approach
- Consider how best to address evaluation challenges

Wagner will introduce the theory of change concept, and intended impact of the programs. She will facilitate participation in program and evaluation development, and test the viability of program design for stakeholders and mission impact.

Participants will:

- Learn about the role and purpose of theory of change
- Design their own theory of change
- Develop and refine program outcomes
- Learn how to measure outcomes using an evaluation template

Workshop (RNA)

Refugees welcome programme: why plants matter

Room: *Outside – meet in entrance foyer*

Chair: *Gesche Hohlstein / Botanic Garden and Botanical Museum Berlin*

Max capacity: *No maximum*

This workshop will present a “refugees welcome” programme developed by the Botanic Garden and Botanical Museum Berlin/Germany. It will show how refugees aged 9-12 can explore the importance of plants during a six-hour visit to the Garden. Find out which methods are helpful for delivering a programme to pupils with little or no knowledge of German/the respective instructor's language.

Discover how sign language, objects and song can guide participants through the programme. Learn how low-level storytelling, discovery trails, an explorer notebook, hands-on experience, games and workshops, etc. can be used to support teaching about why plants and their diversity matter. Share success stories, challenges, experiences and problems you may come across when imparting education for sustainable development to young refugees.

This is a target group, which has not so far been the focus of attention in education programmes in Botanic Gardens (in Germany).

Teaching the importance of plants and their essential conservation can be a small contribution to encouraging refugees to seek a sustainable lifestyle. Botanic Gardens can contribute to facilitating the integration of refugees in their new home country by delivering special education programmes.

Workshop (double) (SFE) Photosynthesis – easy or difficult?

Room: 55A

Chair: *Elżbieta Turek / Copernicus Science Centre*

Max capacity: 20

 **Please note this is a double session and will last three hours**

Photosynthesis – this is a well known topic, but do people really understand it? How is it possible to illustrate photosynthesis to the wider public, especially to children or teenagers? What can we use to demonstrate it in easy but interesting ways?

During our workshops, you will carry out experiments yourself. You will measure the intensity of photosynthesis depending on light condition, isolate photosynthesis dyes from different plants and check their properties – they may surprise you!

In our workshops, we will try working based on “design thinking” educational method. After our

experimental session, you will be able to create your own workshop about photosynthesis.

15:30–16:00

Break

16:00–17:30

Panel session (RNA)

Working with different audiences

Room: *Main lecture theatre*

Chair: *Mark Nicholson / Brackenhurst Botanic Garden*

Max capacity: *No maximum*

Presentation 1: Reaching young urban Kenyans and tourists on the importance of African flora

Mark Nicholson / Brackenhurst Botanic Garden

Kenya is becoming increasingly urbanised.

At the same time, land degradation, land hunger and land use change is becoming a major threat to native forests. Kenya’s flora is under threat owing to degradation of rangelands (in a country that is 70% arid or semi-arid) and the disappearance of woodlands due to the demand for charcoal and firewood.

Accompanying the loss of indigenous biodiversity is the loss of indigenous knowledge. Most young people in cities are unable to identify or name their native trees when fifty years ago their grandparents would have known all the names in their vernacular languages. Today Kenya’s trees are forgotten in the vernacular and only have

Latin names. Likewise, the vast majority of the overseas tourists who visit Kenya want to see the charismatic Big Five animals. About 5 percent might have an interest in birds and <0.1 percent have an interest in trees. How can this trend be reversed? There are over 1200 species of indigenous shrubs and trees in Kenya, many of them almost eradicated, vulnerable or under threat but trying to find them in roadside nurseries is almost impossible owing to the absence of indigenous knowledge. The Kenya Forest Service has never had an interest in native species and exists for the exploitation of commercial exotic species. The establishment of urban botanic gardens that specialise in native species might be one way to increase interest provided there are commercial avenues for native plant growing. Three of these are ecotourism, ethnobotany and the creation of a hardwood timber industry for the future. These opportunities will be discussed.

Presentation 2: Opportunities of ecological education of teenagers in the Botanical Garden of St. Petersburg

Larisa Musinova / The Peter the Great Botanical Garden of the Komarov Botanical Institute RAS

Teenage years are a difficult period when the relationship with nature gradually loses its cognitive character and becomes more and more emotionally conditioned. Typically, psychologists distinguish early teenagers (11-14 years) and older teenagers (14-19 years). Personal and

professional self-determination for teenagers during these periods become the main goals.

In the Botanical Gardens, there are all the conditions needed for the implementation of environmental education for teenagers, as well as helping them to decide their professional orientation. Mechanisms of education can be both impressions of discoveries in the plant world, and the interaction of specialists with young people. Some programmes at the Botanical Garden of St. Petersburg for children of 11-15 years are aimed at the development of interest in plants and the formation of a careful attitude to nature. Their names: "IUCN Red List", "Ecotropics", "New Year's Plants of the Earth", "The Children of Captain Grant", "Succulents", "Coniferous and Deciduous Plants of the Arboretum".

Many programmes are offered to schools in the context of studying specific school topics. For example, the purpose of the "IUCN Red List" quest is to attract young people's attention to the magnitude and importance of threatened biodiversity. Teenagers learn about the activities of environmental organisations (IUCN and CITES) to conserve plant biodiversity on the planet and study the concepts of "conservation status", "endemic" and "environmental factors". They also learn about rare plant species, such as the Norfolk Island pine, Venus flytrap and redwood trees. This excursion quest continues in the form of a project competition.

The motivation of students is supported by

a variety of programs, pedagogical techniques such as “success situations” and botanical souvenirs for the best project.

In summer, children aged 14-19 have practical activities. They do a simple job as assistants to gardeners, interesting work which can encourage some young people to choose a profession.

Additional authors: *Yuri Kalugin, Alexandra Volchanskaya / The Peter the Great Botanical Garden of the Komarov Botanical Institute RAS*

Presentation 3: Working with African diaspora people on plants, food and food security in the context of the BigPicnic project

Jutta Kleber / Meise Botanic Garden

As partners of the Europe funded BigPicnic project on food security, Meise Botanic Garden decided to work with people who are part of the African diaspora as one of our main target groups for the project. Our choice was inspired by our long tradition of collaboration with Central-African Gardens and Institutions, and research on African plants. Furthermore, with Brussels and its large African diaspora community being so close to our Garden, we realised that this was an audience we still hardly reached. Starting with some co-creation sessions with African diaspora groups, an intensive collaboration with a manifold of outputs was realised. Two exhibitions and interactive events were created, one on eating insects

in the European and African context and a second on roots, tubers and bananas as staple food in tropical Africa. We also co-created a video portraying people's food memories and the influence of their migration story on their food ways.

More intense collaboration between our scientists and African diaspora people setting up projects in their countries of origin was another result. A collaboration on African edible mushrooms was initiated, we organised a Science Café about eating insects ‘here’ and ‘there’ during which African diaspora scientists, entrepreneurs and other participants were well represented. We also organised an ‘African Diaspora Agrofood Forum’ in our Garden, where entrepreneurs, funders and scientists met to look at the future of African Agrofood business and the role research and African diaspora people can play in it.

Noticing that people with African origins showed interest in gardening and specifically in the possibility of growing African food in Belgium, we set up a platform for exchange of information on the growing of African plants, that we called ‘Garden Gossip’. In the future, we plan to have events in the Garden where African diaspora people will be able to exchange knowledge, experience, seeds etc. with each other and with our gardeners.

Presentation 4: Refugee recipe celebration: reaching new audiences through program partnership

Tracy McClendon / Atlanta Botanical Garden

Refugee Recipe Celebration is an annual, weekend-long cultural exchange demonstration held in June by the Atlanta Botanical Garden in partnership with the Clarkston, GA based non-profit Friends of Refugees. The small town of Clarkston, GA, located near metro Atlanta, has been called “the most diverse square mile in America” by the New York Times Magazine. Since refugees began to be settled in Clarkston in the early 1990s, the population has grown 34% as refugee families from over 150 different ethnic groups have made it their home. During Refugee Recipe Celebration, guest cooks from Sudan, Burma, Nepal, Syria and others prepare dishes from their home countries in the Atlanta Botanical Garden’s Outdoor Kitchen. This weekend-long event allows Garden visitors to experience the power of plants to bring people together around the universal experience of eating food. In sharing their recipes, the refugees also share the stories of where they are from, why they have come to the US, and which edible plants and cooking traditions are unique to them. The international cooking demonstrations are paired with a variety of cultural activities, including weaving crafts, musical performances, traditional dance, seed planting, and an artisan showcase. Friends of Refugees promotes the event widely within their network to ensure

that their service population knows about it and can attend.

Working with this new audience involved understanding and overcoming barriers to visitation, which can include a variety of factors from non-traditional work schedules, to transportation, to the logistics of ticket distribution. In this poster session, we will discuss the joys, benefits, and challenges of developing this community partnership.

Presentation 5: Nature education for persons with disabilities at the Adam Mickiewicz University Botanical Garden in Poznań

Justyna Wiland-Szymańska / Botanical Garden of Adam Mickiewicz University

At the Adam Mickiewicz University Botanical Garden in Poznań multidirectional activities have been undertaken in order to increase access to nature and gardening education for people with special needs.

Since 2005, several dozen people have been visiting the Garden on a regular basis with vocational training for students and occupational therapy workshops, as well as educational and therapeutic projects. These are people of all ages, with intellectual or multiple disabilities. The participants learn to perform simple gardening tasks. Some of them may start working in future and skills gained during vocational training could be of great help.

Students with special needs also take part in classes on nature conducted within the

educational offer for schools. In 2017, 213 people with various disabilities participated in workshops and trips. The workshops, especially dedicated to special needs and integration classes, provide not only visual but also olfactory and tactile experiences. The most frequently chosen topics concern scented plants, medicinal plants, fruits and spices.

The AMU Botanical Garden participates in an international project “Botanical Garden: COME IN! VSTUPE! KOM IN! WEJDŹ! GYERE BE!” financed within the Erasmus+ programme and coordinated by the Prague Botanical Garden. The project concerns work with special needs visitors in botanical gardens. Partner organisations are also Gothenburg Botanical Garden and Magyar Arborétumok és Botanikus kertek Szövetsége.

In order to develop methodology for people with special needs, free interdisciplinary workshops for test groups have been conducted at the AMU Botanical Garden. Workshops took place in December 2017 concerning Christmas customs - “Stories from beneath the Christmas tree” - and in January 2018 on spice plants - “Expedition with Christopher Columbus in search of aromatic gingerbread”. Participants of the workshops were visually impaired persons - members of the Polish Association of the Blind and members of the Association of Friends of the Blind and Visually Impaired.

Additional authors: *Roksana Lubkowska, Mateusz Sowelo, Joanna Markiewicz (Botanical Garden of Adam Mickiewicz University)*

Workshop (WT)

The evolution of a special event: making connections and weaving interpretation into Holiday Traditions

Room: 103B

Chair: *Jennifer Dick / Royal Botanical Gardens*

Max capacity: 100

Discover how two teams at Royal Botanical Gardens, Canada (RBG) have combined their expertise to create a legendary visitor experience during the holidays. Jennifer will take you through the history of the Holiday Traditions event and guide you through a sampling of the activities offered to our guests.

RBG’s holiday event began as simple visits with Santa in 2004 and has now evolved into a multifaceted event with strong interpretive elements that support RBG’s mission by connecting visitors with the plant world.

The Holiday Traditions event has grown in size and attendance over the years and, in 2015, RBG faced unprecedented popularity with huge queues at multiple points throughout a visit.

A good problem to be sure, but one that required us to adapt or compromise the visitor experience. By working closely together, the Special Events and Interpretation teams have revitalised the event with a Santa’s Cabin Experience with timed-ticketing, costumed interpretation, storytelling, hot chocolate and other plant-based holiday traditions.

Participants will learn interpretive solutions to event queues and take away some new

ideas about how plants can be incorporated into holiday programming. Participants will discover how collaboration between Special Events and Interpretation teams can create a stronger visitor experience.

Workshop (SFE)

The power of connected learning: from food to follow through

Room: 301A

Chair: *Patricia Harrison / Botanical Research Institute of Texas/Fort Worth Botanic Garden*

Max capacity: 32

Children in urban communities are seldom connected to their food supply. In fact, many live in food deserts that limit their access to locally grown foods. Without experiencing a variety of foods from plants, can children make the connection between healthy food choices and local plant conservation practices? Yes, through empowering their teachers with knowledge gained through experience.

This session explores how public gardens can inform formal education through teacher professional development that not only changes educators' professional practice, but their thinking about conservation. The Botanical Research Institute of Texas and the Noble Research Institute in Oklahoma are teaming with the Fort Worth Botanic Garden and the Las Cruces Biological Station in Costa Rica to grow a network of teachers and students who understand the importance of conserving

biodiversity to maintain our soil, water, and resulting food supply.

The Environmental STEM Boot Camp is a summer professional development series that explores sustainable agriculture practices in ranching and food production. Through the third year of Boot Camp cycle, participating teachers from two countries gained a greater understanding of pressing global environmental issues and have begun to collaboratively design solutions and exchange data relevant to local community needs.

This workshop introduces innovative practices for connecting teachers with plant conservation research through a 3-year cycle of local, regional and global experiences that inspire student-learning projects for their classrooms.

It will model instructional strategies that take project-based learning to the next level by giving teachers connections to agricultural, environmental, and technology specialists who enrich their content and build their network so they can facilitate richer, more engaging projects for their students. Workshop participants can begin to build their own connections to formal education by designing real-world experiences outside the classroom that incorporate twenty-first century themes: Global Awareness, Environmental Literacy, Economic Literacy, and Health Literacy.

Additional authors: *Tracy Friday / Botanical Research Institute of Texas, Amy Hays / Noble Research Institute*

12.09

Wednesday

8:00–13:30

Registration

9:00–10:30

Plenary

Room: *Main lecture theatre*

Chair: *Izabella Mier / University of Warsaw Botanic Garden*

Keynote (NET)

Animating the inanimate: engaging new audiences with plants

Chris Thorogood / *University of Oxford Botanic Garden*

It can be challenging to engage large and diverse audiences with research into plant and herbarium collections, or indeed the explorers who helped create them. In an age of instant information, film and social media can be highly effective tools to achieve this. This talk will explore how the use of digital media can engage diverse audiences, open up new platforms for dialogue, and how such media can be a tool for researchers working on topics that are often conventionally perceived as being inanimate.

Keynote (SFE)

Formal learning in botanic gardens: from communicating knowledge on plants to developing scientific literacy

Krzysztof Spalik (*University of Warsaw*)

Botanic gardens were once centres for the study and dissemination of knowledge on plants, particularly related to medicine, horticulture, and plant taxonomy. With the diminishing roles of pharmaceutical botany in medical education and systematic botany in modern biology curricula, the usefulness of botanic garden collections to the affiliated academic institutions and, consecutively, their continued existence is threatened. Botanic gardens have to secure their role in formal learning, both with respect to primary and secondary education, through remodelling their teaching collections in response to current needs and formal curricula including also plant ecology and conservation, genetics, physiology, and biotechnology. When developing their educational programmes, they should address not only the question of how to communicate content knowledge on plants but most of all how to develop scientific literacy among students, i.e., the ability to explain phenomena scientifically, to evaluate and design scientific enquiry, and to interpret data and evidence.

10:30–11:00

Break

11:00–12:30

Panel session (RNA)**The role of public gardens
in revitalizing communities****Room:** *Main lecture theatre***Chair:** *Jennifer Schwarz Ballard**/ Chicago Botanic Garden***Max capacity:** *No maximum*

While many municipalities in North America and around the globe have in recent years seen a return of commercial and residential investment, too many cities remain mired in cycles of poverty, community degradation, poor quality education, and chronic unemployment. Public gardens cannot by themselves reverse these long-standing problems, but through partnerships with community organizations they can develop programs that address real needs in ways that are culturally sensitive and locally based. In so doing, gardens can become active members of their communities, to the mutual benefit of both the gardens and local residents.

In this session, speakers with long experience in public horticulture and community outreach will share replicable strategies and processes for effectively engaging communities, illustrated by examples of programs that address areas in which public gardens are making significant contributions – degraded neighborhoods; lack of access to fresh produce; poor quality science education; ineffective job training programs; and environmental degradation. Speakers will describe the challenges to developing community

engagement programs, approaches for engaging communities in the program development process, characteristics of effective partner organizations, ways of funding and supporting programs, and ways to measure their effectiveness. Through these examples and shared resources, participants will be better positioned to establish such programs at their own organizations, and to gain support for their introduction.

**Presentation 1: *Identifying needs
and potential partners*****Merav Schnap** / *Jerusalem Botanical Gardens*

In response to increasing urbanization, the concentration of populations in urban centers, and the resulting disconnect between humans and nature, the Jerusalem Botanical Gardens has created a framework for connecting a diverse community of stakeholders to the Gardens and to one another. In this presentation, the Jerusalem Botanical Gardens (JBG) will share how they developed Hubitus, the Jerusalem Botanical Gardens' hub for urban sustainability. This new model of community engagement created and is supporting an interdisciplinary professional network that allows organizations and change agents to share and leverage their collective expertise. The Hub both provides JBG content to the community and leads eco-social programs in the JBG and throughout Jerusalem. The discussion will include how they successfully created the network and developed new partnerships based on the needs of the communities they serve.

Presentation 2: *Constructing programs*

Donald A. Rakow / *Cornell University*

Introduced in 2011, collective impact is an approach for addressing large-scale social, environmental and economic challenges. It has been successfully implemented by coalitions to address issues such as poverty reduction, health and education, thereby transforming the ways communities are able to address common social problems. Key elements forming the structure of collective impact are: development of a common agenda; utilization of data-based benchmarks for accountability; an action plan that produces mutually-reinforcing activities between stakeholders; ongoing communication between stakeholders; and the development of a backbone organization. In this presentation, Dr. Rakow will describe how each of these elements is best developed and refined, and will provide examples of partnerships that have used collective impact to improve their communities.

Presentation 3: *Funding and sustaining programs*

Julia Willison / *Royal Botanic Gardens, Kew*

Grow Wild is the UK's largest-ever native wild flower campaign. An initiative of Kew Gardens, Grow Wild has engaged more than four million people and successfully involving tens of thousands of 12-25 year olds since its launch in 2012. Pivotal to Grow Wild's success has been its funding of inspirational community projects throughout the UK, enabling people to transform

communal spaces through creative ideas and events. To date Grow Wild has supported more than 300 such projects, with funding ranging from £1,000 to £4,000.

This presentation will take you through the journey of Grow Wild's community projects, from start to finish. By explaining how Grow Wild supports groups to develop and shape their proposals, scores and awards funding, monitors and celebrates progress, we shall be highlighting a compelling model, replicable at any scale that empowers communities across the UK to achieve significant outcomes, benefits and impacts in wellbeing.

Additional authors: *Philip Turvil, Tim Owen*
/ *Royal Botanic Gardens, Kew*

Presentation 4: *Evaluating effectiveness*

Jennifer Schwarz Ballard

/ *Chicago Botanic Garden*

In this presentation, Dr. Jennifer Schwarz Ballard will illustrate how to apply evaluation methods in a community-based context. While evaluation is a critical component of any program, there are unique considerations when you are evaluating a collaborative program developed and implemented in partnership with community organizations. The talk will include an overview of basic evaluation methods and approaches, their application in a community-based context and a discussion of how to apply authentic assessment methods to ensure that the evaluation results are of value to the institution,

to community partners, and to program participants.

Panel session (MI)

Outdoor spaces and nature-based programming in public gardens: building the evidence base for early STEM learning

Room: 103B

Chair: *Susan Wagner / The Morton Arboretum and Tracy McClendon / Atlanta Botanical Garden*

Max capacity: 100

Recent research indicates there are developmental benefits for children who engage in nature-based play. As a result, nature-based programming is emerging as an important learning environment in which children can expand their STEM-based knowledge and strengthen critical thinking as well as language skills. The evidence base for the impact of such programming, however, is still in its infancy and both program development and evaluation can occur in silos. More information is needed on the way children gain knowledge, skills, confidence, and an affection for nature and the outdoors that emerge from experiences in these informal early learning environments, as well as best practices for linking these programs to formal learning environments.

In response to emerging evidence that nature-based experiences positively impact the development of STEM skills in early childhood, the Morton Arboretum in Lisle,

IL led a symposium in May 2018 for university researchers and practitioners involved in the development and evaluation of natural spaces and outdoor programming.

The session, led by Sue Wagner, VP Education and Information at The Morton Arboretum, Lisle, IL USA will share select learnings from public gardens and cultural organizations involved in the development and evaluation learning in nature-based spaces. Tracy McClendon, VP Programs at Atlanta Botanical Garden, Atlanta, Georgia, USA will share examples of her children's garden program and evaluation. Participants in this collaborative event will discuss what evidence is needed to demonstrate the distinct learning impacts of nature-based programs. They will share current knowledge of early childhood learning in nature programs. Participants can support the establishment of a new research and practice network in which partners work jointly to build the evidence base for the impact of children's nature programming by sharing knowledge, collaborating, and increasing the capacity of programs that link early informal and formal STEM learning.

Roundtable (WT)

The missing piece: developing and maintaining stakeholder relationships through sponsorship and endorsing organizations

Room: *Library*

Chair: *Carrie Stowers / Minnesota Landscape Arboretum, University of Minnesota*

Max capacity: 40

Public gardens often rely on community partnerships to advance their mission, but is it possible to engage external stakeholders at a deeper level? This 90-minute interactive session will explore creating and cultivating stakeholder relationships with examples of current models that impact stakeholder engagement and growth.

Find the power to develop long-term relationships with external stakeholders to “endorse” and “support” educational tools. Community partners bring new opportunities to sustain and expand educational programming through outreach; however, they can also bring a set of pre-determined expectations and barriers to work together.

What is the missing piece that will deepen this connection? You! In this interactive presentation, I will outline the expectations, priorities and goals that can set botanical education programs apart from their competition and begin to build the foundation of stronger stakeholder framework. I will also define the missing piece to successful long-term community partner relationships.

At the conclusion of this presentation, attendees will be able to

1. Identify new audiences for program sustainability
2. Apply connections to build long term relationships with sponsors and endorsing organizations
3. Differentiate your organization from competitors

Workshop (RNA)

Gaining audience insights through empathy mapping

Room: 401A

Chair: *Carissa Dougherty / The Morton Arboretum*

Max capacity: 30

As educators and communicators, we spend a lot of time thinking about what we want to teach our target audiences and what messages we want them to absorb. But how often do we consider THEIR motivations, influences, and pain points? We know our content and our discipline so well that we can develop an “expert blind spot”; by focusing so single-mindedly on our own educational mission, we may actually end up distancing ourselves from our audiences’ real-world needs.

This intensive, 90-minute workshop will teach you how to “get inside the head” of your target audience(s) using a technique called empathy mapping. Rather than focusing on what you want to tell them, empathy mapping flips the process on its head and gets you thinking more deeply

about what (and how) your audiences want to hear from you.

Empathy mapping isn't necessarily about changing the content you're delivering, but about re-considering how you connect with and communicate to your learners. Examining your audience's worldview and how your garden may (or may not) fit in can be challenging, but you'll return to your garden with some surprising insights and a valuable tool that you can apply in different contexts for decision-making, program innovation, and audience development. This workshop is for education leaders, program managers, communication specialists, and anyone who wants to transform their relationship to existing audiences—or cultivate new ones. This thought-provoking design thinking exercise will help you re-connect and re-engage with the people who matter most to your mission.

Workshop (CG) Becoming the people's garden

Room: 301A

Chair: *Michelle Chan & Debbie Chen*

/ Gardens by the Bay

Max capacity: 30

Located in Singapore, a biophilic city-state where nature is carefully incorporated into the urban landscape, Gardens by the Bay (GB) is quintessentially a city garden. Set in the heart of the city's new downtown in Marina Bay, this prime location is both a bane and a boon. Faced with a population that prefers to escape

from the tropical heat into air-conditioned comfort, we constantly ask ourselves what we can do to pique their interest and convert them into a garden-going people with an appreciation for nature. We have approached these challenges from several angles, by fusing nature, architecture and technology.

This workshop explores how GB showcases the best of tropical horticulture and garden artistry, with a mass display of flowers and coloured foliage in the outdoor gardens, and a conservatory complex that is an architectural icon, a horticultural attraction and an exposition of sustainable energy technology. Visitors are attracted to the ever-changing floral displays and an array of unusual non-native plants in the conservatories, apart from it being a welcome respite from the heat. The Gardens' annual calendar is filled with a wide range of programmes that draw people of all ages and interests to GB. Festivals cater to young families and multi-generational visitors while workshops and holiday programmes are conducted to cultivate a love for greenery. Those aged 4 to 16 embark on programmes designed with learning objectives that are aligned with the curriculum, with play incorporated to make them fun and engaging. With these, participants are invited to contribute to a gallery walk of ideas and to discuss what more can be done to engage various audiences in our respective gardens. This interactive session will also have participants working in teams on a mission to find the formula to a healthy lake ecosystem,



through Eco Warriors at the Dragonfly Lake, a board game that was designed to encourage visitors to discover more about interdependence in ecosystems.

Additional author: *Stephanie Dhillon*
/ *Gardens by the Bay*)

12:30–13:30

Lunch

13:30–21:30/22:30

① The return to Warsaw

depends on the trip chosen

Mid-Congress tours

For more information see [Tours section](#)

13.09 Thursday

08:00–17:30

Registration

9:00–10:30

Plenary session

200th anniversary of the
University of Warsaw
Botanic Garden

① Please note this session will be

delivered in Polish but an English
translation will be provided.

Room: *Main lecture theatre*

Chair: *Maria Ciemerych-Litwinienko*
/ Faculty of Biology University of Warsaw

Max capacity: *No maximum*

Official addresses:

Hanna Werblan-Jakubiec, *Director of UWBG;*

Marcin Palys, *Rector of the University*
of Warsaw; **Agnieszka Mostowska**, *Dean*

of the Faculty of Biology UW; **Paweł Kojs**,
President of the Polish Council of the Botanic
Gardens and Arboreta

This special session will also include short
overviews of the Botanic Garden's past and
present (by **Hanna Werblan-Jakubiec**, *Director*

of UWBG), research activities (by **Marcin Zych**),
and education (by **Iwa Kołodziejska**).

We will also host **Michael A. Slawinski**
(*Memorial University, St. John's, NL CANADA*),
descendant of the first director of the Garden,
presenting 'Michał Szubert and seven generations
of his family rooted in natural sciences'.

Plenary session

Measuring impact panel session

Room: *103B*

Chair: *Paul Smith / Botanic Gardens*
Conservation International

Max capacity: *100*

Presentation 1: **Paul Smith**

/ Botanic Gardens Conservation International

In 2017, BGCI produced a Technical Review
on defining the botanic garden, and how
to measure performance and success (Smith
and Harvey-Brown 2017). In carrying out this
survey and review, it became clear that too few
botanic gardens measure the impacts of their
work. For example, nearly all 200 gardens that
were assessed in this study, measured visitor
numbers but fewer than half of the gardens
measured visitor attitudes or behaviour following
a visit. In short, the Review revealed a gap
in best practice by botanic gardens – the
need to measure impact rather than activity.
As a follow up, in 2018 BGCI released its second
Technical Review: The economic, social and
environmental impacts of botanic gardens, which
highlights case studies where economic, social

and environmental impact evaluation studies have been carried out by objective, third parties - usually auditors, consultants or academics. The results of such studies are useful to policymakers and funders because they enable decision makers to weigh up the cost: benefit ratio or return on investment associated with particular activities carried out by botanic gardens. Such studies are also useful to botanic garden leaders and staff in enabling them to measure the effectiveness of their activities. In this session, we will explore ways in which public engagement and education activities can be designed, and their impact effectively measured.

Presentation 2: *Sue Wagner*

/ The Morton Arboretum

How do gardens measure impact? There are financial and environmental impacts, but how do we measure the social impacts of this work? Our mission describes why we exist, defining our social impact helps us answer the “so what/ who cares” questions about our work being vital to our community. The Arboretum as an educator, convener, inspirer, expert and gathering space for the community. How do our education programs for adults directly influence the behavior of our community? How far afield are we having an impact?

Presentation 3: *Iлона Таńska*

/ Copernicus Science Centre

Measuring the impact and analysis of the educational value of exhibitions has recently

become the hot topic among informal science institutions. One of the approaches to this process is the direct replication of the formal school evaluation system in which critical attention is paid to the increase of a knowledge. The nature of informal science settings is different. The interaction with exhibits in science centres and museums, as well as the visitor experience in museums, botanic gardens and zoos, is a holistic experience of exploration, interpretation and noticing phenomena. At the same time, the experience has an episodic character; the experience is limited to 3, 6 or in the best case 9 hours... per year. So when talking about measuring the impact we should consider rather broader categories, like the role of informal science in the development of an individual's science capital. Or, alternatively, we should analyse the role of these epistemic practices in developing competencies. In my presentation I would like to share the data gained in the Copernicus Science Centre to illustrate both perspectives.

Presentation 4: *Ftīs Plent*

/ University of Cambridge Botanic Garden

How much of the regular evaluation and measurement of the activities we run actually help us to improve our programmes? We increasingly measure a whole range of stuff to meet the needs of funders, our organisation's existing reporting structures and to support wider policy initiatives. But are we missing the point by trying to make it all fit in a spreadsheet?

Nursery in Residence case study: Working in partnership with educators from the Fitzwilliam Museum, and alongside early years practitioners, we used photography, video, audio and field observation techniques to gather a wide range of data on the experience of a small group of three year olds during a week-long residency. The talk will focus on a small area of the data that relates to the children's experience of signage and interpretation.

Presentation 5: *Ari Novy*

/ Liechtag Foundation, San Diego Botanic Garden, University of California-San Diego, Smithsonian Institution

This presentation will discuss the evaluation of botanic garden programs and exhibits through an intentional impact framework.

Presentation 5: *Wanlu Liu*

/ Xishuangbanna Tropical Botanical Garden, Chinese Academy of Science

Mainly, there are two kinds of environmental education programmes run in XTBG – natural experience activities and the Tropical Rainforest Exploration Programme – which serves more than 3000 students per year. In this presentation, I will briefly introduce 4 evaluation projects conducted in XTBG – 1) the influences of museums in botanic gardens on visitors' experiences and satisfaction; 2) the function of discovery maps; 3) the impact of nature observation clubs on children's conservation behaviour; and 4) the impact of quasi-

apprenticeship science programmes on students' science career intentions.

Botanic gardens need to develop environmental education programmes with support of psychological and educational theories and principles. With rigorous proper evaluation, we could know not only what the outcomes are, but also the mechanics behind them.

10:30–11:00

Break

11:00–12:30

Panel session (EPG)

Official celebrations of the botanic garden bicentenary

i Please note this session will be delivered in Polish but an English translation will be provided.

Room: *Main lecture theatre*

Chair: *Marcin Zych*

/ University of Warsaw Botanic Garden

Max capacity: *No maximum*

This session is the continuation of the Official celebrations of the Botanic Garden bicentenary and will include the award ceremony of the “Medal for Services to the University of Warsaw Botanic Garden”, launch of the new postage stamp for UWBG 200th anniversary, and the book “In the kingdom of plants. 200 years of the University of Warsaw Botanic Garden”. The session will end with official greetings.

Panel session (WT)

Environmental education for a hot and hungry planet: exploring shared values and assumptions to partner for impact

Room: 103B

Chair: Tara Moreau / UBC Botanical Garden

Max capacity: 100

In the age of the Anthropocene pressing and immediate change is needed at both individual and collective levels to address climate change and meet Sustainable Development Goals. Such societal action can only be predicated on collaborative partnerships with botanic gardens as key nodes in driving inclusive educational programs across global and local landscapes. Setting the table for partnerships and collaborations requires deeper inquiry and space to explore assumptions and establish shared values that guide environmental education. In this session, we explore through case studies how several institutions involved with climate change and sustainability education go through a process to daylight assumptions, establish common values, promote positive teams and execute partnerships for meaningful impact. Discussants will attempt to distil important themes, strategies and pitfalls for successful educational partnerships.

Presentation 1: *Welcome to the Anthropocene - a tool for framing inquiry into global change*

Sharon Willoughby / Royal Botanic Gardens, Kew

A useful tool to consider when exploring concepts such as global change is the idea of the Anthropocene. The Anthropocene is the name of a new geological epoch added after the Holocene to the Quaternary. This epoch was coined by ecologist Eugene Stoermer and controversially popularised by Paul Crutzen (a Dutch Nobel-prize-winning atmospheric chemist) as the twentieth century ticked over into the twenty-first. The Anthropocene marks the point at which humans began to change planetary ecosystems and takes its name from the Greek roots: anthropo- meaning 'human' and -cene meaning 'new.' The Anthropocene is still an idea in prospect, generating debate in the scientific community particularly around the timing of the beginning of this proposed epoch. The Anthropocene as a way of framing the impact that humans have had on planetary systems adds a new dimension to discussions around our role in global change.

Presentation 2: *Case studies on how to begin the conversation: HOPS, Live It Learn It*

Lee Coykendall / US Botanic Garden

We must work in our communities to get people to love nature before asking them to save it. How do we do this? Carefully. Botanic

Gardens, no doubt, are incredibly rich resources with much expertise. However, in North America where diversity issues are often at the forefront we need to acknowledge and have a conversation the fact that botanic gardens lack diversity – in audience, in leadership and in staff – and are not reflective of the community that must come together to take on climate change. It is easy to say we are going to ‘partner’ but we must PAUSE and ask the question of how are we going to show up? We must first build equity in the community. We must look at the inequities and have conversations about privilege, food access, housing... It is through trust building – a deliberate and intentional walk into the community that we can develop a shared value. Then, we can come together as community to design solutions.

Presentation 3: *Using an asset-based community development approach for climate-friendly communities*

Jennifer Schwarz Ballard / Chicago Botanic Garden

Too often, environmental organizations approach sustainability as a problem to be solved with solutions they can provide. However, this tactic can be counterproductive when it results in community disengagement, alienation, or active resistance to proposed solutions that don't take into account the cultural, social, economic, or political context of the community.

Asset Based Community Development (ABCD) is a strategy that engages the local community in leveraging their untapped assets and drawing upon existing community strengths to build stronger, more sustainable communities for the future. This presentation will illustrate the power of applying ABCD to engage diverse communities in climate action through co-created projects that meet community-identified goals and result in climate-positive impacts. The Chicago Botanic Garden's Connect project will be used to illustrate how ABCD has been used successfully to engage diverse communities in climate action in community-relevant ways at the organizational, local, and regional scales.

Presentation 4: *The earth is our garden: we're all in this together*

Ari Novy / Liechtag Foundation, San Diego Botanic Garden, University of California-San Diego, Smithsonian Institution

Since the Enlightenment, evidence-based thinking has enabled astounding leaps in knowledge and associated societal benefits. However, collective action is predicated on shared values, perhaps even more than shared facts. Botanic gardens are scientific institutions, dedicated to the advancement and dissemination of knowledge, but our ability to precipitate the large scale action required to achieve the Sustainable Development Goals will depend on our ability to create a community of shared values across a wide spectrum of visitors. Many gardens have recognized that food and

agriculture are great equalizers. We all eat, both for sustenance and as an expression of our deepest held cultural values. The agriculture that provides our food is gardened from our massive collective enterprise, consuming approximately one-third of the terrestrial surface. Every bite we eat necessitates that someone, somewhere garden. We are each gardeners either directly or through the actions our consumption necessitates. This presentation will explore how institutions are already leveraging our shared experience as eaters and gardeners to reach new audiences in personal, intimate ways and establish shared values with our visitors to spur societal change.

Presentation 4: Escalating environmental education: team building for sustainable development

Tara Moreau / UBC Botanical Garden

The climate is changing faster than we are. Recognizing that understanding human behavior change is key to addressing sustainability challenges of our time, we explore tools and insights that can assist botanical garden educators in designing programs for local and global Sustainable Development Goals. The Sustainable Communities Field School is reaching new audiences by engaging businesses and organizations in Vancouver, Canada. Through collaborations and community partnerships the program aims to build teams and increase connection with nature, environmental

knowledge and sustainability skills. Results of research from the past three years will be shared and tips and techniques for policy-informed engagement and education explored.

Panel session (MI) Measuring the impact of environmental education and green spaces

Room: 102B

Chair: Wanlu Liu / Xishuangbanna Tropical Botanical Garden, Chinese Academy of Science

Max capacity: 80

Presentation 1: How do green campus and environmental educational programs affect children's ecological value and pro-environment behaviour?

Wanlu Liu / Xishuangbanna Tropical Botanical Garden, Chinese Academy of Science

Enhancing children's ecological value and pro-environment behaviour has been highlighted from perspectives of both environmental education and psychological development. The campus green space and educational programme are recognised as the important measures, but empirical study is lacking. In this study, by collecting data from 1597 students aged 9-12 years in China, we found that the students' environmental attitude and self-reported pro-environmental behaviour were significantly influenced by perception of the school green space and natural activities

within school and environmental activities out of school. The quality of green space on campus had a significantly positive effect on students' perception of the green space. Implications for campus design, educational programmes in schools and how botanical gardens can participate in the important educational process will be discussed at the end.

Presentation 2: *The educational needs survey of botanical garden visitors and its application*

Xiaoliang Zhu / Shanghai Botanical Garden

Recently, more and more people have been paying attention to the problem of "Nature Deficit Disorder". A lot of organisations are beginning to organise science education activities. Some activities are good for the people, while the others may not be as useful. Even the good activities are not necessarily suitable for every group of children. And there are so many activities available that parents and children struggle to find the right one for them. How can we organise a good science education activity for most children?

To run an excellent science education activity, a lot of elements have to be considered to ensure the children's happiness and safety. The elements influence the feelings of the children and we should know the impact of changing

the elements for different groups. That is why our survey to get this sort of information and support educational activities is necessary.

Our survey collected data from the science

education activities of Shanghai Botanical Garden such as "Visit to the night elves", "Gardening Sharon" and "Natural Course". We tried to assess the impact of changing elements for different groups such as start time, duration time, education details, publicity methods or other elements so that we can find out what the citizens really want to learn. And then we can find a better way to organise some new activities to meet their needs accordingly.

Presentation 3: *The impact of Royal Botanic Gardens' Community Greening program in urban and suburban communities*

Son Truong / Western Sydney University

In 1999 the Royal Botanic Garden Sydney joined with Housing New South Wales (NSW) to establish a partnership called 'Community Greening' to serve the broader community through innovative outreach programs that promote community garden projects. This successful program has now reached almost 100,000 participants since 2000, and established 627 community gardens and youth-led community gardens in NSW, Australia. Sixty-nine percent of the gardens established under the auspice of the program are still going strong today. The demand for Community Greening continues to grow, with the aim to deliver 100 gardens and engage 200,000 participants by 2023. Community Greening also provides mentoring and support systems

for participants, delivers horticulture and Indigenous education, generates opportunities for disadvantaged youth and promotes wellbeing and sustainability. The model also includes “outreach horticulture” through hands-on learning and capacity building with Community Greening horticulturalists and educators.

In 2017-18, a study was commissioned in partnership with Western Sydney University to systematically survey new community gardeners at six new garden sites across urban and suburban neighbourhoods in the Sydney region. The purpose of the research was to better understand the relationship between community gardening and sense of community, health, wellbeing and social participation in low income communities. The mixed methods study included:

- A. The planning and construction of new garden beds with community gardeners
- B. Data collection, including the Sense of Community Index, Personal Wellbeing Index, and focus group interviews
- C. On-going gardening and outdoor educational opportunities

This presentation showcases the innovative partnership and key findings from this pioneering study, which is the first of its kind for the Community Greening program. Results include the experiences of new gardeners on the impact of gardening on wellbeing and social engagement. The findings support the benefits of community gardening in social housing communities in both urban and suburban settings.

Additional authors: *Tonia Gray, Kumara Ward, Danielle Tracy /Western Sydney University, Philip Pettitt / Royal Botanic Garden Sydney, Community Greening*

Presentation 4: Public profile of arboretum visitors of the botanical garden – Rio de Janeiro

Carmen Sílvia Machado / Instituto de Pesquisas Jardim Botânico do Rio de Janeiro

The Observatory of Museums and Centers of Science and Technology (OMCC&T) is a network created by The Observatory of Museums and Cultural Centers (OMCC), an initiative of research and services for museums and related institutions. It is a network of data sharing and diverse knowledge about museums and their relationship with society. The Rio de Janeiro Botanical Garden became part of this network in 2016, and started its participation with the application of the Profile-Opinion Questionnaire, divided in 4 blocks and answered by 651 visitors from August to November 2017. During the four months it was possible to create an average profile of the visiting public, its suggestions and demands. We used the R Commander program for data analysis; it provided considerable material for analysis and discussion about public perception on the Botanical Garden. This material will be used in the creation of research protocols for comparative and relational purposes among the participating museums. In addition, the development of systematised

studies on the public at museums and science centres, their experiences and the possible results of a visit generate subsidies that enable the improvement of institutional actions, influencing the proposition of activities of public interest, providing reflections on the role of the Arboretum specifically for the creation of museum experiments. This effort also aims to provide a visit not only for leisure, but also to add an experience that awakens new knowledge and curiosities about the environment, the history of the Botanical Garden and the scientific technical progress of the Institution.

Additional authors: *Lilaz Beatriz Monteiro Santos (Universidade Federal de Estado do Rio de Janeiro UNIRIO), Laura Bacelar, Maria Clara Trindade (Instituto de Pesquisas Jardim Botânico do Rio de Janeiro)*

Presentation 5: *The biodiversity valley, a suburban botanical garden that combines nature, culture and agriculture*

Gabriele Rinaldi, Francesco Zonca / Bergamo Botanical Garden

Metropolisation is a massive process involving a growing number of people and regions. A few decades have been enough to transform an agriculture matrix with urban nucleus into an urban matrix with residual agricultural areas. Bergamo, almost a satellite town of Milan in the Lombardy region (North Italy), is paradigmatic of this process, with a progressive urban

sprawl and soil consumption, as well as a growing gap between young people and nature. In the last few years, it has been possible to develop a new section of Bergamo Botanical Garden, in a suburban area, in a large green property close to an old ex-monastery and to an urban district.

The intellectual challenge linked to this project has been to combine an historical, agricultural and natural landscape with a contemporary botanical garden. The main answer is biodiversity, but also the man-made landscape details were milestones inspiring the museum project. The lost vineyard terraces and the drainage network present are not only secondary details. The nature, the agriculture and the culture have been a conceptual frame in order to tackle one of the topic of a botanical garden: to communicate the biodiversity.

This is the reason of the Valley of Biodiversity, where, with more than 1000 vegetable cultivars, Bergamo Botanical garden is trying to make the concept easier to be understood by a wide audience and with a direct practical experience, not just a theoretical statement.

A topic question that Bergamo Botanical garden is trying to answer is “Which plants feed humans on the planet?” It helps people think in the plural - not tomato but tomatoes, not oat but oats etc. - increasing their awareness of the problems caused by massive food standardisation and by the erosion of biodiversity.

The Bergamo Botanical Garden engages people through exhibits, cultural events, science cafés,

meetings with farmer and local policy makers, conferences, vegetable auctions and other activities.

World Café (RNA) Reaching new audiences through nature-based learning experiences

Room: *Library*

Chair: *Jessica Kester / Missouri Botanical Garden*

Max capacity: 36

The Missouri Botanical Garden in St. Louis, Missouri strives to reach new audiences by providing diverse nature-based learning experiences for children and families. To expand capacity, the Garden and its family of attractions, including Shaw Nature Reserve and the Sophia M. Sachs Butterfly House, utilize carefully-planned nature spaces, onsite programs for children and families, and outreach programs. The Education team has identified four elements that impact the capacity of these programs, including defining clear learning objectives and evaluating program impacts, marketing to new and diverse audiences, engaging sustainable funding sources, and adding elements to ensure experiences are inclusive. During this session, participants will learn about the Garden's nature spaces where families are able to connect in thoughtfully designed areas like the Garden's Children Garden, the Nature Reserve's Sense of Wonder Woodland, and the Butterfly House's Nature Trek. We'll share a compilation of the Garden's onsite programs

for children and families starting with the Little Years Series (for ages 2-5 years) through the Adventure Series (for up to age 12 years). Finally, programs with community partners like the St. Louis Crisis Nursery, Easterseals of St. Louis and early childhood centers allow educators to reach at-risk and underserved audiences.

Participants will discuss the following elements that impact their programs and strategies they have used to overcome obstacles.

What are key learning objectives of your programs and how do you determine if they are being met?

What marketing strategies are most effective to reach new and diverse audiences?

What fundraising strategies are most effective to sustainably fund programs?

What elements make your program inclusive of all audiences (including individuals that are at-risk, underserved, or with disabilities)?

To conclude, participants will help distill patterns from group discussions and share insights that will cultivate and sustain connecting with new audiences through nature-rich experiential learning.

Additional authors: *Jennifer Wolff, Jennifer Smith (Missouri Botanical Garden)*

Workshop (SFE) Explorers of nature

Room: 13D

Chair: *Maria Zachwatowicz*

/ University of Warsaw

Max capacity: 20

We invite the representatives of formal and non-formal education (school and pre-school teachers: ISCED 0, ISCED 1, ISCED 2, instructors, educators and parents) to the workshop exploring the opportunities for nature-based outdoor education for children in the city. We will show how to plan and guide several field-based hands-on activities. We will make use of brainstorming, field observations and simple quantitative analysis. We will prove that the ordinary vicinity of a school may be treated as a research polygon full of fascinating discoveries. The workshop will be held by the scientific staff of the Biology Teaching Lab in cooperation with students of the Faculty of Biology - University of Warsaw.

We will meet at the Faculty of Biology and move to the Pole Mokotowskie park (located in the close neighbourhood of the Faculty), where our workshop will take place. After a short introduction the participants will be split into groups and will play Nature Explorers. Every group will perform tasks during which the participants will: apply basic field techniques, identify common plant and animal species (invertebrates, birds, herbaceous plants, trees and shrubs), quantitatively estimate diversity of species, improve teamwork competences, learn to plan and conduct simple

field observations and documentations, present results and formulate conclusions. We will discuss how different factors affect species occurrence and composition in a given area, and whether some species are more common than others and why.

Participants will compare and discuss their results between groups. They will try to understand and define such terms as: 'biodiversity', 'ecological niche', 'species richness' and 'species diversity'.

Field activities will be based on instructions, worksheets and equipment (e.g. framed sampling units, simple taxonomic keys or atlases of flora and fauna, binoculars, pens and pencils) that groups will receive from instructors. The instructors kindly ask the participants to bring their own smartphones.

Additional authors: *Joanna Lilpop, Marcin Chrzanowski, Igor Siedlecki, Kamil Kwiecień / Faculty of Biology, University of Warsaw*

12:30–12:45

Congress photo

Meeting point – entrance to the Faculty building.

12:45–14:00

Lunch

14:00–15:30

Panel session (WT)

Creating successful collaborations: challenges and solutions

Room: *Main lecture theatre*

Chair: *Carissa Dougherty*

/ The Morton Arboretum

Max capacity: *No maximum*

Collaborative projects can be extremely rewarding and extremely challenging. It's hard to get everyone on the same page, especially when the people involved don't have a reporting relationship and may get pulled in different directions by their own shifting priorities. In these situations, establishing trust, getting buy-in, and empowering your collaborators is essential – and this panel presentation will help you learn how. The panelists will discuss specific challenges they faced in tackling collaborations at their gardens; identify the solutions they employed; and discuss what they learned from the experience.

Carissa Dougherty, The Morton Arboretum, will describe using the RACI model for managing complex projects; Susan Caldwell, Longwood Gardens, will examine how they developed a new program marshalling numerous internal and external resources; and Britt Patterson-Weber, Naples Botanical Garden, will discuss how the organization maximized limited resources to meet a community need. Audience members will have a chance to ask questions and discuss how some of these techniques could be applied at their own gardens.

Presentation 1: *Carissa Dougherty*

/ The Morton Arboretum

How do you keep a busy, cross-departmental team on track for a complex project? How can you make sure that the experts in the room—whether educators or marketers or scientists or event planners—are trusted and held accountable for their work? How can you avoid having too many meetings, receiving feedback when it's too late, and misunderstandings about decision-making? The Morton Arboretum addressed these challenges during a recent interpretation project by setting clear expectations about roles and responsibilities using the RACI model. This project management framework allowed us to use team members' expertise to its best advantage; get the right people in the room for different types of meetings (planning versus informative versus decision-making); and establish accountability and timelines that keep the project moving forward with as much collaboration (and as little drama) as possible.

Presentation 2: *Sarah Cathcart*

/ Longwood Gardens

How do you bring together a diverse group of stakeholders to develop a world-class, world-wide education program that will be offered as free and open online courses? Longwood Gardens wanted to create a series of online courses in order to highlight our collections, share expertise, and promote best practices in horticulture. A number of challenges

surfaced along the way, including managing internal resources, coordinating the timing of capturing video and images of flowers in bloom, defining the global audience, and creating a marketing plan for a new type of offering. We addressed these challenges by assembling the right partners—both internal and external—who were all interested and invested in expanding our impact and fostering a growing community of learners. Key to our success was our partnership with the learning management company D2L Brightspace, who facilitated the course design and hosts the open courses.

Additional author – *Susan Caldwell / Longwood Gardens*

Presentation 3: *Britt Patterson-Weber*

/ Naples Botanical Garden

How can your organization maximize limited resources to meet a community need? Naples Botanical Garden encountered that challenge as demand for school garden assistance exploded in recent years. Although supporting school gardens aligns with our mission, the demands of our own property and our small education staff forced us to think of a creative way to address this need in a sustainable and meaningful manner. Our solution was to organize a network of diverse stakeholders—teachers, parents, local experts, and community members—who all have a shared interest in school gardens. This model empowers garden leaders with the knowledge and resources to build and sustain

their projects, while at the same time allowing us to reach more children than we could by visiting classrooms on our own. Through regular workshops and other contacts, Naples Botanical Garden has become a local hub where educators can come together to share best practices.

Panel session (RNA) Pondering new social roles, diversity, and inclusion at botanical gardens

Room: 102B

Chair: *Katja Neves (Concordia University)*

Max capacity: 80

This panel explores recent developments at botanical gardens taking place in the context of the new social roles that these institutions have embraced in recent decades and related engagement with previously under-represented audiences. The first paper in this panel theorizes these transformations within a historical context and proposes reflexive thinking on some of the dilemmas that these transformations may entail. The second paper in this panel examines best practices of diversity and inclusion as well as their meaningful contributions to individual gardens and the global collective. The third paper in this panel presents a case study from the southwest United States to discuss some of the conundrums that power dynamics can pose in relation to the goals of promoting diversity, equity and inclusion, as well as the notion of engaging missing audiences.

Presentation 1: *“Beyond the greenhouse”: situating the reinvention of botanic gardens as socially purposed institutions of plant conservation*

Katja Neves / *Concordia University*

For close to three decades now, botanic gardens have sought to go beyond their walls (Maunder 1994; 2008) and engage with an expanding array of previously under-represented audiences (BGCI 2012). A desire to remain relevant at a juncture where global socio-environmental problems have reached unprecedented scales has propelled much of this change. This paper provides a historically situated discussion of the current reinvention of botanic gardens as socially purposed institutions of plant conservation, while also bringing forth some of the dilemmas and conundrums that these transformations entail. The presentation’s purpose is to invite the sharing of experiences and reflexive conversations on these matters.

Presentation 2: *Diversity and inclusion – discovering our missing audience*

MaryLynn Mack / *Desert Botanical Garden*

Diversity and inclusion is a necessary focus if botanic gardens are to remain relevant and sustainable. The purpose of this presentation is to examine how diversity and inclusion will have a positive and meaningful impact on individual gardens and the global collective.

We will examine the key elements of diversity and inclusion in order to understand how a broad vision of intersecting environmental, economic, and social strategy will create conscious inclusion within a garden, and engage communities in an authentic and meaningful way.

We will review how recognition of bias, barriers, and assumptions play a key role in a garden’s diversity and inclusion strategic plan. We review approaches used in gardens to create change in diversity and inclusion and outline some of the challenges faced when making these changes. Best practices data from a botanical garden in the United States will show the organization shifts, structural changes, and community dialogue necessary for internal stakeholders and external audiences.

Presentation 3: *Engaging new audiences through partnerships: thinking through the “politics of participation”*

Tallie Segel / *Concordia University*

Growing the social role of botanic gardens (and other types of conservation parks and reserves) through creative partnerships brings opportunities for new audiences, directions, and frameworks for programming. But oftentimes, not without complications, conflicting objectives, and asymmetrical power relationships. Through the complications

of working with and across partners, important questions of what anthropologists Jaskiran Dhillon and Robert Nichols refer to as a paradox of “participatory power” – power built through representation that may lead to local, community empowerment, but that may also be co-opted as a way to regulate the boundaries of participation – come in to view.

Questions such as:

How participatory power is built, framed, and shared through partnerships and collaborations across botanic gardens and communities (in particular those related to “missing audiences”)?

- What are the benefits of partnerships and power sharing, and are they even? Who speaks, and about what are they ‘authorized’ to speak?
- In what ways does engaging diverse partnerships by building participatory power in some ways reproduce the problems of institutional and structural inequity and oppression?

Using as an example an urban conservation site in the southwest United States, and drawing on Croft and Beresford’s politics of participation as well as Dhillon’s critical analysis of participatory power, this presentation seeks to engage with the reflexive process of both celebrating and problematizing diversity, equity and inclusion and notions of engaging missing audiences.

Presentation 4: *Botanical garden audiences – from segregation to reciprocity*

Oren Ben-Yosef / *Jerusalem Botanical Gardens*

For the past few years, the public garden community and especially botanical gardens have been searching for their place in society, shifting slightly from living museums with very specific audiences to places of education, empowerment, therapy and rehabilitation. With the shifting role of botanical gardens, we see more and more gardens take on a more active social stance beyond their traditional roles of research, conservation, display and education. They are getting involved in ever more diverse, important and exciting community initiatives. These activities, which comprise a relatively new field for botanical gardens, raise numerous questions for our organizations, and require gardens the world over to face the challenges presented by a field in which there is very little actionable knowledge available. By learning from the experience of different gardens, this presentation would try to reflect on the process that few gardens have done, and to offer some insights from thus reflection.

World Café (MI)**U.N. Sustainable Development Goals and botanic gardens: our global role!****Room:** *Library***Chair:** *Sheila Voss / Missouri Botanical Garden, Kôzi Hayasi / Natural History Museum & Institute, Chiba***Max capacity:** 30

Thanks to the vision and courage of world leaders at a historic U.N. summit in 2015, all people of the planet now share a common set of Sustainable Development Goals (SDGs), specifically 17 “Global Goals” and 169 targets to be achieved by 2030. Calling for action by all countries, these new goals build upon the Millennium Development Goals, but aim to go further to end all forms of poverty, fight inequalities, and tackle climate change in ways that leave no one behind.

The SDGs recognize that it will require the entire global village to step up – governments, corporations, non-profit organizations, civil society, youth, and yes, botanic gardens. Underlying every goal, a healthy, vibrant, biodiverse living world is a common denominator requisite.

In this World Café session, Kôzi Hayasi (Natural History Museum & Institute, Chiba, Japan) and Sheila Voss (Missouri Botanical Garden, United States) will jointly share the SDGs with participants in ways that deepen understanding, broaden perspectives, and spark new connections. Kozi will kick off the session with a brief

overview of the origins of the SDGs, as well as an interactive icebreaker in which small groups discuss and rank the SDGs in order of priority, challenging themselves to build consensus within their small teams. To ensure diverse perspectives are shared, these small groups will be recruited to include a mix of educators from urban and rural areas.

Following the icebreaker, Sheila will challenge participants to consider the SDGs in the context of their work in their respective botanic gardens and communities. An aspirational outcome of this World Café would be the development of a BGCI-wide SDG Action Plan for Botanic Gardens, a prioritized inventory of strategies, roles, and actions that our powerful international network of gardens can pursue to help advance and achieve these Global Goals.

15:30–16:00**Break****16:00–17:30****Panel session (WT)****Doing more with less: collaboration, synergy and impact through creative partnerships****Room:** *Main lecture theatre***Chair:** *Ian Edwards (Royal Botanic Garden Edinburgh)***Max capacity:** *No maximum*

Botanic garden education programmes thrive through mutually beneficial relationships with

other organisations. With limited resources these symbiotic relationships are more important than ever. We all have inspiring landscapes, expanding audiences and creative ideas but on our own we may lack the resources to fully utilise the opportunities for engaging with the public. Through partnership working we are able to 'co-create' collaborative projects with greater impact, wider reach and more sustainability than when attempting to realise ideas alone.

This session offers inspiring examples of different kinds of creative partnership working: Botanic gardens networking with other botanical institutes; botanic gardens working with museums, art galleries, research institutes and children's nurseries; and botanic gardens developing projects with and for the local community. A range of collaborative approaches and fields of interest include growing food plants, creative art projects, community engagement, working with early-years children and 21st century climate science and storytelling. By sharing successes and good experiences, and sometimes things that didn't work, we will demonstrate the strengths and pitfalls of partnership working, and the value of creating links and sharing resources between complementary fields. Examples relate to other conference themes: urban gardens, measuring impact and reaching new audiences. The introduction includes a brief overview of the diversity of collaborative and creative approaches in the European BigPicnic partnership project.

After five short case studies of successful collaborations with a variety of partners we will open the discussion out to explore the essential elements for successful partnership and what can we do to enhance the impact and insure the sustainability of partnership projects.

Presentation 1: *A nursery in residence*

Flis Plent & Bronwen Richards

/ Cambridge University Botanic Garden

Inspired by the 'My Primary School is at the Museum' research project, educators from Cambridge University Botanic Garden and the Fitzwilliam Museum invited nine children from a local nursery school to spend five mornings 'in residence'. The residency was documented using video and audio recordings, detailed observation notes from all the practitioners, and participant 'journals'. Although the full data is still being analysed, there are already clear themes emerging that show how this collaborative approach enriched the delivery and evaluation of early years learning at CU Botanic Garden.

Flis Plent and Bronwen Richards will give an overview of the residency, highlighting how links were made between plant collections at the Botanic Garden, and art and objects at the Fitzwilliam Museum. Discover how storytelling, play, natural exploration, drawing and enabling curiosity allowed educators to see collections through the eyes of three year olds.

Presentation 2: *Climate Garden 2085*

Juanita Schlaepfer-Miller / Department of Environmental Systems Science, ETH Zürich

The story of plants and a changing climate is both local and global. Every community in the world will be affected differently and can tell their own story, enabling a personal, emotional connection to often abstract global climate scenarios.

Two climate scenarios were created in greenhouses in the Old Botanical Garden in Zürich at temperatures of +2 and +4°C above current annual summer temperatures. Visitors were able to participate by taking measurements of drought and heat-stressed plants.

The Climate Garden concept is slow media: watching plants grow and wondering about our future gardens and landscapes. It is about listening to the storytelling of gardeners, artists and scientists and finding positive framings that support action. The Project was a collaboration with the Botanical Garden of the University of Zürich and the public programming was enriched by the Ethnographic Museum, local artists and storytellers.

Presentation 3: *The Centipede and Germinator Projects*

Natalie Taylor / Centipede Project

The independently-funded Centipede Project has been working with people in one of the most deprived areas of Edinburgh for the past five years. Community engagement is at the core

of Centipede's philosophy and lead artist Natalie Taylor approaches all creative aspects with local people's involvement. Large brownfield sites, now under housing development, have been transformed into award-winning, community-led play and growing spaces.

The Germinator Project has made growing your own food and being creative with plants accessible for over 300 children in the area. Children have learned about the wonder of turning one potato into twenty over a summer season, made and eaten soup, drawn vegetables from life, turned fruits and vegetables into plant paint and peered down microscopes to draw insect life. An exhibition on the Centipede and Germinator Projects was presented at the Royal Botanic Garden Edinburgh in Summer 2018.

Presentation 4: *The Tree*

Krystyna Jędrzejewska-Szmek

/ University of Warsaw Botanic Garden

What opportunities exist for cooperation between botanic gardens and art museums? Ecological and environmental issues are important themes in contemporary art so the potential for dialogue exists. Nevertheless those two fields use different languages, narratives and approaches.

'Naturomorphic' was a unique project created by a contemporary art museum cooperating with a botanic garden. The program consisted of art interventions and scientific observations carried out in a city park. The dialogue established between the two parts inspired and strengthened them both.

The programme was co-created by artists, biologists and the botanic garden's educational staff. The Tree not only bridged the gap between two different institutions but it also forced the staff to find new approaches and work with a different audience. Krystyna Jędrzejewska-Szmeke presents the successes and disappointments of the project and will reflect on the synergy that is created by contributions from different fields.

Presentation 5: *Beyond your gates: partnering for walk-by*

Sandy Tanck / Minnesota Landscape Arboretum

How can public gardens reach beyond their gates to take educational messages out into their communities? One strategy used at the Minnesota Landscape Arboretum is to collaborate with new and existing community partners. Together we agree on themes, then the Arboretum develops messages and graphic designs for sets of informal interpretive signs the partners can produce and install at their own walk-by learning sites including schools, community gardens and Master Gardener demonstration sites.

Topics covered in the sign sets produced to date include low-input lawns, planting for pollinators and beginning vegetable gardening. The same outreach to external stakeholders approach has been very successfully applied to our public policy symposia and conferences, by engaging with community partners to plan and implement these events using a framework of “endorsing” and “supporting” organizations.

Workshop (NET)

LearnToEngage multiplier event

Room: 102B

Chair: *Liliana Derewnicka / Botanic Gardens Conservation International*

Max capacity: 80

LearnToEngage is an exciting new suite of professional development modules for botanic garden staff and museum educators in the UK, Portugal and Italy. The modules are being developed in partnership between BGCI, Royal Botanic Garden Edinburgh, Nottingham Trent University, National Museum of Natural History and Science, Lisbon and Muse Science Museum, Italy.

The aim of the project is to pilot a blended learning approach to professional development in order to enhance public engagement across Europe and beyond. It will additionally encourage botanic gardens to reach out to new audiences and establish a way of working which caters to the specific needs of their local communities as well as supporting adoption of more rigorous research and evaluation within informal education.

The project will result in four modules focussed on different areas of public engagement at botanic gardens: Interpretation, Working with Diverse Audiences, Science Communication and Research and Evaluation. The three-year pilot is being funded by European Commission's Erasmus + programme.

This multiplier event is a hands-on workshop that will give a flavour of the LearnToEngage modules, provide some very basic training

related to the module content and highlight the trainer and student handbooks that will be developed as part of the project and available open access.

More info: <https://www.learntoengage.eu/en>.

World Café (WT)

Developing partnerships to reach learning objectives and new audiences

Room: *Library*

Chair: *Aileen Abbott / Missouri Botanical Garden*

Max capacity: 35

Across cultures and throughout history children demonstrate a near-universal connection to animals. As adults, we have many opportunities to nurture their attachment to animals, like adopting a household pet, visiting a regional zoo, or observing native wildlife. Research suggests that these opportunities lead children to have an increased sense of empathy towards other living things and sense of stewardship towards animals and the environment

Shaw Nature Reserve, a division of the Missouri Botanical Garden, offers education programs in partnership with nearby wildlife conservation organizations, including the World Bird Sanctuary and the Endangered Wolf Center. These partnerships offer a unique opportunity for students to be immersed in the native habitat of threatened and endangered species and have an up-close and personal experience observing the animals that the partnering organizations protect.

Partnerships with wildlife organizations help the Reserve staff to design programs to meet learning objectives for diverse audiences of school-age children. For example, we are making real world connections with native wildlife and their associated habitats. This type of learning will lead to a better understanding of why and how healthy habitats are essential for a healthy planet. Cooperating agencies working together will reinforce the importance of not only global issues, but of local ones as well.

In this session, we will discuss key issues associated with developing partnerships, including identifying appropriate partners; defining roles and responsibilities; developing marketing strategies; and evaluating programs.

Workshop (Master class)

Addressing the UNSD goals through botanic garden learning programmes

Room: *401A*

Chair: *Julia Willison / Royal Botanic Gardens, Kew, Jennifer Schwarz Ballard / Chicago Botanic Garden*

Max capacity: 40

In September 2015, Heads of State and Government agreed to adopt the 2030 Agenda for Sustainable Development, which includes 17 Sustainable Development Goals. These goals set out quantitative objectives across the social, economic, and environmental dimensions of sustainable development and are intended to provide a framework for shared



action 'for people, planet and prosperity' to be implemented by all countries and all stakeholders, acting in collaborative partnership'.

Participate in this master class to examine where botanic garden education fits into this context, and how your own programmes do, or could, contribute to the delivery of the UNSD goals.

Learning outcomes

- Describe how learning is linked to the UNSD goals
- Identify key UNSD goals linked to your learning programme/s
- Assess how your learning programme/s can more effectively deliver the relevant UNSD goals

- Plan a communication from your garden to highlight how your learning programmes are helping to address the UNSD goals.

19:30

Congress dinner
for registered guests

For more information see [Congress dinner section](#)

14.09 Friday

8:00–15:30

Registration

9:00–10:00

Plenary (RNA)

Room: Main lecture theatre

Chair: Ari Novy / Liechtag Foundation,
San Diego Botanic Garden, University
of California-San Diego, Smithsonian Institution

Max capacity: No maximum

Keynote 1: How to reach new audiences and why this matters

Ian Edwards / Royal Botanic Garden Edinburgh

Botanic gardens are often very popular places and therefore it is easy for us to get complacent about audiences. But are we reaching the right people with the right messages, or simply ‘preaching to the choir’? With support from initiatives, including Communities in Nature and the BigPicnic, the Royal Botanic Garden Edinburgh has reached beyond our traditional affluent and well-educated audience and engaged with a range of hard-to-reach communities, embracing diversity in all its forms, and helping to build a better informed and more resilient society. Sharing our failures and the lessons

we have learnt, as well as our successes, I will show how food, art, play and popular culture have been used at Edinburgh to engage with individuals and communities who had never set foot in our gardens before, and how this has changed their lives for the better. The key to effective engagement with limited resources, has always been strong partnerships and I will explain how collaboration and mutualism is at the heart of everything we do.

Keynote 2: Meeting diverse needs of visitors

Katarzyna Winter / The Zachęta National Gallery of Art

Zachęta – National Gallery of Art is open to the diverse needs of its visitors. We strive to make our collections, exhibitions and the building itself as accessible as possible.

The building is adapted to the needs of individuals with motor disabilities. The Zachęta website includes contents translated into Polish Sign Language. On our website we generate and collect educational materials useful for sight- and hearing-impaired users.

The exhibition accompanying the educational programme includes events translated into Polish Sign Language with live audio descriptions. We are successively recording audio descriptions for works in the Zachęta collection and add captions for individuals with hearing impairments to video works. We also strive to meet the expectations and perceptual abilities of other groups and communities, including those with autism

spectrum disorders. We train our client service team to enable our people to help everyone according to his/her needs, to be ready to assist in a suitable manner. We would like to make everyone feel welcome in the gallery throughout the visit, which is a very challenging task.

Keynote 3: The BigPicnic project

Liliana Derewnicka / Botanic Gardens

Conservation International

BigPicnic is an EU funded project that brings together the public, scientists, policy-makers and industry to explore the global challenge of food security. With 19 Partners, the project is co-creating a range of exhibitions and participatory events with people from all walks of life, to generate dialogue, build greater understanding of food security and inform Responsible Research and Innovation (RRI).

Botanic gardens are ideally suited as sites for this kind of work as they bring together expertise in both science and public engagement and their sites represent a perfect venue for hosting public dialogue events. Therefore, BigPicnic aims to build capacity and profile of botanic gardens across Europe as hubs for RRI in food security.

11th International Congress on Education in Botanic Gardens announcement

BGCI and the University of Warsaw Botanic Garden will co-announce the next host garden for the 11th International Congress on Education in Botanic Gardens in 2022.

10:00–10:30

Break

10:30–12:00

Workshop (RNA)

Brewing co-created science cafés

Room: *Main lecture theatre*

Chair: *Elena Amat De Leon Arce*

/ Royal Botanic Gardens of Madrid

Max capacity: *No maximum*

Science cafés have become a very popular tool to communicate science worldwide.

They are a way to gather together scientists, experts and the public in a casual setting (pubs, coffeehouses or anywhere you could imagine) creating an informal atmosphere, rather than taking place in the usual lecture hall. Discussion takes place in a two-way direction, enhancing the public to participate, and scientists to show the more practical side of science. Themes, venues and dynamics can be very flexible... putting your creativity to the test!

Science cafés are one of the main tools used in the BigPicnic project (Horizon 2020) both to engage the public and to collect relevant data on food security. This project comprises 13 countries working together to engage the public through a co-creation approach and public debate. It aims to enable the public to understand and articulate their views to contribute to Responsible Research and Innovation (RRI) in the field of food security, with botanic gardens as the perfect meeting point.

Designing a good and effective science café can be a big challenge. In this workshop, the Spanish partners of the BigPicnic project (the Royal Botanic Gardens of Madrid and Alcalá de Henares) will present participants with a series of successful experiences, but most of all you will:

- Learn how to prepare your science café from start to end
- Discover how to enrich your science café by following a co-creation approach
- Be ready to run your first science café!

It does not matter what topics you are working on. This communication tool is ideal for all areas of science and technology.

Come and join us!

Additional authors: *Maria Bellet Serrano*

/ Royal Botanic Gardens of Madrid,

Blanca Olivé / Alcalá de Henares

Panel session (RNA)

Co-creating the BigPicnic exhibitions

Room: 103B

Chair: *Gabriele Rinaldi, Francesco Zonca*

/ Bergamo Botanic Garden

Max capacity: 100

BigPicnic is an EU funded project that brings together the public, scientists, policy-makers and industry to explore the global challenge of food security. With 19 partners the project will co-create a range of exhibitions and participatory events with people from all walks of life, to generate dialogue, build greater

understanding of food security and inform Responsible Research and Innovation (RRI). Exhibition and event design is following the co-creation approach. This involves botanic gardens working with their audiences and stakeholders to design public engagement tools that draw upon the interests, wants, needs and expertise of these groups. This session will highlight how this innovative participatory approach has been used to engage hard-to-reach audiences and develop inspirational public engagement tools that generate public debate.

In this panel session we will present an overview of the co-creation process and how it has been used within the BigPicnic project. Three BigPicnic partners (Bergamo Botanic Garden, School Biology Centre Hannover, Natural History Museum and University of Oslo) will then share details of exhibitions that they have produced and their experience of using co-creation. Bergamo Botanic Garden will present the mobile exhibit and the temporary exhibition focused on food security, with activities to engage target groups such as teenagers and ethical purchasing groups. The School Biology Centre Hannover will provide an overview of their moving “exhibition” of education materials developed with migrant groups visiting the botanical garden. Finally the Natural History Museum and University of Oslo will present their climate change exhibition developed with teenagers.

Additional authors: *Regine Leo, Stefanie Lange*

/ School Biology Centre Hannover, Kristina

Bjureke, Gro Hilde Jacobsen / Natural History Museum and University of Oslo

Workshop (RNA) Fruitful discussion

Room: 401A

Chair: *Hanneke Jelles / Hortus botanicus Leiden*

Max capacity: 25

In a city, nature seems far away, but fruit and vegetable are products we all know. You can take them with you easily to a class, and afterwards you can re-use them for cooking. In this workshop, the attendees take a close look at some vegetables and fruit. How did it grow, what part of the plant is it? While drawing, cutting it open, tasting and describing the fruit or vegetable, small groups of attendees find out what they see and how this grew. Gradually the discussion starts: why are there no seeds in this vegetable? How is it possible to keep this fruit fresh for such a long time?

This workshop had its test at a conference of biology teachers in the Netherlands, in February 2018, and was developed as a part of the BigPicnic project.

The workshop starts with a short introduction (5 minutes power point). During the workshops, findings of the groups of attendees are written on a blackboard or flip-over. In the last part of the workshops, every group is sharing its findings on the subject. To finish, this way of working is evaluated: who would work this way, what kind of groups, what could be done better.

The experience is compared with the teachers workshop in January.

Workshop (NET) Bird garden

Room: *Outside – meet in the entrance foyer*

Chair: *Paweł Pstrokoński / University of Warsaw Botanic Garden*

Max capacity: 20

Botanic gardens are homes for birds as well as plants. Let's set off on a bird journey. But this isn't simply a walk – we're going to take part in an outdoor game! Of course we need binoculars. We will look for birds, but also discover bird-plant relationships. Birds love plants – they use them to build their nests, they eat them, they hide in them. Does any other animal have feathers? That's just the opening question. The rest is in our eyes and ears.

'The 'Bird garden' workshop is dedicated to participants who want to discuss and share ideas about all thematic garden journeys, not just about birds. Are outdoor games a good tool with which to explain nature to visitors? How to create workshops around simple 'artefacts' like a feather?

Binoculars are the obvious tool to use during a bird watching walk. How can extra tasks and tools make our walk more interesting? One could be putting a bird house together, another a bird game sheet that changes us into heroes. Nature is full of exciting themes but catching interest depends on how we present them.

12:00 – 14:00

BigPicnic Marketplace

Over lunch we invite you to visit the BigPicnic marketplace where project Partners will be showcasing some of the activities and exhibition materials developed during the project.

BigPicnic is an EU Horizon 2020 funded project co-ordinated by BGCI. There are 19 Partners from 13 countries (12 in Europe and 1 in Africa).

BigPicnic brings together the public, scientists, policy-makers and industry to help tackle the global challenge of food security. Botanic gardens, with help from other Partners, have been co-creating a range of exhibitions and participatory events with people from all walks of life, to generate dialogue and build greater understanding of food security. Our collaborative approach aims to give a voice to adults and young people, communicating their views to policy-makers, sharing ideas, encouraging debate on the future of our food and achieving Responsible Research and Innovation (RRI).

For more information about the project please visit: www.bigpicnic.net.

14:00–15:00

Closing ceremony

Room: *Main lecture theatre*

Chair: *Paul Smith / Botanic Gardens*

Conservation International

Marsh Christian Awards*Closing*

Marcin Zych / *University of Warsaw Botanic Garden, Lilliana Derewnicka, Helen Miller*

/ Botanic Gardens Conservation International

Representatives from the University of Warsaw Botanic Garden and BGCI will bring the Congress to a close. In this session, we will highlight key topics and messages from the event and share images featuring the week's events, sessions, places, people, and plants to reflect on the range of activities, discussions and ideas that have taken place at the 10th International Congress on Education in Botanic Gardens.

15:00–15:30

Transfer to the University of Warsaw Botanic Garden

15:30–17:00

Exploring the Botanic Garden and its partners

After the closing ceremony, we will transfer to the University of Warsaw Botanic Garden for activities, which will be followed by the Farewell BBQ (17:00).

For more information see [Exploring the Botanic Garden and its partners](#) and [Farewell BBQ sections](#)



POSTER ABSTRACTS

/ City gardens

1 / *Project Pollinator: a community garden initiative*

Chris Hartley / *Butterfly House, Division Missouri Botanical Garden*

An overview of Project Pollinator, a community garden initiative. Project Pollinator was developed to promote an appreciation of all pollinators through education and the creation of pollinator gardens.

Since March 2016, the Butterfly House and its partners have reached out to the St Louis region to increase pollinator gardens in public areas, schools, businesses, and educate citizens on how they can create pollinator gardens at their homes.

2 / *In the centre of the city and attention*

Larisa Musinova / *The Peter the Great Botanical Garden of the Komarov Botanical Institute RAS*

The Peter the Great Botanic Garden was founded in 1714 as an Apothecary garden. It was given a whole island on the periphery of the new city,

which is still called the Aptekarsky Island. Years passed and the city rose and developed. The Botanic Garden history has become indissolubly joined with the history and the life of the city. Now it takes up 23 hectares in the centre of the metropolis. It has great scientific, cultural and historical value, which has significant impact on the Botanical Garden activities, including educational activities. Firstly the central location guarantees, of course, the unquestionable recreational attractiveness for the citizens. Of great importance is the transport accessibility for visitors, which allows guests to visit at night and watch the blooming of *Selenicereus grandiflorus*. The Garden's curators often complain that adult trees and historical planning do not allow for fully carrying out the scientific principles of the formation of open ground plants botanical collections. But for botanical knowledge popularisation this disadvantage is actually a benefit. For example, a number of routes in our Garden have been built on the principle of a genus complex. They are realized both

with guides and with the help of the specialized publications. The walking, the sequence of movements and stops, the change of landscapes and Garden images have a positive effect on the perception of purely botanical information by visitors.

The close connection of the Garden with the history of St. Petersburg and with the history of the development of botanical knowledge make it possible to widely use other scientific disciplines in educational activities, such as landscape architecture, ethnography, geography, etc. Being interdisciplinary in the presentation of information attracts to the Garden an increasing number of visitors whose interests are not connected with the study of plants.

Additional authors: *Yuri Kalugin, Alexandra Volchanskaya / The Peter the Great Botanical Garden of the Komarov Botanical Institute RAS*

3 / Asian Mountain Garden: dialogue between townspeople and plants

Kunduz Adylbekova & Dmitry Vetoshkin

“Archa Initiative” Public Foundation, Bishkek Botanical Garden, named after E.Z.Gareev and part of the National Academy of Sciences of the Kyrgyz Republic, is a scientific institution, which was established in 1938.

Bishkek Botanic garden is the largest botanical garden in the territory of the Central Asia occupying area of about 150 hectares.

The Botanical Garden occupies one

of the leading places in Central Asia in terms of species diversity.

For the years of independence, the Botanical Garden has experienced a difficult time in its history. For 26 years the Garden staff retained its territory and collections with exorbitant efforts. And the garden has preserved the collection, but the territory has fallen into degradation, the infrastructure has completely collapsed and it was even unsafe in the garden. During this time a whole generation of townspeople grew up not understanding why the Botanical Garden is needed for the city. Some thought it was an abandoned park, others that it was a closed territory. There are a lot of private companies interested in constructing buildings on the territory of the garden every year. But, despite these difficulties, the Garden has survived!

We, the citizens who are inspired by the enthusiasm and wishing to return the Botanical Garden to its former glory, created the “Archa Initiative” Public Foundation, which took on the mission of reviving the Botanical Garden. We started our activities by involving people in the development of the Botanical Garden. We realised that the plants are silent and we started to deliver the value of the Garden to the townspeople with the help of the “plant language”. Our plants “speak” in five languages:

- The language of science: we created the Resource Centre where we bring together townspeople and employees of the Botanical Garden to talk about their scientific work

- The language of ethnicity (ethnobotany): through stories we have collected an amazing traditional knowledge on the use of plants by nomadic people - food, medicine, spices, folk art, and we try to apply this knowledge with our guests
- The language of art: on the territory of the garden we teach painting lessons and hold concerts of classical music, where we chant and paint the beauty and wonderful world of plants
- The language of creativity: we regularly organise creative masterclasses and trainings
- Physical Language: we constantly strive for our guests to contact with living plants.

And the townspeople “heard” the plants.

The Botanical Garden has become a centre of knowledge and an interactive platform.

The citizens actively connected to our work.

Botany became an accessible, interesting and even trendy science among active citizens.

While we have not yet been able to restore the Botanical Garden, the townspeople now need the life of Garden. We believe that our dream will come true! We believe that the garden will be restored in a new light taking into account modern challenges and uniting global programmes and areas of work. It will become a place of applied science and implementation of a global strategy for the conservation of native flora. It will become the unique “Asian Mountain Garden” with a collection of mountain plants, restored by the forces of the townspeople.

4 / *The present state and prospect of education in Kunming Botanical Garden*

Feng Shi / Kunming Botanical Garden

Kunming Botanical Garden (KBG) was founded in 1938, making it 80 years old, and opened to the public in 1995. Kunming is the capital city of Yunnan Province, and the province is widely reputed as the kingdom of plants. Kunming Botanical Garden focuses largely on the ex-situ conservation of plants from SW China, especially the endangered, endemic and economically important plant species native to the Yunnan Plateau and the southern Hengduan Mountains. The Garden covers an area of 44 hectares, has 15 specialist plant collections and contains over 8000 plant species and cultivars.

The garden's education plan aims to build bridges between science and public, reinforcing the public understanding of science and technology. We have a botanical exhibition hall that's around 320 square metres. In the past 5 years, we have achieved a lot - our garden became 8 popular science bases across city-level, provincial-level to national-level. The activities of popular science includes two types: Public Science Day etc. from the Chinese Academy of Sciences and some other organizations, and our own creative characteristic activities, for example, “Where will you go on summer holiday?”

All activities are open to the public, especially children. Science popularisation includes

a botanical name board which attaches to the flora database, and an exhibition board covering rich botanical themes that changes regularly. Last year, our garden applied for a public WeChat number for popular science.

The effect is very good.

Some future prospects of the education in KBG:

- What will we do in the next 5 years?
- How to integrate the resources of KBG and Kunming Institute of Botany?
- How to increase the influence of the education?
- How to realise the visitor self-help population science to get the interesting botanical knowledge?

We have some new ideas and measures to try and realise these plans, and we hope to share these with global educators.

5 / *Community environmental stewardship: Baden pilot project*

Betsy Crites / *Missouri Botanical Garden*

The Missouri Botanical Garden (MBG) has worked alongside community members and regional stakeholders on the Baden Community Pilot Project. The goal of this project was: To transform vacant land in Baden neighborhood into thriving community green space that serve as a place of employment and development for youth; increases gardening expertise of residents; builds trust among community members and partners; and catalyzes civic engagement of the residents and stewardship of greenspace.

The neighborhood, Baden, was chosen as a pilot for St. Louis City because of its large amount of vacant lots, high crime and poverty and large disconnect between residents and greenspaces.

Achievements of note in this project include:

- Youth & Community Garden: constructed and maintained garden, providing teen employment, healthy food access, and community green space.
- Tree planting: organized “Dig In!” event for Baden community members to plant over 60 native trees in a neighborhood park.
- Community-based capacity: hosted workshops and field trips for residents interested in learning more about gardening and green space.

As a pilot project, the best practices and lessons learned will be applied to MBG’s future community work:

- Identify stable community members and institutions.
- Develop and implement projects alongside community members.
- Plan for project perpetuity with identified stable partners.
- Remain flexible to address the needs of a changing community.
- When possible, implement projects in conjunction with other complimentary mission-driven organizations to best use resources, time, and talent

This poster will showcase the strategies and achievements of this project and lessons learned in hopes to inspire and connect with other

institutions who are interested in greenspace initiatives supporting environmental social justice in their communities.

6 / *Mazhar Botanic Garden in Cairo, a model to be followed of research, education & preservation private initiatives*

Waleed Abdelaal / Mazhar Botanical Garden

Botanical gardens in developing countries can play significant roles in research, education, and conservation. But within struggling official budgets of governmental institutions, environmentalists are seeking to optimise current methods and develop new techniques for using limited resources to protect their particularly fragile environments. And the private initiatives are considered promising opportunities.

This paper documents the success of a private initiative “Mazhar Botanical Garden” which could be considered as a response to these difficulties. It is considered as a development of institutions that engage in research, education, and conservation with local knowledge and local solutions. Its success may be explained by its prime focus on research, then education, and finally conservation in that order. This is because we cannot educate or conserve what we know little about. In addition, research also opens up new & unexpected opportunities.

The well organised & displayed cultivated plants and the very rich species samples in the herbarium made “Mazhar Botanical Garden” a focal oasis for interested scholars,

experts, & NGO’s. More and more people became interested locally and globally without any publicity.

Private herbarium collections have represented the starting point for the establishment of many of the still-extant natural history museums and Historical Botanical Gardens in Egypt and around the world. Collecting plants by individuals & private collectors was the fashion of the seventeenth and eighteenth centuries in Europe. Which resulted in the amassing of large private collections, which later became the basis of institutional collections.

7 / *The phytodiversity island in the heart of the megapolis - successes and problems*

Svetlana Rozno / Samara National Research University, Botanical Garden

The Botanical Garden in Samara, founded in 1932, is located in the centre of Samara city (about 1.2 million inhabitants). It has always been a part of educational institutions and since 2015 it has been the educational and scientific unit of the Samara University. Its territory (33.7 hectares) includes a dendrarium, other collection and production plantations, two ponds, meadow and steppe plots. Its greenhouse keeps subtropical and tropical plants collections (980 taxa).

The open-air collections include trees, shrubs and lianas (1016), decorative perennials and annuals (840), rare and protected plants (>180), medicinal plants (80), coastal-aquatic and

aquatic plants (about 50 taxa) etc. The Botanical Garden is a phytodiversity island in the heart of the megapolis where each year about 100 thousand people spend time and get experience connected with nature.

The plant collections (>3500 taxa) are used for professional and ecological education (studentclasses and practices, introductory and educational excursions for schoolchildren and others). The preschool children like to attend the greenhouse excursions. The floristry master classes for schoolchildren are also very popular. The adults prefer excursions or independent collections survey; they are welcome to join volunteer groups, helping in plant care. Each summer the municipality sends about 100 older schoolchildren to work as gardener's assistants and pays them. Annually we invite youth to celebrate the International Plant Day (May 18). The Botanical Garden is particularly attractive for elderly citizens and young mothers with children. Some of our problems are connected with local climate heavy for plant introduction. We also suffer through insufficient visitors' culture, limited financial resources and air pollution. The challenge of modernity is the growth of anthropogenic pressure on the Botanical Garden as a natural reserve. This poses the task of diversifying and expanding the forms of interaction with the urban community improving the ecological culture.

Additional authors: *Alexander Pomogaybin, Lyudmila Kavelenova (Samara Research University, Botanical Garden)*

8 / *Experimental Botanical Garden – Rabat: herbariums for plant biodiversity education in urban environments*

Lalla Meriem Mdarhri Alaoui / *National Agronomic Research Institute (INRA)*

The Experimental Botanical Garden – Rabat “Jardin d'Essais Botaniques” is known as the oldest botanical garden of Rabat, which is a natural heritage. It is located in an urban area in the heart of Morocco's capital. The JEB-Rabat is an experimental area of the National Agronomic Research Institute (INRA-Morocco), offering educational and scientific possibilities and support for plant biodiversity knowledge and also environmental education. The study of flora is a botanical activity for recognising plants introduced to the garden. It also allows identifying many spontaneous species.

In this activity:

1. The spaces of study are:
 - Delimited and protected,
 - Described by their sampling location; for their sun exposition and for their vulnerability to wind or other elements
 - Identified by the nature of soil
 - Characterized by diversity in age and size of plants and also by plant distribution heterogeneity of each sample
2. The plant species are:
 - Described by measures of length, height, type of branching
 - Photographed for their determination (flowers)

- Classified according to their evolutionary level
- Placed in the vegetal phylogenetic tree
- Prepared for the herbarium design.

This poster will illustrate all the actions related to our theme, which are adapted to the different education stages from kindergarten to university.

9 / Porto, City Of camellias – discovering the gardens through a trademark

Norma Lúcia Cardoso Pott / *Museum of Natural History and Science of the University of Porto*

The name “Porto, City of camellias” is because Porto is the only city in Europe with this trademark. Although camellias are originally from Southeast Asia, from countries like China or Japan, they found themselves at home in Porto in the past. As ornamentals, camellias quickly adapted to the mild temperatures and the acid soils of Porto and the climax of their popularity was in the nineteenth century. Especially, they grew with the bourgeois families that had the possibility of making trips abroad and brought the species with them, but they are also connected to England and to the Port wine trade. In 1865, they were shown in the International Exhibition at the Crystal Palace and were given the names of each one of the Royal Portuguese Family. At this time considered exotic and a sign of richness, the species of the genus *Camellia* have played an important role in Portugal, mainly in Porto. Nowadays, they are important because of old collections in beautiful romantic

gardens which makes an interesting component in educational tourism and a good ground to the development in general.

Camellia is the flower of Porto and every year the Town Hall organise an extensive cultural programme exclusively dedicated to camellias among different places like gardens, farms, squares, museums, theatres, churches, foundations, institutes, libraries, universities, transport stations, restaurants, shops, and other spaces. The programme includes activities such as exhibitions, concerts, guided garden tours, workshops and various events. There is also a map of camellias that suggests a route to visit the gardens and parks where we can contemplate this particular flower, for example, the Porto Botanical Garden.

In summary, “Porto, City of Camellias” is a growing garden trademark and project involving more and more national and international partners, as an environmental quality factor and a permanent challenge for all who love gardens.

10 / Urbanity & diversity: biodiversity through civil dedication – rare native plants in gardens, on balconies and windowsills

Patrick Loewenstein / *Botanical Garden University of Potsdam*

Urbanity & Diversity (U&V) is about ex situ plant conservation with active participation of the general public.

U&V has two main targets, nature conservation and environmental education:

1. The support of rare plant richness in urban surroundings by propagation in private hands & coordinated reintroduction will promote biodiversity.
 2. Learning by doing: Teach people about biodiversity, natural heritage and conservation and get them to change behaviour by education through action.
- U&V cares about 80 different species in the cities of Berlin, Potsdam, Dresden, Marburg and the surrounding regions. With up to 1500 participants it will be by far the biggest project of its kind in Germany.

With our approach, we show people a very easy way into nature preservation. They can get engaged in many different ways from only one contact, to field trips and talks up to being part of the U&V community. We closely work together with conservation authorities and NGOs.

How does U&V work?

1. Collecting seeds regionally
2. Producing sufficient numbers of plantlets in the botanical gardens
3. Mobilising a broad audience through all kind of media
4. Distributing 18 plants (3 species, each 6 individuals) to participants, with species leaflets
5. Planting of privately propagated material on personalized beds in urban "Ark-Areas"
6. Regular events like determination courses, excursions to natural habitats, biotope maintenance

7. Reintroductions as required together with participants and authorities
- We will evaluate the change of consciousness and behaviour during the project and in later also the genetics of populations reintroduced. Another aim is to continue after the funding period with a community of participants.
- The BG Potsdam is coordinating U&V, which contains three more partners: BG Humboldt University Berlin; BG University Marburg and the Centre of Environment Dresden. It has been funded for four years by the governmental "Bundesprogramm Biologische Vielfalt".

11 / Innovation and botanical garden and its education's sustainable development

Hong Wu / Shanghai Botanical Garden

With the development of the economy and the society, the city has become more modernised and more commercial. AS the population in city has grown quickly and centralised, the nature space and the average green occupancy for each citizen has obviously decreased. The botanical garden has a very good opportunity to take advantage of its special values and play a great role in the city's sustainable development, biodiversity conservation, environment and nature protection and public education.

In recently years, the economic restructuring on a global scale and the imbalance of regional economic development means the cities are facing many challenges. The botanical garden is the same.

Many botanical gardens face the big challenges of insufficient financial support, insufficient space, diversion of visitors, customer's continuous demanding change, etc. Located in Shanghai downtown, Shanghai Botanical Garden also faces the same challenges. Through continuous innovation, cooperation and sharing in recent years, it has succeeded in servicing the city, attracting visitors and self-development.

In 2017, it planned and hosted more than 100 events to attract visitors and offer education, such as Shanghai International Flower Show, International Flower Arrangement Art Show, series of Fairy Summer Campus, etc. More than 5 million visitors were attracted, including more than 100,000 students. Over 10,000 applicants were trained in different course and program, 100 of which come from Germany, New Zealand and other countries and regions. In 2017, the botanical garden won first prize in Shanghai's Popular Science Innovation Award and the National Outstanding Popular Science Education Base.

For sustainable development, the botanical garden needs to keep on innovating and integrating its advantages with science research, multidisciplinary approaches, industry, new technology, brand and culture to meet the demands of the scientific research, city development, economic development, urban, ecological and the citizens' demands.

12 / *Villa Ludovica Ethnobotanical Garden*

*Guillermo E. Rodriguez / Fundacion Jardin
Ethnobotanico Villa Ludovica*

Villa Ludovica Ethnobotanical Garden (VLEG) is a no-profit organisation founded by a group of professionals to protect a small sample of tropical dry forest in the middle of the city. Its mission is to recover the traditional knowledge about plants of this ecosystem; this knowledge is an important contribution to research and product development in the pharmaceutical, agricultural and cosmetic fields and the city itself.

We also design, develop and support projects that strengthen communities in their ecological, social, cultural and spiritual knowledge in reference to the use of different plants. VLEG is located at Cerro La Pedrera in the city of Santa Marta, in an area of 7000 square metres and seeks to promote public awareness on environmental issues through educational programmes and cultural activities to stimulate interest in the community around the conservation of tropical dry forest. VLEG is a member of the Latin American Ethnobotanical Sister Gardens, which has the support of the Center for Latin American and Caribbean Studies at the University of Georgia in Athens, GA. This concept was established in 1998 to create a network of gardens to promote the documentation, conservation, education and horticultural maintenance of ethnobotanical material in Latin America.

VLEG has a visitor centre, a series of archaeological terraces of the Tairona culture and stone paths that serve as articulators of the trails proposed for the visitors. It is a dry spot, where rainfall does not exceed 700mm annually and with a period of almost 8 months with no rain during the year.

The initial collection of plants is the result of experiments for the recovery of tropical dry forest for more than twenty consecutive years. The biological collection is called Villa Ludovica and was registered with the Research Institute of Biological Resources "Alexander Von Humboldt" in the National Register of Colecciones Biológicas No. 132.

13 / Qur'anic Botanic Garden; conservation based on education

Fatima Al-Khulaifi / Manager of the Qur'anic Botanic Garden

The Qur'anic Botanic Garden (QBG), a member of the Qatar Foundation for Education, Science and Community Development, exhibits the plants, botanical terminologies, conservation principles and environmental ethics mentioned in the Holy Qur'an – the book of Muslims – and the Hadith – the Saying of the Prophet Muhammed PBUH. The Garden inspires appreciation of nature by encouraging respect and responsibility for our environment. The concept of the Garden comes from a region-wide UNESCO project. The idea of the QBG had been in place since it was inaugurated by Her Highness Sheikha Moza bint Nasser, Chairperson of Qatar

Foundation, on 17th September 2008.

One of the main goals of the Qur'anic Botanic Garden (QBG) is to produce basic and applied information about plants, conservation and cultural heritage. The QBG's educational programme is based on conservation in order to promote a comprehensive awareness locally, regionally and internationally in Arabs and non-Arabs, Muslim and non-Muslim people. Through its outreach initiatives, QBG aims to encourage local community engagement and to strengthen cultural heritage awareness in Qatar, supporting the Qatar Foundation's dedication to sustainable development and environmental responsibility.

The educational programme based on conservation targets students, teachers, families, professionals and the general community by providing interactive "edutainment". In 2017, the QBG organised 21 community programmes for students, professionals, families and internationals that engaged 28,345 people. The educational program was able to engage 9244 students and 249 teachers within the QBG Conservation Educational Programme.

Food security is a programme targeted at high school students on agriculture process and securing vegetables especially after the blockage. The Garden provides many educational conservation activities such as planting campaigns, environmental research competitions, outdoor site visits & field trips and indoor workshops. This presentation will display

the various educational programmes provided by the QBG, highlighting the concepts, activities and relevant age categories.

Additional author: *Ahmed ElGharib / Assistant Researcher, Qur'anic Botanic Garden*

14 / Education projects of Gaziantep Botanic Garden

Pelin Okkuran / Gaziantep Metropolitan Municipality

The Botanical Garden has been running at Park Garden and the Green Areas Department of Gaziantep Metropolitan Municipality since 2009. The garden holds the distinction of being the first and only in the region. It has 10 designed gardens covering 17,000 square metres.

Botanical gardens are areas that have a lot of importance in many different subjects.

In this context, the topic we are focussing on is education. The area in which we organise educational activities is the 'Ecological Classroom', which is one of 10 specially-designed gardens. The ecological classroom is a garden that nursery, elementary, secondary, high

school and university students besides generally-interested members of the public can all benefit from. Within this scope, many training activities are organised.

Our education projects are being prepared by observing developments and requirements of individuals. Our target is to raise individuals who are aware of nature and ecology. Since we opened, we have reached one million people

with our training projects and have reached the public through 15 different education projects: Journey To The Botanical World, Unimpeded Nature, Silent Nature, Theatre Of Nature, Sound Of Nature, Feel Nature, Independent Nature, Horticultural Courses, The Bells Are Ringing For Nature, Ecoclubs, Educator Training, Colours Of Nature, Schools Are Turning Green, Trainee Training and Workshops.

We will continue our work in Gaziantep Botanic Garden to reach more people with our education projects that started with the idea of "A Better Future, Possible Through Environmental Education".

Additional authors: *Sibel Çuhadar, Banu Gökçek, Kadir Arslan, Ali Aslan, Fatma Şahin / Gaziantep Metropolitan Municipality*

15 / Harnessing the impact of exotic species in the JBHM as an educational and integration tool for the community

Gonzalo Matias Salas / Botanical Garden Horco Molle

The Botanical Garden Horco Molle is administered by the Faculty of Natural Sciences and IML of the National University of Tucumán - Argentina. It has an area of 98 hectares, standing out as one of the largest in the country. Located in the pedemontana zone of the ecoregion of Yungas, one of the most biodiverse environments

in Argentina. It constitutes a buffer zone for the urban areas of the Gran San Miguel de Tucumán (approximately 800,000 inhabitants). This jungle is in a high degree of threat in Argentina, and in Tucumán it is considered completely transformed. The Botanical Garden Horco Molle was launched in 2014 and considered the invasion of exotic species as one of the main problems to be addressed. To reverse this situation, an ecological restoration programme (PRE) was created. To carry out this programme, there is a forest nursery in which the native species are produced and then used to replace the invasive exotic species. Since its creation to date the Botanical Garden Horco Molle has received 10,000 visitors of which 80% are young people of school age. Young people aged between 9 and 10 years old were selected to take an active part in the PRE. These young people were trained with workshops on collection of seeds, production techniques and field establishment of the seedlings produced. In the period of 2 years, 1,200 specimens of 10 native species of the area were produced. The Botanical Garden Horco Molle tries to use the problem of exotic species as a strategy to generate sensitivity in young people who participate actively in the programme, those who visit it and the general public using the mass media. This problem led to a bond of support and collaboration being formed between the Botanical Garden Horco Molle and the different social groups.

16 / Royal Garden as a collection – idea, cooperation, challenges, education

Julia Dobrzańska / Museum

of King Jan III's Palace at Wilanów

The complex of the palace and parks in Wilanów is a unique piece of landscape art shaped as a result of long-lasting evolution of relations between nature and culture. Since the times of King Jan III, this place has been extended with new ideological concepts, which allowed the creation of a unique landscape composition called the Wilanów property. Historical circumstances and rapid civilization development have brought a number of negative effects, which disturb the spatial order and degrade valuable natural habitats. In response to contemporary landscape threats, a new concept of managing natural richness should be developed in accordance with the idea of harmonious coexistence of nature and culture. How to develop such a variety of resources? How to manage them? How to display natural resources providing them at same time with adequate protection? Searching for the answer to these questions requires the cooperation of specialists from many fields, including: nature, gardening, landscape architecture, history and art history. The authors will present the idea of the collection of the Wilanów nature, the challenges associated with its development and the educational potential of a museum look at the historical landscape.

Additional author: *Jacek Kuśmierski*

/ Museum of King Jan III's Palace at Wilanów

/ New educational tools

17 / *The Erasmus+ strategic partnership pilot program on Higher Education Innovation in Plant Diversity – “HEI-PLADI”*

Gabriella Stefania Scippa / *University of Molise*

The pilot program HEI-PLADI (Higher Education Innovation in PLant Diversity: flexible learning paths for emerging labour market), funded by the Erasmus+ K2 strategic partnerships (2015-2018), is aimed at developing, testing and implementing an higher education program on plant biodiversity evaluation, conservation and management. HEI-PLADI follows the priorities of 2011 EU Modernisation Agenda to equip the younger generation with transversal skills for new emerging green labour markets related to environmental protection and conservation.

The programme included ICT techniques in a blended path of virtual and physical mobility.

Its implementation required the constructive cooperation and successful integration of expertise between Botanic Gardens and Germplasm Banks from 5 Universities – Molise (IT), Cagliari (IT), Lisboa (PT), Malta (MT) and Sofia (BG) – and 2 research institutes – the Mediterranean Agronomic Institute of Chania (GR) and the Centre for Biological Diversity Conservation in Powsin (PL). HEI-PLADI implemented a flexible programme that included five e-learning modules (virtual mobility) and seven practical activities (physical

mobility). Also, seven short-term training activities were organised as field works and aimed at developing skills and knowledge on topics treated in the e-learning modules. The e-learning modules are available as “open learning objects” on a Moodle platform and are thus usable by different stakeholders: students, educators, technicians working in laboratories, herbarium, museum, germplasm banks, botanical gardens, natural parks, arboreta and plant nurseries at national and international level. Beside the implementation of the flexible learning path on plant biodiversity evaluation, characterisation, conservation and sustainable use, the project provided:

- Teaching/learning materials usable in courses of established curricula degree, and/or to develop new curricula
- The exchange of the best practices between partners
- The reinforcement of cooperation and integration between European botanic gardens and germplasm banks in the field of higher education that may lead to new projects and/or joint international courses such as Master and PhD programs

Additional authors: *Paola Fortini, Simone Scalabrino, Rocco Oliveto, Piera Di Marzio, Paolo Di Martino, Dalila Trupiano / University of Molise, Gianluigi Bacchetta, Francesca Meloni, Marco Porceddu / University of Cagliari, Ilektra Remoundou, Chariton Kalaitzidis / Mediterranean Agronomic Institute of Chania, Wiesław Podyma, Konrad Woliński, Maciej Niemczyk / Polish*

Academy of Sciences Botanical Garden – Centre for Biological Diversity Conservation in Powsin, Ana Isabel Correia, Helena Cotrim, Maria Amélia Martins-Loução / University of Lisbon, Joseph Buhagiar, Marco Iannaccone, Christian Borg / University of Malta, Lyuba Pencheva, Ognyan Iliev / University of Sofia

18 / *Phyllotaxis tool*

Giovanna Angelucci / *Dipartimento di Matematica – Università degli Studi di Milano*
Our poster will present a practical tool we have devised, which shows the divergence angle between two consecutive leaves on a plant stem. This homemade object is low-cost and easy to realize. The idea and design have been developed in collaboration with Museo Civico Explorazione Treviglio (BG).

Additional author: *Vittorio Erbetta / Museo Civico Explorazione*

19 / *National Botanical Garden of Georgia – advances in public engagement and environmental education*

Tamaz Darchidze / *National Botanical Garden of Georgia*

The National Botanical Garden of Georgia (NBGG) is currently undergoing the process of transformation from the closed institution of the post-Soviet model, towards a botanical garden that is open for society. Through this transformation NBGG is focussed on the implementation of the Global Strategy

of Plant Conservation (GSPC) targets and responding to the tasks assigned to the botanical gardens in the contemporary world. Since the mid-nineteenth century, NBGG – one of the oldest scientific institutions of the Caucasus – has been studying the diverse flora of the Caucasus region and establishing living collections of plants. The NBGG has contributed much to the development of the gardening sphere in Georgia, as well as to the study and solving of problems within forestry, plant protection and urban greening. During the long history of the garden, however, the level of involvement of the local public in garden activities has not been satisfactory. Lack of public activities and limited communication with the public have been significant challenges for the garden over the years.

Recently a completely new approach has been elaborated in relation to the botanical garden. The Municipality of Tbilisi City and the personnel of the NBGG have come to the mutual understanding of the role that our organisation can play in raising public environmental awareness and popularising knowledge of plant diversity and, in turn, promoting the protection of biodiversity in Georgia. In addition to enhancing public recognition and popularisation of the garden and increasing the appeal of the garden among the younger generation, over the last few years the garden has worked to foster a favourable environment in order to improve and diversify involvement of the community in the activities of the

botanical garden. Changes introduced to the Organisational Charter of NBGG in 2015 defined objectives and tasks in the sphere of environmental education, which respond to those set by the GSPC. Environmental education has been defined as one of the priorities laid out in the Strategic Development Plan of NBGG for 2018-2030, which was adopted in 2017. The Strategic Development Plan declares the main principles and objectives that make the basis for guiding the educational activities of the Garden until 2030 and was developed for the NBGG with the participation of international experts from Botanic Gardens Conservation International (BGCI), Royal Botanic Gardens, Kew, Chicago Botanic Garden, Missouri Botanical Garden and the Morton Arboretum. In 2018 NBGG has launched the first of its education projects, designed for pupils, students and citizens of different ages. The new education program covers the following projects: Study and cognitive tours in the botanical garden – the target group for the project is pupils of higher secondary school grades and students of higher education (HE) institutions. Within the scope of this project, participants of the tours, guided by the staff of the botanical garden, will get familiar with the garden's collections and the principles of their establishment, the significance of plant biodiversity, methods of rare and threatened species conservation, seed bank activities and the botanical garden in general. Each group will be comprised of 15 members. The tours last three hours

for HE students, and two and a half hours for school pupils. In total 240 students will participate in the project. Weekend School – over the course of a weekend, the garden will host a series of lectures, practical workshops and fieldwork sessions aimed at eighth to tenth-grade pupils. Over the course of two days participants of the project will attend four lectures, two workshops and two fieldwork sessions. Lecture themes will be: plant diversity, ecology, significance of plant conservation and horticulture. Workshops will deal with plant agro technics, collection of seeds and herbarium specimens, phenological observations, etc. Fieldwork sessions will be carried out on the collection plots and areas of the garden with natural vegetation. In total 60 pupils will attend the Weekend School. iNaturalist Ecohunter – this project aims to attract and involve the population of Tbilisi in the process of describing the flora of the city's environs. Using iNaturalist, an innovative and rapidly growing citizen science online social network and app, will enable the garden to raise the awareness among citizens of Tbilisi on plant diversity in the city and its environs. The project will proceed in the form of a competition, as participants will compete with each other to fulfil tasks set by the botanical garden. The tasks will involve making as many observations, descriptions and verifications of particular species, which will be announced in advance, as possible over a two-month period. At the end of this period the person

who described the highest number of plants of the particular species from the highest number of localities and did the most number of verifications for the described plants, will be named the winner. The approximate number of participants will exceed 1000. Commencement of these educational activities in the NBGG is a vital part of the realisation of its diverse functions and its important work and responsibility to promote the sound attitude of the population towards biodiversity and its conservation.

Additional authors: *Tinatini Barblishvili, Irina Murjikneli, Rati Gelashvili, Kristine Belashvili* / National Botanical Garden of Georgia

20 / Climate science & stewardship project: plants as bioindicators and solutions

Sheila Voss / Missouri Botanical Garden

Plants as bioindicators. Plants as ways to see the unseen. Plants as living lenses through which to understand climate change and impacts. These are the themes central to the Climate Science & Stewardship Project, a collaboration between Missouri Botanical Garden, a local university, and the U.S. Environmental Protection Agency. As an outgrowth of the St. Louis Bioindicator Ozone Garden Network, the project focused on teachers and students in grades 3-12, with the goal of increasing understanding of climate science and stewardship actions through plant-based investigations. Specifically,

the project centered on select plants known to show visible foliar damage to elevated levels of ground-level ozone, increasingly harmful to agricultural crops and human health. In this context, plants were a way to literally see the usually invisible effects of damaging pollution and a warming world.

In Summer 2016, the project launched with a multi-disciplinary Educator Summit, followed by a series of half-day Field Labs, experienced by more than 500 students who learned to score ozone-damaged leaves, collect data to measure and map microhabitats, and identify plant-based solutions that strengthen climate resilience. During the Field Labs, students were provided with a unique tool to capture their experiences – a blank sheet of paper. This blank, anti-worksheet page was intended for each learner to customize for their own learning styles. Students were encouraged to doodle, sketch-note, make observations, record data, write down questions, and capture concepts most interesting to them in any way they wanted. On the reverse, they were asked to write one personal climate action they could take. “Doodle Sheets” proved a powerful way to assess engagement and learning. In this interactive workshop, participants will experience a modified Field Lab, use digital scopes to observe and sketch plant parts, map microclimates, identify plant-based solutions on a model campus, and yes, doodle!

21 / *Development of geographic information system-based virtual map for monitoring plant collections dynamics in botanic gardens*

Rahadi Pratomo / Center for Plant Conservation, Bogor Botanic Gardens, Indonesian Institute of Sciences)

Mapping is one of the main tools in the management of collection plants in the botanical garden. The use of conventional maps available in the botanical gardens is difficult when there is a change of data because it takes a long time to change it. In addition, conventional map analysis is also very complicated because the drawing process should be re-done as needed. This requires the availability of maps that contain information along with the location of collection plants that can be accessed offline and online, so we developed a virtual map that can be accessed anytime, anywhere and can run on various platforms, such as internet, smartphone (iOS, Android, and Windows Phone) and also desktop. Making the GIS used data collection by taking and processing data coordinates of planting points or plant collections in the Bogor Botanical Gardens, combined with data or information collection about the plants, so that employees and visitors can find out the position of the plant collection, along with information about the collection number, origin, taxonomy and image of the plant. Employees and visitors can also play an active role in reporting everything that happens about

the plant collection. The virtual map is GIS based, which is very important for employees, because this virtual map can be installed in smartphones so is very applicable. The software used to build GIS uses Map Server 3.6.6, Apache Web Server 2.0, php 4.3.2, Carry Map 5.1, and Arcgis 10.3.

Additional authors: Rosniati Risna / Center for Plant Conservation, Bogor Botanic Gardens, Indonesian Institute of Sciences

22 / *The Route of Science: bringing botany with other sciences*

Reyes Álvarez Vergel / Atlantic Botanic Garden

The Route of Science is a new itinerary of the Atlantic Botanic Garden for teaching botanical sciences and related sciences such as physics, chemistry, geology and technology. Each stop within the route consists of a permanent expositive element integrated in the life collections of the botanic garden. These elements include a panel with a double content: a first item with a brief explanation of a scientific or technological invention, and a second item highlighting the relationships with plant biology or physiology. The Route of Science is now at the first stage of development thanks to a collaboration between the Atlantic Botanic Garden and the School of Engineering of Oviedo University. This first stage consists of five elements dedicated to the use of renewable energy (hydraulic, solar and wind). For example, we use one hydraulic wheel, installed in the historical

garden in the nineteenth century, to explain the scientific basis of the movement of water through the plant vascular system. We also present the mechanism of a wind turbine to explain the role of wind in seed dispersal, and one hydraulic turbine to demonstrate the efficiency of helical seeds for burial in the soil. The Route of Science requires a technical background that makes it more appropriate for students over 14 years old and adults. It is also a suitable educational tool for groups of students from secondary school onwards, as a complement to other disciplines in science and technology.

23 / New education tools to support GSPC target 14 on communication, education and awareness program in Bogor Botanic Gardens, Indonesia

Rosniati Risna / *Center for Plant Conservation, Bogor Botanic Gardens, Indonesian Institute of Sciences*

Since its establishment on the 18th May 1817, conservation, research, education and ecotourism have become core components of Bogor Botanic Gardens. The Garden become a valuable destination not only for tourists but also for young students, with more than 1.3 million visitors annually. On the other hand, the number of educators is not sufficient to educate visitors in terms of conservation and the importance of Indonesian plant diversity in effective and efficient ways.

As major visitor motivations in visiting the Garden are social and setting – not educational – in an attempt to expand the coverage of our education and awareness program, we built two new education tools. The first tool is operated in Android-based smartphone app, providing information and navigation features about the Garden’s living plant collections, as well as heritage landmarks and buildings to be explored. By using this application in their smartphones, visitors are able to make their own garden tour with educational content.

The second tool is an Ecodome, a green building supported by Erasmus Huis – Kingdom of the Netherlands, as an education room and display. The Ecodome has become a site that strengthens Garden-community engagement. These tools support one of GSPC’s (Global Strategy for Plant Conservation) targets and objectives in terms of education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on Earth.

Additional authors: *Kapat Yuriawan, Uus Khusni* (Center for Plant Conservation, Bogor Botanic Gardens, Indonesian Institute of Sciences)

24 / Plant Museum – a new facility for public education in NBG

Mei Li / *Nanjing Botanical Garden Mem. Sun Yat-Sen*

Nanjing Botanic Garden Mem. Sun Yat-Sen (NBG), the first national botanic garden

in China, has put emphasis on environmental education since the late 1990s and became National Education Base in 1999. NBG owns over 7000 taxa of living plants, 700,000 sheets of herbarium specimens and 20 specialised gardens (sections). Since 10th December 2017, the Plant Museum has become a new addition to NBG's education facility.

The Museum is located in the central part of NBG, with an area of about 600 square metres. It was mainly designed for primary and junior high school students and is open to the public on Saturday and Sunday. Visiting groups making appointments in advance can be offered a scientific guide service.

The Museum is divided into 4 sections:

The Origin and Evolution of Plants, Plants and Human Beings, Plants and Ecological Civilization and Mysterious Plant's World.

Hundreds of panels, specimen and exhibits, combined with multimedia technology, such as phantom imaging, laser projection fusion, multi-touch interaction, dual-screen animation interactive projection and little interactive activities like a tree-planting game and on-line quiz, are supplied to the visitors.

Among exhibits, there are fossils of ancient Ginkgo (*Baiera*) from the Mesozoic era, silicified woods, wood of *Populus euphratica*, a coat made of *Antiaris toxicaria* bark, the most poisonous tree in the world, etc. 'The World of Seed' containing seeds of 124 species from 61 families with a vivid and interesting pattern is another highlight of the Museum.

The Museum has become a window through which the general public, especially young people, can discover the uniqueness, beauty and secret of plants, then cultivate a love and respect for them and create a sense of biodiversity protection.

Additional author: *Yang Yuwen / Nanjing Botanical Garden Mem. Sun Yat-Sen*

25 / Digital platforms for dissemination: an anticipated start of educational work

María Isabel Avalos Sánchez / El Charco del Ingenio AC

In 2014 the Botanical Garden created a communication strategy using digital platforms that aim to be the first contact with the educational work of the site: making known the activities carried out by a Botanical Garden, being sensitive to the care of nature, spreading awareness of environmental problems, emphasising the appreciation of local ecosystems and calling for educational activities organized by the association. A rapid, effective, wide-ranging and low-cost means of dissemination was needed.

The registered visits and the community around the site were mostly foreign people. The consequences of the American crisis led to a drastic decrease in donations. Concentrating on attracting the national public would help sustain the Botanical Garden economically. The process was short, the objectives were defined, the most appropriate platforms were

chosen under the criterion of ease of operation and type of user (age and language) and content was designed in the axes: promotion, information, activities and awareness.

The results were analysed with the measurement tools provided by the platforms themselves.

We are now working on continuous improvement depending on the most current needs of the Botanical Garden.

In 2017 we had 15,589 followers on the Facebook page, a database of 2,869 email accounts that receive the monthly newsletter and other specific messages in English and Spanish, a website with 27,788 visits per year and we are rated #6 of the 121 things to do in the city on TripAdvisor.

The number of Mexican visitors remains higher in relation to foreign visitors.

A communication strategy using digital platforms is very useful for the Botanical Gardens and can be adapted to the general and particular objectives that each institution wants to achieve.

26 / Discussion on application of DIY and interaction in science education

Jing Shen / Shanghai Botanical Garden

With the promulgation of the ‘Law of the People’s Republic of China on the Popularization of Science and Technology’, more and more people realise that the scientific quality and background of citizens, especially teenagers, should be improved. However, at present, many popular science education programmes, courses or events are failing to interest the public,

especially teenagers. How to attract more teenagers and educate them with colourful activities has become one of the most important subjects to us.

The organic combination of DIY and interaction is one of the traditional courses of the science education in Shanghai Botanical Garden.

Set out from the new elements, the new ways and the new methods, Shanghai Botanical Garden inspires the interest of the teenagers successfully through a series of DIY and interactive activities in the last several years which are highly artistic and creative such as flowers bookmarks, leaf printing, polymer clay art and plant cultivation.

27 / Trivial Evolution: Plants: a new game to discover plant diversity and evolution

Magali Stitelmann / Conservatoire et Jardin botaniques de la Ville de Genève

Would you like to know more about plant

evolution and classification? It is now possible

with the game “Trivial Evolution: Plants“!

This game enables players to run through the

evolutionary tree of land plants in order to place

a species on its position in the tree. To move on

from one branch to the next, one has to throw

the dice and answer questions about evolution,

genetics, botany or history of science.

Many people are fascinated by the vast diversity

of life. But how to understand the way biodiversity

developed to the present state? “Trivial Evolution:

Plants” makes it possible to grasp this diversity

and understand what laws modelled it. This game is an excellent asset for outreach and informal education activities bridging the gap between our scientific missions and the public, including children. It addresses many issues such as biodiversity, species description, classification and conservation. This is why all the plants included in the game set are also cultivated in the Botanical Garden, to allow players to see them alive.

The game was launched on May 18th 2015, during the European event ‘Fascination of Plants Day’ as the product of a fruitful collaboration among the Ecole de l’ADN in Nîmes (France), the outreach structure BiOutils (University of Geneva) and the Conservatoire & Botanical Garden of Geneva.

The participants of the workshop will be invited to play and there will be time for questions and answers on how this new educational tool has been used up to now.

Additional authors: *Louis Nusbaumer, Daniel Jeanmonod, Yamama Naciri / Conservatoire et Jardin botaniques de la Ville de Genève, Karl Perron / BiOutils - Université de Genève, Stéphane Theulier / Ecole de l’ADN de Nîmes*

28 / Community-supported interpretation: a free multi-site mobile app for garden tours

Abby Meyer / *Botanic Gardens*

Conservation International

For some people, public gardens can be their closest link to the natural world. Engaging visitors on the importance of plants and

empowering people to take action to conserve plants are among the greatest impacts gardens can have on their communities. An app can reach extremely broad and diverse audiences, however developing and maintaining an app can be technologically challenging and financially unsustainable for many gardens. This year, an innovative multi-site app was launched by BGCI-US, which allows any garden to offer app tours to their visitors. As part of the “Care for the Rare” interpretation resources offered by BGCI, this app aims to demonstrate the conservation value of public gardens, tell meaningful stories of plants, and provide links and suggestions for ways individuals can contribute to saving and understanding plant diversity. Download the “Care for the Rare Tours” app from the App or Google Play stores and see a demonstration of the app functionality, learn how we collaboratively build tours with gardens, and see preliminary results of the pilot phase among 10 gardens across the U.S.

/ Working together

29 / Quality matters: educator’s training on ESD in German botanic gardens

Marina Hethke / *Tropengewächshaus-Kassel University*

Education has become a considerable task in German Botanic Gardens. We do realize our part as formal, informal and non-formal learning sites to implement the German National

Action Plan on Education for Sustainability (ESD). ESD calls for a reorientation of the garden's programs: a global perspective in the curriculum, interdisciplinary cross looks and new methods and ideas of learning and teaching.

The German Association of Botanic Gardens (GABG) started an initiative to train its gardens' educators: two long-term courses took place with a total of 14 seminars with 50 participants from 38 German gardens, among them gardeners, biologists, agriculturists, technicians, freelancers as well as employees.

The emphasis of the courses laid on interactive learning and took into account environmental issues as well as the implications of social, economic and political factors of plants. The courses comprised lectures, workshops and practical activities, all as a ground for discussion and reflection. They offered time to exchange varied experiences and to develop new strategies. Participants developed an ESD-relevant program for a selected audience group in order to receive a quality badge as "Qualified ESD Trainer on Biodiversity in Botanic Gardens". According to evaluation participants developed a growing professional reputation and confidence.

The German Federal Environmental Foundation funded this capacity-building program to enhance ESD in non- and informal learning sites. Kassel University managed the project, Mainz and Dresden Universities were part of the leadership team.

As a means of consolidation the third course starts in May 2018. This is the very first time

GABG offers a professional development course. It is a crucial step to make the gardens prepared for the future.

Additional author: *Dr Ute Becker / Green School at Johannes Gutenberg University Mainz*

29 / BiodiverseCity St. Louis: a case study in collective impact

Sheila Voss / Missouri Botanical Garden

How could a botanic garden help propel an entire region to rethink its relationship with the local living landscapes all around them? How would they start? Who would they form alliances with? How would they organize and structure themselves to achieve maximum impacts with limited resources? This narrative-driven poster, designed in graphic novel form, shares the origin story of BiodiverseCity St. Louis, a growing network of 100+ organizations in the greater St. Louis area who work to create nature-rich communities that enable a greater diversity of life to survive and thrive.

The story begins in 2012 with the Garden convening local leaders who were doing worthy work – restoring degraded lands, investing in urban parks, cleaning up rivers, creating new wildlife habitat, documenting biodiversity, tackling invasive species, and prioritizing biologically valuable forests, grasslands, and wetlands. While impressive efforts were underway throughout the region, much of the work was happening in “parallel play,” not connected or integrated with like-efforts, flying under the radar of public

consciousness, and difficult to sustain over time. The Garden saw the value in regularly convening these stakeholders, providing them with a practical forum to share their work, exchange best practices, and join forces on projects.

The Garden also saw the value of spreading the news of this work to broader audiences and focusing on major action-oriented themes:

1. Recruiting citizens as scientists and stewards
2. Employing youth in urban ecology
3. Promoting an active, outdoor, nature-centric culture.

Soon, alliances began to form around these themes, with the Garden remaining in its hub-role of convener and behind-the-scenes backbone. Today, a series of signature initiatives serve as evidence of collective impact at work: Honeysuckle Sweep for Healthy Habitat, St. Louis Green Teen Alliance, Meet Me Outdoors in St. Louis, Wild Ideas Worth Sharing, and the STL City Nature Challenge.

30 / AUBotanic as a common ground for joint activities and teaching – creation of multiple users’ network

Beata Dreksler / Visiting Assistant Professor of Landscape Architecture , Department of Landscape Design and Ecosystem Management at the American University of Beirut

The American University of Beirut campus, at the heart of urban Ras Beirut, incorporates within its walls a unique natural environment. Since it was established in 1866, AUB has been

celebrated for its academic programs and for its campus. With the designation of the AUB campus as a Botanical Garden in 2016, 150 years later, the university has reaffirmed its responsibility as a custodian of its natural environment. It boasts not only extraordinary views of the Mediterranean Sea and the mountains east of Beirut, but also diverse flora and fauna, winding walkways, and secluded spaces. The campus is a sanctuary for the AUB community.

Even before the announcement of the botanical garden, the campus was always used as an open classroom for many courses throughout the faculties. The official announcement by BGCI (Botanic Gardens Conservation International) enhanced the opportunity to use the campus garden as a source of teaching and practical space like a living laboratory. The space – like in any botanical garden - is used for botany, plant material, and horticulture sessions to fulfill basic educational purposes. Since it is at the same time a university campus, members of different faculties are encouraged also to use the space for their activities. Therefore, the campus became a hub for site engineering, electrical engineers, arts, entomology, climate changes investigations – just to mention some of them. New interactions between different groups of AUB users with different backgrounds created a unique opportunity to collaborate and exchange ideas and experiences. The project aims to enhance linkage and create a network of

cooperation between different faculties using Botanical Garden as a common ground for joint activities. Different teamwork projects and challenges out of the scope of the usual botanical garden will be presented and discussed.

Additional author: *Monika Fabian / Instructor of Landscape Horticulture, Department of Landscape Design and Ecosystem Management at the American University of Beirut*

31 / Celebrating World Water Day in Przemyśl 2003-2018

Ewa Antoniewska / The Arboretum and Department of Physiography in Bolestraszyce

The idea of working together allowed the transformation of a modest celebration of World Water Day, initiated in the Bolestraszyce Arboretum in 2003, into a project involving four interschool contests, including artistic works, writing, photography, multimedia and artistic programs, as well as a final conference. The celebrations also involve school workshops, which allow students to learn about various aspects of water resources protection. Every year 800 elementary and middle school students participate in celebrations of World Water Day. Works and artistic programs submitted for the contests are individual, creative and spontaneous statements of young people aware of the negative consequences of excessive water use and concerned with the unequal access to water resources.

Within the last 16 years various institutions, associations, schools of higher education, self-government units and organisations have joined the celebrations of World Water Day, offering necessary support.

In 2004 the Przemyśl Culture Center, a cultural institution, provided access to a conference hall where artistic programs and conferences can be held, as well as provided support of educators during contests for the best artistic works and programs.

Another organization cooperating on the organization of World Water Day is the Regional Water Management Authority. This institution, responsible for the protection of water resources in our region as well as control and execution of the Water Law, organises and conducts school workshops as part of the celebrations, which gives students an opportunity to choose from a variety of practical activities in their schools.

The final conference of World Water Day includes lectures and presentations prepared by speakers from educational institutions such as: the University of Warsaw, the Jagiellonian University, the University of Rzeszów, the Medical University of Warsaw, Rzeszów University of Technology, the Institute of Physical Chemistry at the Polish Academy of Sciences, the Museum of Folk Architecture in Sanok and Polish Humanitarian Action.

Additional author: *Narcyz Piórecki / The Arboretum and Department of Physiography in Bolestraszyce*

32 / *Guarantee of a smooth development of educational activities – security work*

Yujie Cao / Shanghai Botanical Garden

The details decide the effect. In the process of science popularisation, neglecting any details may lead to a far cry from the expectation of the whole activity. Security is an important factor related to the effect of the activity.

The Safety Protection Department of Shanghai Botanical Garden summarized three steps of the activities' safety guarantee on the basis of years of cooperation with science popularization activities:

1. Careful planning before the activities, including contingency plans, making safe and common sense of the staff, testing safety of facilities and equipment, site, instructions and exit passageway
2. The process should be strictly controlled, including controlling the number of people entering the event site, prohibiting to carry dangerous goods into places strictly. And if the accident happened, the staff members should not be panic and treat it according to the emergency plan
3. Reflecting after the activities, checking, training and preparing to carry out activities more smoothly for the future.

33 / *We can! Botanical garden for new century!*

Dubravka Sandev / Botanical Garden University of Zagreb Faculty of Science

The Botanical Garden is an institution that is built and has grown to inform and teach and is also a place for enjoyment, relaxation, admiring garden aesthetics and spending time with family and friends. All of this can be combined in botanic exhibitions that have played the main educational role in our garden for 10 years now. Building the pavilion was a crucial moment that created a space for such a challenge and attracted attention to the garden, increasing the number of visitors by 43% in ten years. This resulted in a strong positive relationship between the garden management and visitors' wants and needs, through an understanding of the main activities undertaken in the garden, perceptions of visitors in service qualities and the value of the employees of the Botanical Garden.

We cannot tell how much influence we have on the knowledge of our visitors, but it seems that behaviour and environmental attitudes are more positive amongst the 100,000 people visiting the Botanical Garden every year.

Additional authors: *Sanja Kovačić, Vanja Stamenković / Botanical Garden University of Zagreb Faculty of Science*

34 / *The Shanghai Botanical Garden enhances public interest in gardening through the cooperation between different departments*

Huafang Zhu / Shanghai Botanical Garden

The flower show plays a very important role in inspiring new design ideas, promoting horticultural development and arousing the public's love of gardening. Under the cooperation between different departments, the annual spring flower show and full year's various themes and special plant exhibitions, Shanghai Botanical Garden are striving to popularise knowledge of flowers, gardening and environmental protection, and arouse people's strong interest in plants.

The temporary exhibition garden in the comprehensive flower show, the use of new gardening materials, advanced cultivation technology and more avant-garde design ideas will attract the public to focus on the garden art and plant landscape. At the same time, the annual update of exhibition gardens can also make tourists always feel that there is always something new and fresh.

Combining plant introduction, scientific research results with the theme exhibitions and special plant exhibitions in the garden to enrich the plant material on the flower show, and to promote the collection of living plants and the research of plant science.

We will use the role of the popular science media and attract tourists through the colourful

landscapes created by diverse plants, so that we can pass the relevant botanical knowledge and stories to the public.

We will make full use of the team leadership role, integrating the advantages of different departments. The various departments are in charge of different aspects of the flower show, but all the departments will also cooperate with each other to promote the flower show and ensure everything is in good order, well arranged and will work smoothly.

35 / *Synthesis of permanent and temporary expositions of the Peter the Great Botanical Garden as a new approach in educational activity*

Larisa Musinova / The Peter the Great Botanical Garden of the Komarov Botanical Institute RAS

The Peter the Great Botanical Garden, as any other, consists of a complex of permanent exhibits (separate systematic groups of plants, landscape complexes, etc.). They are used for passive and conditionally passive forms of education - visual material and excursion work, which make it possible to provide a large amount of information in a short period of time. 25 excursion programs of the Garden are designed for children (gaming), adolescents (training) and adult visitors (overview).

Annually more than 8500 excursions are conducted in the Garden, and the total number of visitors is about 170,000 people.

A serious addition to the educational activities

are temporary (thematic) exhibitions. Their advantages are:

- The possibility of immersion in the topic and dialogue with specialists.
- The participation of collectors and clubs expands the species composition of temporary exhibitions.
- Presentation of rare and unique exhibits from stock greenhouses introduces ordinary visitors to the rarest representatives of the plant world.

Exhibition educational programs are carried out in the form of passive and active work.

Passive one – inspection of the plant exhibitions and accompanying exhibits from the collection of the Botanical Museum, textual and schematic information on stands, photos from nature, stands with substrates for cultivation and planting technology and computer presentations.

Conditionally-passive work is realised in “specialist-participant” interaction – consultations and lectures. To secure the received material, active teaching methods are important, where the project participant directly manages the plants.

Thus, the combination of permanent and temporary expositions that complement each other, as well as the use of different ways of supplying the material, allows the Garden to effectively deliver specialized material to different categories of visitors.

The authors thank the Komarov Botanical Institute for financial support.

Additional authors: *Yuri Kalugin, Alexandra Volchanskaya / The Peter the Great Botanical Garden of the Komarov Botanical Institute RAS*

36 / How can external cooperators support our garden? Examples from the Botanical Garden in Bergen, Norway

Heidi Lie Andersen / Botanical Garden – University of Bergen

The Botanical Garden in Bergen is new and currently being developed. Changed priorities at the University and society at large have been a major challenge facing us in this process. In particular, there are strong requirements for obtaining external economic support, which instigates a need for stronger and broader visibility and also better communication of our benefits to the University and society. This has led us to start a process to target how to evolve. We have started to engage more people by having more and diverse events and courses, resulting in numerous activities in the garden.

In order to engage with many people with our limited number of employees and low budgets, our strategy has been to cooperate with external partners. Our cooperative partners include all kinds; universities, research and educational organisations, non-governmental organisations, governmental organisations, private sector, both small and bigger companies, lecturers/courses, local schools, neighbours and other enthusiastic people in our community.

Our experiences with letting all these different partners into the garden are only positive. This gives us the opportunity to arrange numerous events with less effort, to attract new audiences in new subjects, and to our spread name and reputation through the contacts of all our partners.

We are also faced with some challenges when cooperating with different organizations. We have to be firm in where the limit goes for cooperation, and to what extent we can engage in commercial activities. Here, we will give some examples of our partners, and how we deal with this cooperation.

Additional author: *Siri S. Jansen / Botanical Garden/University of Bergen*

37 / Botanic gardens intervention on climate change and communities aesthetics

John C. Onyango / University Botanic Garden Maseno, Maseno University

Botanic gardens have played a crucial role in plant conservation and have preserved some of the indigenous communities' heritage for a long time. However, with climate change, communities, governments and regional blocks must come up with practical interventions that will aid in minimising climate change effects. Carbon dioxide sequestration is paramount to reducing effects of climate change on atmospheric warming. This heavily depends on Botanic Gardens working with communities

to increase reforestation and planted areas.

The university Botanic Garden is currently involved in working with local communities to plant and conserve more plants. The results are encouraging as the temperatures and winds are on the downward tread compared to the open Lake Victoria environs.

This is coupled with other benefits from plants of medicinal values, energy provision and structural uses. The Botanic Garden also acts as a recreation and study environment for students and local communities and the art increases the aesthetic value of the gardens and above all conservation value.

38 / How do researchers in Shanghai Botanical Garden support popular science education?

Yuke Bi / Shanghai Botanical Garden

As a base of popular science education, the botanical garden not only has the unique advantages of abundant plant resources, but also has a great advantage of groups of employees with various knowledge backgrounds and techniques, such as researchers, gardeners, curators and educators. Scientific researchers have the characteristics of professional broad knowledge and wide information exchange. All of this is conducive to promoting the popularisation of education. In Shanghai Botanical Garden, scientific researchers mainly support the popularisation of science in the following ways:

1. Carry out the popular science lectures
2. Conducting plant guided tours
3. Writing popular science articles
4. Assisting in checking the scientific accuracy of popular science information

At the same time, there are some challenges in the work of science popularisation education:

1. The teaching method is too basic, sometimes purely saying the knowledge, which lacks of interaction and makes audience feel boring easily
2. The explanation of vocabulary is too specialised and difficult to understand
3. Most of them have stiff body language and an overly-serious attitude, which makes them seem unapproachable

In order to face these challenges, Shanghai Botanical Garden has developed many training courses for these popular science guiders and encourages scientific researchers to participate in the training. The training is taught and led by experienced popular science staff and includes language expression, body expression, and so on. Through years of daily work and training, researchers and popular science staff have learned from each other, making the activities of popular science more interesting and meaningful.

39 / Living collection policy as a tool to increase the cooperation between gardeners and scientists, the case of the Botanical Garden Of Geneva

Louis Nusbaumer / Conservatoire et Jardin botaniques de la Ville de Genève

After a two-year analysis process, the Botanical Garden of Geneva published its new living collection policy in 2018. Forty main collections were identified and evaluated, each one by the gardener in charge of it, the scientific advisor affiliated to the collection and the head gardener.

This process generated a tight cooperation between the collaborators of two very diverse parts of the institution: the conservatory and the garden. Each collection's evaluation ends by suggestions for improvement, proposed by the gardener and botanist.

Most frequent suggestions concerned verifications of geographical origin of specimens, identification of unidentified plants, IUCN status to check, specimens to look for to complete the collection with specific spectacular or endangered taxa, developing tours for schools and general public to highlight the collection and managing the ageing problems for woody collections.

Each pair now has five years to reach these goals, after which a second evaluation process will be conducted. Since the evaluation, concrete projects were already initiated for several collections that are showing a very constructive collaboration regarding scientific mediation,

communication on social networks and other electronic communication means. Several activities have been proposed to schools and some unidentified specimens were identified in the institution or sent to external taxonomists.

Additional authors: *Nicolas Freyre / Conservatoire et Jardin botaniques de la Ville de Genève*

40 / Cooperate with other organisations to enhance environmental education in NBG

Lijuan Hu / Nanjing Botanical Garden Mem.

Sun Yat-Sen (NBG)

Nanjing Botanic Garden (NBG) is the first national botanic garden in China, also one of the earliest botanic gardens in China to carry out environmental education. The environmental education activities of NBG have been carried out in various ways: scientific guides, exhibitions, lectures, training courses, practical activities, summer camp, popular science book and materials.

Besides organising our own activities, we also cooperated with other organisations to implement environmental education programmes. Local schools are the main cooperative partner of NBG. Cooperation includes holding lectures and exhibitions at school, organising inquiry-learning courses for school children, providing training courses for teachers, etc. Sometimes we cooperate with the local government departments, providing consultancy, organising summer camps and nature education

activities. In addition, we cooperate with companies to provide half-day trips or day trips for school children and families. A trip usually involves a visit with scientific guides and a number of practical activities, such as collecting and processing specimens, searching for 'Green Treasure' and making bookmarks with plant materials.

Cooperating with other organisations brought many benefits for us, not only the increasing revenue, but also the deeper connection with local community and schools. In addition, cooperation expanded the influence of NBG.

Additional authors: *Yang Yuwen, Yalong Qin / Nanjing Botanical Garden Mem. Sun Yat-Sen (NBG)*

41 / Use of the space by small children of a Reggio Emilia-philosophy community school in the Patiño Etnobotanical Garden (JEP), Paraguay

Irene Gauto / Asociación Etnobotánica Paraguaya

The Patiño Etnobotanical Garden (JEP) is a small education-oriented garden composed of useful plants with a significant collection of medicinal plants, located in the surroundings of Itauguá, Paraguay. The garden offers the use of the site for experiential space for the little children of the community school "Kunumi Areté".

The school has a Reggio Emilia philosophy and gives the children the opportunity to learn through hands-on experiences, using the JEP as a living classroom. Once a week children

go to the garden to develop their educational agenda. We provide a synthesis about the activities developed by the children in the JEP, and how these actions help them to enrich their knowledge.

Additional author: *Racio Fernandez*
/ *Asociacion Etnobotanica Paraguaya*

42 / Involvement of Kamyanets-Podilsky community and tourists in the program of development ecological awareness and popularisation concept of sustainable use of biological resources

Viktoriiia Zheikhovska / *Kamyanets-Podilskyi Botanical Garden, State Agrarian and Engineering University in Podilya*

Kamyanets-Podilsky is a well-known tourist centre, where the cultures of seven nations are combined, including with the history of the city's close links to Poland. For example, in our region, the well-known botanist Stefan Leon Makovetsky worked on horticultural issues and the study of wild local vegetation. Each year, thousands of tourists visit the city and the botanical garden is a popular location for a useful and enjoyable pastime.

We are currently working on creating a programme of institutional policy related to the service of tourists, as a result of which visitors will receive an understanding of the importance and value of the activities of the botanical garden.

Plans are in place to cooperate with local, national and international tourist centres and agencies to popularise the Kamyanets-Podilsky Botanical Garden. Currently, in addition to excursions around the botanical garden, we organise one-day bicycle trips along the tourist route through the territory of the Podilsky Tovtry National Park, ecological actions, and picnic-tea using medicinal herbs.

In the warm season, we hold very popular outdoor movie screenings where people of all ages come together to see interesting documentaries and feature films on environmental topics such as plant conservation, environmental protection and climate change.

The Botanical Garden actively cooperates with the schools of the city, conducting masterclasses for children related to the study of plant life, their reproduction and conservation. Annual ecological actions, like young citizens cleaning household rubbish from the dendrological park and the canyon, also have an educational benefit. Tree-planting actions also help to form a positive attitude to local plants, understanding their significance for people.

/ Supporting formal education

43 / Connecting hearts with nature – talk to plants

Mandy Fung / *Kadoorie Farm and Botanic Garden Corporation*

With the growing emphasis on environmental

awareness and sustainability in our society, living things, the growth of plants, and environmental protection have all become a part of the formal education curriculum across all age groups in Hong Kong. However, while the current content in formal education places heavy emphasis on the ecological and scientific aspects of these topics, focusing on increasing students' factual knowledge and academic understanding, our nature education programmes hope to provide a different learning experience to participants. The mission of Kadoorie Farm and Botanic Garden is to harmonise our relationship with the environment, our programmes focus on holistic design and experiential learning based on the 3H approach: heads, hands and hearts. An excellent example of this is the "Talk to Plants" programme.

The purpose of this one-day programme is to reconnect children and youth to nature by exploring and appreciating the hidden beauty of plants through experiential activities.

Head:

- Learn about different native plants in Hong Kong that can be commonly found and their interconnected relationships with animals and humans through guided walks
- Increase students' awareness of endangered plant species and conservation

Hands:

- Be encouraged to explore soil and insects using all their senses
- Foster respect for nature by creating plant

pots to grow plants which they will continue to nurture at home

Heart:

- Contemplation: To discover and appreciate the more subtle details of plants
- Deeper connection with plants through focusing exercise

We hope that this integrated 3H approach can provide students with a different experience which can enhance their awareness of their integral relationship with nature. Ultimately, we hope the program can connect peoples' hearts with nature to achieve the vision of a world in which people can live sustainably with respect for each other and nature.

Additional author: *Eliz Leung / Kadoorie Farm and Botanic Garden Corporation*

44 / Trees and tech: teacher professional development at The Morton Arboretum

Sue Wagner / The Morton Arboretum

The tools that tree scientists use to study the natural world are evolving. On March 2nd 2018, teachers from Dupage County, Illinois, USA participated in the Morton Arboretum's "Trees and Tech" Teacher Institute day workshop. Teachers discovered the innovative ways that The Morton Arboretum scientists are utilizing current technology to study trees, plants and woody shrubs. Participants engaged with different science demonstrations, contributed to our new podcast series for high school students, created tools for measuring tree

size, and learned how a future career in Tree Science may be a fit for their students. The objectives of the workshop included: Demonstrate the innovative uses of technology in tree science and allow teachers to make connections to this content in their classroom instruction.

Engage teachers in the PLANTED: Finding your roots in STEM careers podcast by incorporating their questions into the content for this evolving program. Connect the NGSS to tree science careers and provide teaching resources for teachers to use with their students and engage them in tree science-related topics in their classroom. Select evaluation statistics:

100% of participants said that the instructors presented information in a clear and understandable way.
92% of participants found the workshop interesting or extremely interesting.
92% of participants would strongly recommend this workshop to other teachers.

Summary highlights from the workshop:

- Cool technology including drones + 3D modeling
- Meeting with practicing researchers
- Hands-on demonstrations/activities
- The exposure to The Morton Arboretum's science programs

45 / *VMU Kaunas Botanical Garden experience in organising national competition "The Lithuanian Naturalist"*

Vesta Aleknavičiūtė & Kristina Mulevičienė
/ VMU Kaunas Botanical Garden/KBG

Lithuania and occupies a 62.5-hectare area that is located almost in the centre of Kaunas city. KBG is the provider of non-formal education in the youth field. It had influenced lives of hundreds of young people all around Lithuania through numerous activities – competitions, trainings, seminars and summer camps.

One of the most important KBG contribution of non-formal education is annually organised national competition, "The Lithuanian Naturalist".

The aim of the competition is to create conditions for the development of students' general and nature sciences competences, creativity, initiative, stimulate motivation for learning and the continuity of interest in nature. The competition is open to all students from general education schools and non-formal education institutions of the 1st-12th grade, who are interested in nature sciences and seek knowledge and skills in this field. Students are divided into groups according to their age.

"The Lithuanian Naturalist" competition takes place in two stages: in the first stage, participant's questionnaire and selective assignments are published on the website and all students can test their own; in the second stage, theoretical and practical tasks are performed at the KBG. Only the best students

are selected to participate in the second stage. The competition's main tasks are to introduce students to the problems which nature scientists meet at work and to formulate principles of focussed science education; to assess students' ability to orientate in the abundance of essential concepts and principles of nature sciences, to use the knowledge and methods of nature research in a broader context; using active educational methods to shape the positive attitude of students towards the nature sciences. The tasks performed by the KBG are aimed at broadening students' knowledge of nature and ecology, helping to better understand the complexity and integrity of the environment.

46 / Curriculum-based education in Tallinn Botanic Garden

Marit Kasemets / Tallinn Botanic Garden

Since 2006, Tallinn Botanic Garden (hereinafter referred to as "Garden") has been offering curriculum-based nature education programmes to school students from Grades 2-11. According to the Estonian national curricula for basic schools and upper secondary schools, contemporary study methods and other techniques must be used, including active study methods, field trips or outdoor and museum learning activities, among others. The school should provide students with lessons outside of the school territory (in the natural environment, museums and/or laboratories) at least twice per school year.

The Garden launched education programmes on four topics in 2006 but has since expanded the selection to 11 different themes for students. Every programme includes an exploration of the Garden collections. School groups can learn using also the on-site permanent and temporary exhibitions (there has been a new exhibition almost every month), the nature trails (altogether 6.5km with 21 stops on Pirita River Valley Landscape Protection Area), the special herbarium for teaching, etc. The programmes are conducted by the specialists of the Garden – biologists, geographers and gardeners.

The most popular themes throughout the years have been "Trees, shrubs and herbaceous plants", "House plants and useful plants" and "Natural and climatic zonation".

The groups of maximum 32 students are booked in advance. The groups are divided into two, for better communication and active participation of the students. The total length of a study is 3-4 hours including lunch break for 15 minutes. The knowledge and experience are acquired through active participation, and practical activities are carried out through the whole study day. Worksheets have been compiled for different programmes and different age groups.

The feedback enquiry, filled by the together with students, and returned at the end of the day gives important information to improve programmes and get new ideas for creating new ones.

Additional author: *Siiri Liiv / Tallinn*

Botanic Garden

47 / Fostering sustainability stewardship through professional development

Katherine Golden / *EarthWays Center of the Missouri Botanical Garden*

As botanical gardens we are often called upon for our expertise in plant conservation, but our institutions can also embrace our status as vital players in cultivating cultural awareness around the issues that fundamentally support the successes of plant conservation such as material use, clean air, water, soil, and education. This is often done through community outreach and education programming such as this project poster will demonstrate.

In serving as a regional resource for professional educators and helping change the conversations and culture within schools around effective education towards developing stewardship and sustainability, the Missouri Botanical Garden's EarthWays Center works to help further this mission. This project poster will highlight an approach to partnering with formal educators that seeks to foster sustainability in schools across the St. Louis region.

This program, the EarthWays Sustainability Network (ESN), supports the training of skilled educators not in content, but in process, problem-solving and frameworks for shifting towards a sustainable school culture.

This year-long professional development program empowers educators to embrace a holistic, sustainable, and replicable approach in implementing action projects

and place-based learning, developing sustainably literate students and curriculum, and fostering school sustainability stewardship through behavioral and operational changes related to resource use, especially waste.

School partners represent a wide variety of school types and demographics, which reinforces the message that sustainability is for everyone. Success has led to the implementation of sustainability practices in classrooms, cafeterias, and school gardens, and has spawned more ideas, such as rooftop gardens and reusable water bottle stations. This poster will highlight how this approach has been effective in area schools, the tools and strategies used to help support teachers, and help answer the question of how we as Botanic Garden educators can help support formal educators to better prepare themselves and their students to tackle real-world environmental challenges. EarthWays will share the stories of regional partnerships with schools, demonstrate application of a problem-solving framework, and the results of embracing a whole school approach to fostering sustainability through culture.

Additional author: *Simon Warren* / *EarthWays Center of the Missouri Botanical Garden*

48 / 100 years botanical garden journey from class room to education

Siraj ud Din / *University of Peshawar*

A small botanical garden was established in Islamia College in 1915 to provide class

material for the students of botany. This still exists and contains very old *Washingtonia* and *Olea* trees. After a declaration of University of Peshawar (in which Islamia College was an integral part), another botanical garden was established in the premises of the Department of Botany in 1958. Here, in addition to classroom material, the component of reflecting the national floristic elements were added to its master plan. After the Convention on Biological Diversity (CBD) in 1992, the thematic plan of a botanical garden was changed from display to Biodiversity Conservation. As a follow up, University of Peshawar Botanical Garden was established in 2005 with new dimensions, focusing on Education, Research, Conservation and Healthy Recreation. In the education sector, the University of Peshawar Botanical Garden was combined with the Centre of Plant Biodiversity in 2006. Here, all the four objectives were focussed for the awarding of MPhil and PhD degrees in the field of Biodiversity and Conservation - fulfilling many targets of Global Strategy for Plant Conservation (GSPC). This botanical garden spreads over 83 acres of land, the largest botanical garden in Pakistan providing education to the students at different grades ranging from school to university in addition to its own degree programme. Even for general public visiting the botanical garden, education programs are introduced.

Additional author: *Rashid Abdur*
(University of Peshawar)

49 / *Science-Bridge-Visitor*

Bert van der Meijden / *Botanic Garden TU Delft*

Describing a 10 year period of presenting scientific information to the general public in yearly thematic summer exhibitions. Pitfalls and lessons learned. The topics covered in the poster will include:

- Theme: what to choose, individual, shared
- Angles of observation: plant science, technology, history, folklore
- Text: how much, clearness, exactitude of language
- Image: availability, copyright
- Presentation: graphic design, text, image, sound, smell, living plants
- Assets: place, budget
- Publicity: channels

50 / *The genus Ficus L. (Moraceae): giants and pygmies of the flora*

Andriy Prokopiv / *Botanic Garden of Ivan Franko Lviv National University*

Botanic gardens play a fundamental role in the ex situ conservation and exploration of the global plant biodiversity. It is nevertheless assumed that living collections of tropical plants maintained at the botanic gardens are an underutilised worldwide resource for biodiversity conservation, practical uses and educational activity.

The current investigations, directed to the use of *Ficus* (Moraceae) species plants grown ex situ in Ukraine both for educational activity

and assessment of medicinal properties of these plants, were undertaken in the frame of cooperation program between NBG, Botanic Garden of Ivan Franko Lviv National University (Ukraine) and the Institute of Biology and Environmental Protection, Pomeranian University in Slupsk (Poland).

High species diversity, an extraordinary breadth of growth habits and plant life histories, flowering phenology, life spans, various breeding systems (monoecy and dioecy) and pollination syndromes, well documented medicinal properties, and, in particular, a long coevolutionary history with its obligate pollinator fig wasps make the mega-diverse genus *Ficus*, an ideal plant group for many kinds of educational activities. Remarkably, some *Ficus* species are reported to be among the oldest human food sources.

Presenting our display glasshouses, where various *Ficus* species as well as many other tropical plants are exhibited, we try to reach as many people as possible through communication with various types of recipients having different educational background, such as scientists, horticulturists, teachers and general public. These issues are likely to become increasingly important due to climate change.

Plant exhibitions created at Botanical Gardens of Ukraine highlight the diversity of tropical plants, their uniqueness, the plant adaptations to the ecological conditions of the tropical forest and plant-animal relationships, providing education in issues linked with global climate changes and

the urgent necessity to conserve species that support human needs and wellbeing worldwide.

Additional authors: *Lyudmyla Buyun / M.M. Gryshko National Botanic Garden, National Academy of Science of Ukraine*

51 / 'Flowers and the Youngsters' – a special subproject of 'Flower Watch' programme

Mei Li / Nanjing Botanical Garden Mem. Sun Yat-Sen

Botanic gardens are important centres for education. Nanjing Botanic Garden Mem. Sun Yat-sen (NBG), the first national botanic garden in China, has put emphasis on environmental education since the late 1990s. The EE program of NBG has been carried out in various ways, such as scientific guides, exhibitions, lectures, training courses and thematic activities and often in collaboration with other organizations, like BGCI, CUBG, local media, education or environmental protection agencies.

A project entitled 'Flowers and the Youngsters', a subproject of 'Flower Watch' Program, organized by Nanjing Education Bureau with NBG as its major cooperator is introduced in detail in this paper.

'Flower Watch' is a scientific education programme specifically designed for students aged 11-13. With flowers as the media, the programme aims to build children's character, good taste and thought pattern and improve their ability to identify, study and solve problems.

The programme began in March 2016 in Nanjing and lasted 3 years, with students in 44 primary schools and junior high schools in Nanjing participating.

As a subproject of ‘Flower Watch’, ‘Flowers and the Youngsters’ contains four interesting and unique thematic activities held separately in four seasons: ‘Happy Gathering of Hyacinth’ in spring, ‘Joyful Summer Camp’ in summer, ‘Romantic Poetry and Painting’ in autumn and ‘Greeting New Year by Flowers’ in winter. Among them, three activities were held in NBG. Through a series of interactive and hands-on activities, like growing hyacinth and writing a report, collecting and processing specimen, carrying out tissue culture, making bookmarks with flower petals, painting autumn views in NBG, giving vivid performances, etc., all participants have benefitted a lot and had fun during this project.

Additional author: *Yang Yuwen / Nanjing Botanical Garden Mem. Sun Yat-Sen*

52 / The world of birds at the Adam Mickiewicz University Botanical Garden in Poznań

Roksana Lubkowska / Botanical Garden of Adam Mickiewicz University

There are about 50 bird species that can be observed in the Adam Mickiewicz University Botanical Garden in Poznań. The richness of avifauna is associated with the abundance of food and availability of suitable places for nesting. High diversity of bird species creates

opportunities for conducting various educational activities to broaden the knowledge concerning this group of animals among the society.

In 2014, due to financial support of the Fund for Environmental Protection and Water Management in Poznań, an ornithological trail was established on the premises of the Botanical Garden. The educational trail, called “Garden Singers”, comprises 30 information boards presenting chosen bird species. The boards are located in places where the selected birds can be most commonly observed. Each one of them not only depicts an illustration and a short description but also provides a QR code enabling the visitors to listen to the call of the given species.

Financing from the program Santander Universidades of Bank Zachodni WBK in 2016 made it possible to enrich the existing ornithological trail with a further 10 information boards as well as to introduce the project, “The world of birds at the Adam Mickiewicz University Botanical Garden in Poznań”.

Nearly 200 students of classes 4-6 from ten primary schools took part in the project, which consisted of five meetings. The subject of the workshops mirrored the changes in bird life along with changing seasons. In autumn, it was migration, in winter issues connected with bird wintering and feeding, and in spring the breeding season. During meetings various teaching methods have been used: lectures with multimedia presentations, shows, workshops, observations and outdoor games. A quiz has

been carried out at the end to sum up the cycle of meetings and check the gained knowledge.

Additional authors: *Joanna Gadzińska, Justyna Wiland-Szymańska / Botanical Garden of Adam Mickiewicz University*

53 / Education in botanical garden – an opportunity to awaken the interest in botany

Eva Novozámská / Prague Botanical Garden

The Prague Botanical Garden has provided guided tours for visitors of all ages since 1992. The garden is divided into three parts – the Fata Morgana Greenhouse, Outdoor expositions and St. Claire’s vineyard. For each part we provide educational programmes or tours. These programmes should help teachers to awaken the interest of children and youth in botany and also to revise or deepen their knowledge. Altogether, we have 18 programmes and all of them aim to pass the information to children in easy, interesting and understandable ways. During our tours with schools we use common methods and forms such as experiential learning (learning through doing), didactic games or short-term group work. Also popular are special exhibitions such as the butterfly exhibition, exhibition of carnivorous plants or exhibitions for all senses. For these events we prepare special tours to spark the interest of children in one particular topic. Through the years of doing educational programmes, we have found some

recommendations which work well. A good way to inspire and arouse the interest of children in botany is through their teachers. We have cooperated for many years with the Educational Institute of the Central Bohemia Region (VISK) on a series of lectures representing the garden as a place for alternative education. Teachers know then what our garden offers to school groups and they can then better fit the visit of the garden to their school educational programmes and schedules. During summer we organise short-term summer camps, which take place in the beautiful and inspiring environment of the garden and allow children to be in daily contact with plants.

Additional authors: *Amálie Balaštková, Tomáš Keberl / Prague Botanical Garden*

54 / First steps to establish the PlantingScience programme in Austria

Julia Stejskal / University of Vienna

Planting Science is a program which supports student-centred plant investigations and connects students, teachers, and scientists as mentors. It provides a network and platform for inquiry-learning projects and allows students to work with scientists on scientific topics. As a free online resource for teachers and schools, PlantingScience is actually operating in the US and Canada. Its ideas, methods and projects prove to be very exciting for students and thus trigger success in acting against plant blindness and in improving scientific literacy. The authors

of this presentation therefore started efforts to implement the program in Austria (with the option to include other German speaking countries). PlantingScience agreed to share its infrastructure like its website, thus no website in German will be needed. There are four parallel steps for the start of the implementation:

- “Wonder of seeds” was selected as a first topic for a test phase
- Bilingual schools in Austria will be encouraged to participate in a test phase in English
- Translations of necessary web page contents into German will be prepared
- Austrian scientists will be invited to act as mentors.

In addition, diploma work has been started to prepare a German version of the “wonder of seeds” program. All these steps are planned to be implemented by the end of 2018.

Additional authors: *Lukas Lanzerstorfer, Johanna Rathmayr, Michael Kiehn / University of Vienna*

55 / Implementing Education for Sustainable Development in teacher education – a qualitative perspective

Dr Kerstin Bissinger / *Botanischer Garten der Universität Würzburg*

Education for Sustainable Development (ESD) has become an important educational objective within the German curriculum.

However, in-service teachers are overwhelmed

and have problems putting the theory into educational practices. The “LehrLernGarten” (LLG) supports formal education via teacher training and by student-teacher education focussing on the practical implementation of ESD in formal and out-of-school settings. The LLG uses the infrastructure of the botanical garden in Würzburg in order to showcase ecosystems and the consequences of anthropogenic influences, as well as practical actions in an interdisciplinary context. Multidisciplinary practice is the key strength of the LLG as it works together with different education departments within the university and partners in an out-of-school context. Based on exemplary teacher-training modules and student-teacher education courses focussing on ESD, preliminary qualitative results showcase differences between in-service teachers and student-teacher education:

1. In-service teachers have very few subjects based on ESD, whereas student-teachers are aware of the subject and knowledge areas
2. In-service teachers have problems recognising ESD principles as the basis of their teaching, whereas student-teachers need to learn how to plan lessons in general, so are able to include ESD from the beginning
3. In-service teachers know many methods but seldom recognise the connection to the competency level, whereas student-teachers need to learn which method fits the objectives, so are capable of promoting competencies from the beginning

In conclusion, in-service teachers need more support to identify ESD in their current teaching and to include interdisciplinary approaches and problem-solving learning in their educational practices. Student-teachers in contrast need more didactical support which provides the opportunity to implement ESD from the beginning of their education which might lead to an ESD self-concept. The LLG approach is a promising concept to support formal education.

/ Reaching new audiences

56 / Reaching new audiences

Anahi Acevedo / Benemérita

Universidad Autónoma de Puebla

The Botanic Garden at the Benemérita Universidad Autónoma de Puebla was founded in 1987, but the doors were opened to the public seven years ago in 2011. After a series of different projects, regarding scientific development, congress participation and book publishing, among others, the University Botanic Garden (UBG) has gained an international outstanding presence that leads us to a new stage, facing new challenges as a growth opportunity. The UBG welcomes 30,000 visitors every year and we think it is time this number should increase. So, we ask ourselves: How can we reach new audiences? This poster shows what we did: a Public Study in order to know who our visitors are, what they like, what they don't and if they actually

know us. After the series of surveys conducted to the visitors, and based on the answers we got, three strategies were designed: first, wide dissemination throughout the campus. Most of the students claimed they were not aware of the activities promoted at the UBG, so we visited 30 faculties to talk to students and professors and spread our different activities. Second, we hosted an art exhibition. Students from the School of Visual Arts were invited to assemble a series of installation pieces throughout the garden. This kind of activity draws the attention of a wider range of audiences and not just the university community, which represents most of our visitors. Third, we designed different workshops for children. We realised families had not been close enough to the UBG and this certainly was urgent in order to achieve one of our major goals: positive impact by engaging different social groups in our immediate environment. These strategies shown in this poster are part of a new era for the UBG, facing a continuous changing society with diverse interests.

57 / Therapeutic horticulture: partnerships in the community

Jennifer Smith / Missouri Botanical Garden

The Missouri Botanical Garden's Therapeutic Horticulture Programs are designed to provide creative and stimulating nature-based activities to further enrich the physical, mental and social lives of the participants. Therapeutic Horticulture is a process in which

plants and gardening activities are used to improve the body, mind and spirit, through passive or active involvement. Therapeutic Horticulture is effective and beneficial for people of all ages, backgrounds and abilities.

The Missouri Botanical Garden has an extensive selection of therapeutic horticulture programming designed to engage and stimulate a diverse group of participants. From the senior living community, medical facilities, the cancer support community, and social service agencies, Therapeutic Horticulture can have multi-faceted benefits to many populations.

Those benefits include exercising fine-motor skills, engaging the senses and increasing well-being. That is why many of these local organizations and businesses contract with the Garden to bring plants and plant-based programs to their patients/clients. Our Horticulture Therapists work closely with each organization to create a customized program to meet the unique needs of their clients. This poster will showcase the benefits of bringing the Garden into the community in this unique way and the partnerships it creates.

58 / Gardens for botanists and people

Yurii Naumtcev / Botanical Garden of Tver State University

Where botanists can talk to people and convince them, education is everywhere! But it's not enough just to say something or show and tell using specific examples. We, botanists, carry out

research and experiments, we write books and scientific articles, we determine the problems and threats for plants and ways to solve them. For whom do we do this? Can ordinary people hear us? What do they know about us and our work? Where and how can we communicate to ordinary people and hand down the meaning of our work and the need for participation in plant conservation? Definitely, botanical gardens are the best place for this!

But millions of ordinary people come to thousands of botanical gardens throughout the world every year, every month, every day. Why, then, do plants and plant communities continue to disappear? What are we doing – not quite right – what are we doing wrong? We try to understand much by our intellect, but maybe another time has come, when we have to think about feelings? Maybe we, botanists do not use enough emotions in our education. Over 15 years, the Botanical Garden of Tver State University and the University of Minnesota Landscape Arboretum have developed, exchanged and implemented our new methods and tools for public popularisation and education of people who come to our Gardens to achieve the emotions and feelings. Of course, many approaches and directions of work that we realise are typical for botanical gardens.

Nevertheless, we, in our Gardens, set ourselves a special goal, to arouse the feelings and emotions of people. We create a special atmosphere in our Gardens. At the same time, the constant exchange of knowledge and

experience between our Gardens and the opportunity to mutually test, adapt and improve our methods have been decisively important. Our methods are new educational tools for achieving success and attracting new audiences to the Gardens! We are ready to talk about this!

Additional authors: *Peter Olin, Peter Moe / The University of Minnesota Landscape Arboretum, Ulyana Spirina / Botanical Garden of Tver State University*

59 / The “Sensory Garden”: excite the senses at Naples Botanical Garden

Rosa Muoio / *Naples Botanical Gardens, University of Naples Federico II*

The Naples Botanical Garden is one of the most prominent in Europe for the relevance of its collections and one of the largest and most biodiversity rich in Italy.

Its surface area is nearly 12 hectares in which approximately 9000 species are present with a total of almost 25,000 specimens, displayed according to systematic, ecological or ethnobotanical criteria.

The Naples Botanical Garden carries out a variety of research, educational, technical and cultural activities, which contribute in making one of the leading scientific institutions in Southern Italy.

Its main functions are:

- Conservation and growth of the living collections
- Fundamental research in various areas of plant biology

- Applied research on the plants of economic importance
- Conservation of plant diversity in danger of extinction
- Teaching of botany
- Environmental education
- Public engagement, aiming to spread environmentalist culture among people to protect wildlife for our children’s future

One interpretation has been the building of a particular “Sensory Area“, devoted to blind people, schools, family groups and individuals. In these area plants particularly interesting for their smell and their shape have been collected, so people can touch and smell and to give them the opportunity to enjoy a “sensory” tour. Moreover, other plants have been selected for their flashy flowers to introduce the concept of “Chromotherapy” and its positive effect on general health.

Examples are *Salvia glutinosa* (glutinous sage), a sticky plant whose leaves are covered by white hairs, *Astrophytum myriostigma* (bishop’s cap cactus), a succulent plant without sharp thorns, *Lithops* sp. (living stones) and *Equisetum arvense* (common horsetail) whose stems are rough.

Plants have been equipped with Braille labels and provided with QR Codes, so people can use their smartphone to receive information about the area and the cultivated species.

Additional author: *Bruno Menale / Department of Biology, University of Naples Federico II*

60 / Exhibitions for all senses – innovative educational methods and the issue of accessibility of botanical gardens to the general public including visitors with special needs

Eva Novozámská / *Prague Botanical Garden*)

Prague Botanical Garden (PBG) has been addressing the issue of accessibility of the garden to visitors with specific needs since 1996.

At present, PBG has a comprehensive system of services and educational activities for visitors with special needs. This includes:

- Discreet navigational and information system (the outdoor expositions of PBG)
- Regular staff training for work with visitors with special needs (Certification of the Czech Red Cross)
- Interactive educational activities focused on perception by all senses (Exhibitions for all senses, Scent Trail, Haptic collection of natural items)

More than twenty years of experience with the organisation of exhibitions for all senses resulted in the formulation of generally valid principles for their realisation. From 1996 to now, 22 exhibitions for all senses have been held. The method of perception of nature by all senses is enriching, entertaining and in the long run it reinforces gained knowledge. For visitors there is not only a professionally-trained guide, but also a professionally-prepared audio guide. The exhibition is designed for the general public and brings visitors many

insights and new experiences, regardless of their potential handicap. We cooperate with specialised institutions working with clients with special needs and with other professional and cultural institutions.

An international project “Botanical Garden: COME IN! INSTALL! COM IN! WEJDŹ! GYERE BE!” has taken place in PBG since 2016, with the support of the European Union under the Erasmus+ grant program. This is in collaboration with Göteborgs botaniska trädgård (Sweden), Ogród Botaniczny Uniwersytetu im. Adama Mickiewicza w Poznaniu (Poland) and Magyar Arborétumok és Botanikus kertek Szövetsége (Hungary). The main event of the project is the International Conference at the Botanical Garden of the Adam Mickiewicz University in Poznań (June 2019, Poland), focusing on the accessibility of botanical gardens and on visitors with special needs.

Additional authors: *Jarmila Skružná, Amálie Balaščíková, Klára Lorencová, Tomáš Kebert, Klára Hrdá* / *Prague Botanical Garden*

61 / Building capacity for inclusion: creating spaces that welcome all audiences

Jennifer Wolff, Jennifer Smith

/ *Missouri Botanical Garden*

Public gardens, their venues, and curated outdoor spaces have a key role to play in serving diverse audiences. Providing multisensory environments that allow for sometimes rare contact with the natural world, botanical gardens are uniquely positioned to provide meaningful experiences

that can accommodate the varied needs of all visitors. But to be truly inviting requires an institutional commitment to planning for inclusive experiences for everyone who visits. This includes training staff to be mindful of the diversity of garden visitors, creating spaces that allow physical access for all, and programming that is inclusive and when appropriate, serves the needs of specific audiences.

This session focuses on many facets of how gardens can work to create spaces for all audiences, from designing with intent to learning from missed opportunities and taking action to improve. We will discuss case studies in inclusive design of physical space and various programs that have been designed to welcome and engage diverse audiences in nature-rich experiential learning. We will share highlights of our trainings strategies that have equipped and empowered our staff to work with all audiences as well as allow session attendees to participate in a training exercise. Session participants will have the opportunity to share successes and challenges with creating inclusive experiences and spaces at their own gardens. After this session, colleagues will be equipped with tools and strategies for addressing inclusion challenges in their gardens. We hope this session will empower others to put visitors first and be mindful of diverse audiences in the planning of new spaces, making improvements in existing spaces, and throughout the development, delivery and assessment of programs and educational experiences.

/ Measuring impact

62 / Collective impact in communities: botanic gardens as hubs

Sheila Voss / Missouri Botanical Garden

In cities and regions around the world, botanic gardens are stepping up as energizing, momentum-building forces of nature. More specifically, botanic gardens are serving as critically needed conveners, connectors and community hubs for achieving collective impact.

The reasons why are as diverse as the communities these gardens serve, but the common denominators are the gardens themselves. The nature-centric mission of gardens, combined with their expertise in the fields of horticulture, education, plant science and sustainability, makes them well-positioned and equipped to bring diverse community stakeholders together for common purpose and shared goals. In this World Cafe experience, Missouri Botanical Garden educators will share examples of collective impact work, including strategies, processes, methods, and metrics, made possible by its BiodiverseCitySTL initiative, a growing network of 100+ organizations (non-profit environmental groups, cultural institutions, government agencies, cities and towns, businesses, schools, universities, faith-based groups, and neighborhoods) working together to transform urban, suburban, and rural

communities into nature-rich, ecologically functional, thriving places for all. Specifically, four (4) collective impact opportunities will be explored in-depth: 1.) Promoting a culture of active, outdoor, nature-rich living among people of all ages, backgrounds, and abilities; 2.) Citizen science focused on local biodiversity; 3.) Teen engagement in environmental stewardship and leadership; and 4.) Conservation and ecological restoration of local lands and waters. Participants will have the opportunity to share the unique capacities and interests of their respective gardens and communities, learn how the power of partnership can expand and build upon those capacities, and how gardens themselves can help maintain and sustain momentum and engagement around long-term, multi-year visions and goals.

Additional author: *Betsy Crites / Missouri Botanical Gardens*

63 / Role of botanic gardens in conservation of plant resources and revenue generation

Aliyu Ahmad Nuhu / Kano Botanic Garden

The conservation of plant diversity is very critical for sustainable development. Botanic gardens play a key role as centres of conservation. Botanic gardens are well-positioned to educate the public on conservation related issues. These issues are presently considered as one of the biggest challenges faced by mankind. Responding to and alleviating the impact of global

environmental changes therefore becomes a collective responsibility.

This study looks at the key roles played by botanic gardens in the conservation of plant resources. In addition, we also elaborate on various revenue generation avenues for botanic gardens as a means of sustainability. Botanic gardens in developing countries are increasingly taking up their responsibilities; a case study of Getso Botanic Garden and Kano Botanic Garden are considered in this paper. Their activities include programmes for teachers, students and the general public. The programmes include seminars, workshops and talks covering different subjects like plants in ethnomedicine, biodiversity, global warming and so on.

The gardens also organise training workshops for teachers' professional development and curriculum-based educational programmes. Botanic gardens need to plan carefully for successful fundraising. The search for funding is a difficult task, which requires strategies, plans, determination and persistence. Innovative strategies for revenue generation are discussed here.

Additional author: *Fatima Batul Mukhtar / Kano Botanical Garden*

64 / Advancing University of Ibadan Botanical Gardens

Taiye R. Fasola / Director, University of Ibadan Botanical Gardens

The University of Ibadan Botanical Gardens, established in 1948, was mainly for Botanical

Teaching and Research. Alongside this was the conservation of plant diversity by raising plant seedlings and promoting planting of trees. As protected green area, the Gardens serve to promote biodiversity and recreation. There are arboretum, ornamental, nursery, rock, rose and water and bog garden sections among others.

Detailed descriptions of what each section entails will be covered.

In recent times, additional changes have been effected e.g. people use the Botanical Gardens for social engagements, retreats and excursions. In light of the expanding scope of services being rendered to the public, the children's section was introduced so as to encourage them to take in the culture of conserving plants. Lately,

the medicinal Garden has been introduced, which affords people the opportunity to learn about plant uses. Some of the commonly used medicinal plants shall be discussed.

Many of the social activities take place in the open field. In order to provide more facilities for recreation in the Gardens, six gazebos and a small hall were built. General services rendered by the Gardens include: space for retreats, weddings and other social engagements; landscaping and horticultural promotion; supply of seedlings and ornamentals; exciting Picnics at the Gazebos; bouquet and wreath making; educational visits; field experience on medicinal plants etc. and a mini hall for seminars.

How garden visitations have enhanced ideas, innovations and great development will be discussed.

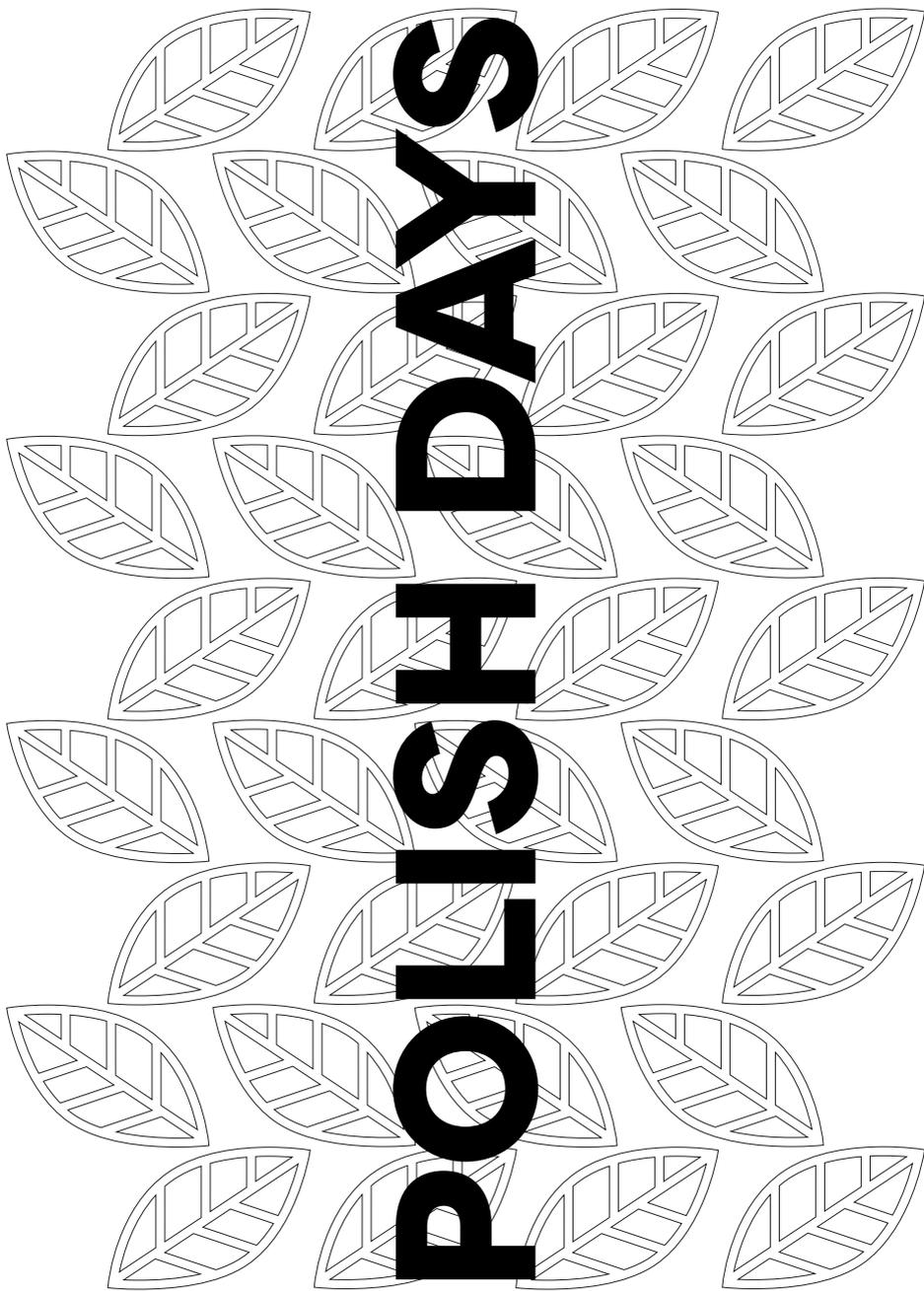
65 / A modified two-major environmental value scale presents a better predictability for Chinese children's environmental value than the new ecological paradigm scale

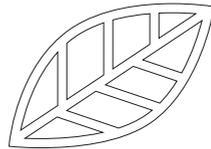
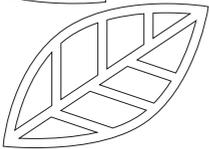
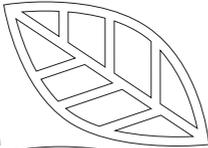
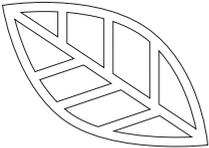
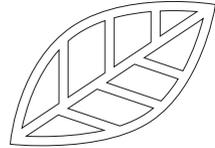
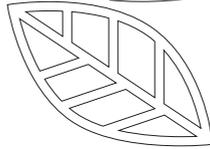
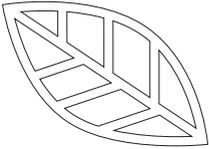
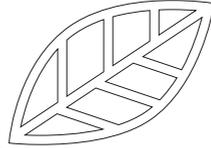
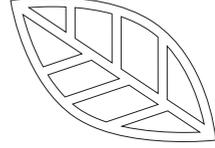
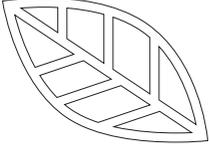
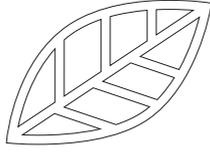
Wanlu Liu / *Xishuangbanna Tropical Botanical Garden, Chinese Academy of Science*

The New Ecological Paradigm scale (NEP) has been widely used worldwide, as well as in China, to predict people's environmental value. However, criticisms have been raised around NEP due to its one-dimensional structure and limited ability to predict pro-environmental behaviour (PEB). The Two-Major Environmental Value scale (2-MEV), which considers the environmental value in two dimensions, may compensate for these elements, although empirical studies are lacking.

In this study, we developed a modified version of the 2-MEV scale and used that to question 464 students aged 9 to 12 years in Chongqing, China. The results show a good internal consistency and an acceptable level of test-retest reliability for the 2-MEV. Confirmatory factor analysis also confirmed the two higher order factor structure. Furthermore, the 2-MEV scale performed significantly better in predicting children's environmental values in two different aspects – preservation (PRE) and utilisation (UT), and with higher statistical power to predict PEB, comparing to NEP scale.

POLISH DAYS





13.09

Czwartek

8:00 – 17:30

Rejestracja uczestników

Budynek kongresowy: Wydział Biologii UW
ul. Miecznikowa 1

8:00

Transport autobusowy do budynku

kongresowego dla osób zakwaterowanych
w hotelach Atos/Portos/Aramis
ul. Mangalia 3b

9:00 - 10:30

Sesja plenarna

Uroczyste obchody
dwusetlecia Ogrodu
Botanicznego Uniwersytetu
Warszawskiego – część 1

Sala: Główna Sala Audytoryjna 9B

Prowadzenie: Maria Ciemerych-Litwinienko
/ Wydział Biologii UW

Limit: Bez ograniczeń

Wystąpienia:

Hanna Werblan-Jakubiec – Kierownik Ogrodu
Botanicznego UW, **prof. Marcin Pałys** – Rektor
Uniwersytetu Warszawskiego, **prof. Agnieszka
Mostowska** – Dziekan Wydziału Biologii UW,

Paweł Kojs – Prezes Zarządu Rady Ogrodów
Botanicznych i Arboretów w Polsce

Prezentacje:

Hanna Werblan-Jakubiec, Marcin Zych,

Iwa Kołodziejska / Ogród Botaniczny
Uniwersytetu Warszawskiego oraz

Michael A. Slawinski / Memorial University,
St. John's, NL Kanada

Uroczysta sesja będzie zawierać krótkie
prezentacje na temat historii i obecnego kształtu
Ogrodu (**dr Hanna Werblan-Jakubiec**, Dyrektor
OBUW), prowadzonych badań naukowych
(**dr hab. Marcin Zych**) oraz działalności
edukacyjnej (**Iwa Kołodziejska**). Gościem
specjalnym będzie profesor **Michael A. Slawinski**
(Memorial University, St. John's, NL CANADA),
potomek pierwszego dyrektora Ogrodu, który
wygłosi wystąpienie pt. „Michał Szubert
i siedem pokoleń jego rodziny zakorzenionych
w naukach przyrodniczych”

10:30 – 11:00

Przerwa kawowa

11:00- 12:30

Sesja plenarna

Uroczyste obchody dwusetlecia Ogrodu Botanicznego Uniwersytetu Warszawskiego – część 2

Sala: *Główna Sala Audytorijna 9B***Prowadzenie:** *Marcin Zych**/ Ogród Botaniczny UW***Limit:** *Bez ograniczeń***Wręczenie medali** „*Za zasługi dla Ogrodu Botanicznego Uniwersytetu Warszawskiego*”.**Prezentacja książki** „*W królestwie roślin.*

200 lat Ogrodu Botanicznego Uniwersytetu

Warszawskiego”; *Małgorzata Kowalczyk**/ historyk sztuki, warsawianistka,**współautorka książki***Prezentacja okolicznościowego znaczka**

wydanego przez Pocztpę Polską.

Krótkie okolicznościowe wystąpienia

zaproszonych gości.

Warsztaty

Edukacja wspólnie tworzona, czyli bardziej angażująca i ciekawsza? Warsztaty o ko-kreacji.

Sala: *301A***Prowadzenie:** *Iwa Kołodziejska, Izabella Mier**/ Ogród Botaniczny Uniwersytetu Warszawskiego***Limit:** *20 osób*

W wielu instytucjach – muzeach, ogrodach botanicznych, różnego rodzaju placówkach edukacyjnych odchodzi się od podawania wiedzy

„na tacy” i zgodnie ze z góry założonym planem.

Ko-kreacja zakłada współtworzenie samego przekazu, jak i jego formy z zainteresowanymi grupami. Wiąże się to między innymi z poznaniem pytań, które nurtują zwiedzających np. ogród botaniczny, i wspólnym stworzeniem form przekazu wiedzy, które najbardziej odpowiadają danej grupie.

Podczas warsztatów odpowiemy na różne pytania np.: po co w ogóle ko-kreować? Czy jest to niebezpieczne dla instytucji i obniża jakość merytoryczną przekazu? Czy można się dowiedzieć czegoś nowego od partnerów ko-kreacyjnych? Kto może być partnerem ko-kreacji? Pokażemy też praktyczne narzędzia, które można wykorzystać pracując z różnorodnymi partnerami – organizacjami, instytucjami, pracownikami ogrodu, różnymi grupami zwiedzających, czy sąsiadami ogrodu. Opowiemy o naszych doświadczeniach współpracy w projekcie „Wielki Piknik: Wielkie Pytania – Angażowanie społeczeństwa w Odpowiedzialne Badania i Innowacje (RRI) w zakresie bezpieczeństwa żywnościowego”. Wspólnie postaramy się odpowiedzieć na pytanie czy ko-kreacja może być narzędziem przydatnym w codziennej pracy ogrodów botanicznych i jak może na nią wpłynąć?

12:30

Zdjęcie grupowe uczestników kongresu i uroczystości dwusetlecia Ogrodu.

*Zbiórka przed wejściem do budynku**Wydziatu Biologii.*

12:45 – 14:00

Lunch

14:00 – 15:30

Dyskusja panelowa**Sesja Polska 1****Sala:** 103B**Prowadzenie:** *Piotr Banaszczak**/ Arboretum SGGW w Rogowie***Limit:** 100

Prezentacja 1: *Działania edukacyjne Hampstead Garden Trust na rzecz ochrony dziedzictwa urbanistyczno-krajobrazowego ogrodowego przedmieścia w Hampstead*

Edyta Barucka / *niezależna badaczka*

Konieczność obecności przyrody w mieście została po raz pierwszy wyartykułowana z całą mocą przez przedstawicieli ruchu miast ogrodów, który narodził się na początku XX wieku na Wyspach Brytyjskich i silnie zaważył na nowoczesnym myśleniu o roli zieleni w mieście w Europie oraz poza jej granicami. Pierwsze dwa założenia wybudowane zgodnie z zasadą rozluźnionej gęstości zabudowy na rzecz przyrody i otwartych przestrzeni – miasto ogród Letchworth oraz przedmieście ogrodowe Hampstead Garden Suburb – stały się wzorem dla licznych podobnych rozwiązań w okresie międzywojennym i ważną inspiracją dla kształtowania architektury krajobrazu, także na ziemiach polskich. Po ponad 100 latach Hampstead Garden Suburb

jest jednym z najbardziej cenionych założeń rezydencjonalnych w Londynie, w dużej mierze dzięki konsekwentnym wysiłkom konserwatorskim, prawnym i edukacyjnym na rzecz zachowania jego unikalnej spuścizny urbanistyczno-architektonicznej oraz przyrodniczo-krajobrazowej.

Celem referatu jest prezentacja działań edukacyjnych prowadzonych na pierwszym przedmieściu ogrodowym przez powołany w 1974 roku Hampstead Garden Suburb Trust (HGST). Działania te przyjmują różnorodne formy – począwszy od prowadzonej na bieżąco strony internetowej, wykładów i spacerów z przewodnikiem, po publikację modelowego poradnika dla mieszkańców, *Hampstead Garden Suburb Conservation Area. Design Guidance*. Wśród wykładów poczesne miejsce zajmuje coroczny “Christmas Lecture” w okresie świąt Bożego Narodzenia, związany z historią przedmieścia, postaciami architektów, architektów krajobrazu lub bieżącą konserwacją. Ważną rolę edukacyjną odgrywają spacerory z przewodnikiem przeznaczone dla różnych grup: miejscowej młodzieży szkolnej, studentów architektury, mieszkańców lub profesjonalistów, w tym spacerory architektoniczne, które są częścią miejscowego Tygodnia Proms, festiwalu muzyki klasycznej. W szerokim spektrum działań edukacyjnych prowadzonych dla liczącego niewiele ponad 20 000 mieszkańców przedmieścia, nie sposób przecenić wagi publikacji o charakterze poradników: poza wspomnianym wyżej

Design Guidance, w którym zestawiono przykłady dobrych i złych praktyk konserwacji architektury i ogrodów, HGST wydało również poradnik z zaleceniami dotyczącymi opieki nad ogródkami przeddomowymi jako częścią przestrzeni publicznej. Działania edukacyjne prowadzone przez HGST można uznać za modelowe dla holistycznego podejścia do kształtowania właściwego rozumienia relacji pomiędzy architekturą i krajobrazem oraz dbałości o prawdopodobnie jeden z najbardziej udanych eksperymentów obecności przyrody w mieście, jakim było przedmieście ogrodowe w Hampstead.

Prezentacja 2: *Spółeczność buduje ogród – jak tworzyć przestrzeń, za którą odpowiada społeczność?*

Ślawomir Sendzielski / Zarząd

Zieleni m. st. Warszawy

Czym jest ogród społecznościowy? Czym jest przestrzeń, która pozwala na rozwój społeczności i kto tę przestrzeń tworzy?

Kto tworzy społeczność, która zmienia przestrzeń? Tak jak wiele jest definicji ogrodów społecznościowych, tak równie dużo jest takich ogrodów na całym świecie, które wymykają się jakiegokolwiek definicji. Uprawa ziemi, tworzenie zielonych enklaw, społeczne gospodarowanie pozostawionymi samym sobie przestrzeniami było i nadal zdarza się, że jest formą oporu, przeciwstawiania się woli zarządcy terenu, próbą zadbania o najbliższą okolicę, pokazania poczucia odpowiedzialności za miasto, w którym żyjemy, zadbania o obecnych i przyszłych

mieszkańców. Dzięki uporowi i samoorganizacji mieszkańców, dużym wysiłkiem powstają zielone wyrwy w betonowych przestrzeniach miasta, spajają podzielone płotami przestrzenie ogrodów działkowych, animują zapomniane fragmenty terenów zieleni, dając przestrzeń dla spotkań, współpracy i wzajemnego poznania. Społeczności zarządzające przestrzenią wypracowują reguły uczestniczenia w tworzonych przestrzeniach. Szkieletem dla działania ogrodu są wartości ważne dla każdej z osób budujących przestrzeń. Rozmowa o wartościach skutkuje wypracowaniem zasad na jakich funkcjonuje przestrzeń, sposobem podejmowania decyzji o wyglądzie przestrzeni, o tym jakie reguły towarzyszą jej tworzeniu. Tytuł wykładu sugeruje, że przestrzeń przyszłego ogrodu musi być wcześniej stworzona i przygotowana. A może jest wręcz przeciwnie? Czy rola władarzy, zarządcy terenu nie sprowadza się do wsłuchiwania się w głos społeczności tworzącej tę przestrzeń? Co zrobić by ułatwić zbudowanie i funkcjonowanie grup ogrodniczek i ogrodników? Czy miejsce to wszystko co potrzebne by nawiązywały się kontakty i zacieśniały więzy społeczne?

Prezentacja 3: *Akademia różnorodności w Ogrodzie Botanicznym w Łodzi*

Dorota Mańkowska / Ogród Botaniczny w Łodzi

“Akademia Różnorodności” to najnowszy projekt edukacyjny Ogródu Botanicznego w Łodzi i jednocześnie termin, który

w najbardziej odpowiedni sposób tłumaczy wielkie zróżnicowanie działań edukacyjnych prowadzonych przez Ogród przez ostatnie 45 lat jego istnienia. Jako iż Ogród Botaniczny w Łodzi jest ogrodem miejskim, edukacja zawsze była jednym z najważniejszych jego celów. Począwszy od lat 70. XX wieku na terenie Ogrodu Botanicznego organizowano liczne wystawy przyrodnicze, wykłady, warsztaty i wycieczki terenowe. W 2001 r. Ogród Botaniczny w Łodzi został odznaczony Medalem Bolesława Hryniewieckiego przez Polskie Towarzystwo Botaniczne, w dowód uznania dla upowszechniania wiedzy botanicznej. Obecnie Ogród Botaniczny w Łodzi nadal poszerza swoją ofertę edukacyjną

m.in. o:

- siedem ścieżek dydaktycznych umieszczonych w Ogrodzie Botanicznym, z których najciekawsze to: "Natura w czasoprzestrzeni" z sześcioma zegarami słonecznymi, wyjaśniającymi interakcje między przyrodą ożywioną i nieożywioną (takie jak np. następstwo pór roku) lub "Zakochaj się w różnorodności biologicznej" z dziesięcioma dźwiękowymi ławkami, na których zwiedzający mogą przysiąść i posłuchać o różnorodności biologicznej w województwie łódzkim.
- dwanaście warsztatów botanicznych, na których dzieci i młodzież poznają wartości użytkowe roślin i sposób otrzymywania surowców takich jak mąka, olej lub barwnik roślinny. Warsztaty te odbywają się na terenie

"muzeum roślin dawnych" z kolekcją drzew owocowych, roślin uprawnych i tradycyjnych domowych roślin ogrodniczych.

- "Akademia Różnorodności", która przeznaczona jest dla dorosłych i całych rodzin, z najbardziej popularnymi warsztatami: na temat ziołolecznictwa "Ziołowe Czwartki", zagadnień hydrobiologicznych pt. „Co żyje w stawie?”, a także wycieczkami entomologicznymi pt. "Łódzkie spotkania z ważkami".

Prezentacja 4: Festiwal Ogrodowy w Arboretum w Bolestraszcach

Narcyz Piórecki / Arboretum i Zakład Fizjografii w Bolestraszcach

W 2011 roku na terenie Arboretum w Bolestraszcach po raz pierwszy odbył się Festiwal Ogrodowy, który jest wydarzeniem kulturalnym o charakterze unikalnym nie tylko w skali Polski, ale również Europy. Festiwal ogrodowy nawiązuje do największych wydarzeń tego typu organizowanych w Londynie – Chelsea Flower Show i festiwalu ogrodów we Francji – Chaumont-sur-Loire. Jego celem jest przedstawienie najnowszych trendów w współczesnej sztuce ogrodowej i działań artystycznych z pogranicza sztuki i projektowania nowych przestrzeni ogrodowych. Pomysłodawcą i kuratorem I Festiwalu Ogrodowego był prof. dr hab. Jan Rylke. Usytuowanie ogrodów pokazowych zaprojektował dr Narcyz Piórecki. Rozmieszczenie i rozplanowanie ogrodów I Festiwalu powstało w ramach pracy inżynierskiej mgr inż. Anny

Wilczyńskiej. Festiwal jest organizowany we współpracy z pedagogami, wykładowcami uczelni wyższych, m.in. z Szkoły Głównej Gospodarstwa Wiejskiego w Warszawie – prof. Jan Rylke, dr hab. Janusz Skalski, dr hab. inż. Beata Gawryszewska, dr inż. Izabela Mysza-Stapór; Akademii Sztuk Pięknych w Łodzi – prof. dr hab. Marek Sak; Akademii Sztuk Pięknych w Krakowie – prof. dr hab. Lilla Kulka; Uniwersytetu Artystycznego w Poznaniu – prof. dr hab. Piotr Szwiec; Politechniki Krakowskiej – prof. dr hab. inż. arch. Wojciech Kosiński, Uniwersytetu Marii Curie-Skłodowskiej w Lublinie – prof. dr hab. Anna Waszczuk, Katolickiego Uniwersytetu Lubelskiego – mgr inż. Wojciech Januszczak. Do udziału w projekcie zapraszani są także studenci m.in. z Uniwersytetu Rzeszowskiego, Państwowej Wyższej Szkoły Zawodowej w Tarnowie pod kierunkiem artysty plastyka mgr Stanisława Chmiela i Państwowej Wyższej Szkoły Zawodowej w Krośnie. Uczestnikami są także uczniowie, m.in. z II Liceum Ogólnokształcącego w Przemyślu, Zespołu Szkół w Wyszatcach, Technikum Architektury Krajobrazu w Zespole Szkół Ekonomicznych w Przemyślu. Do udziału w projekcie zapraszani są artyści plastycy, m.in.: mgr Elżbieta Piórecka, Stanisław Dziubak, mgr Aleksandra Pawlik-Świerż, mgr Maria Świerż, mgr Stanisława Zacharko-Łagowska i architekci krajobrazu, m.in.: mgr inż. Joanna Patrycja Korczak z zespołem Pracownia Architektury Krajobrazu Zielony Zakątek; mgr Irena

Pelczyńska IProjekt; dr inż. Krzysztof Herman z zespołem Kolektyw Parque-no; mgr inż. Wojciech Januszczak z zespołem Garden Concept. Uczestnikami Festiwalu są osoby, instytucje zajmujące się profesjonalnym projektowaniem ogrodów, uczelnie kształcące w zakresie sztuk pięknych, architektury, architektury krajobrazu, ogrodnictwa ozdobnego z Polski i krajów sąsiadujących z Podkarpaciem. Teren Festiwalu został ulokowany na niwie dolnej Arboretum w bezpośrednim sąsiedztwie parkingu i głównego wejścia do ogrodu. W ciągu ośmiu lat działalności Festiwalu, w wolnych przestrzeniach ekspozycyjnych lub otoczonych płotami z żywej wikliny o średnicy 12 lub 15 m, wykonanych zostało ponad sto tematycznych instalacji. Na terenie ogrodów festiwalowych znajdują się także powstała w 2014 roku część astronomiczna, na którą składają się: kwiatowy zegar słoneczny, układ planetarny wykonany w celach dydaktycznych z kompozycji roślinnych oraz platforma widokowa.

Warsztaty

/ podwójna sesja,
do 17:30 z przerwą na kawę
**Fotosynteza – łatwy
czy trudny temat?**

Sala: 55A

Prowadzenie: *Elżbieta Turek*

/ *Centrum Nauki Kopernik*

Limit: 20 osób

Fotosynteza wydaje się być tematem dobrze znanym ale czy jest rzeczywiście dobrze

zrozumianym zjawiskiem? Jak można w łatwy sposób pokazać ten proces szerokiej publiczności, a zwłaszcza dzieciom i młodzieży. Podczas naszych warsztatów samodzielnie wykonasz szereg eksperymentów: zbadasz intensywność fotosyntezy w zależności od różnych warunków świetlnych, wyizolujesz barwniki fotosyntetyczne i sprawdzisz ich właściwości – niektóre z nich mogą Cię nawet zaskoczyć! Po naszej sesji eksperymentalnej samodzielnie przygotujesz swoje własne warsztaty o fotosyntezie. Podczas naszych warsztatów będziemy pracowali metodą „design thinking”.

15:30 – 16:00

Przerwa kawowa

16:00 – 17:30

Wykład Plenarny **Sesja Polska 2**

Sala: 103B

Prowadzenie: Marcin Chrzanoski / Wydział
Biologii UW

Limit: 100

Prezentacja 1: Rozwijanie umiejętności czyli jak wykorzystać potencjał ogrodów botanicznych w edukacji przyrodniczej?

Urszula Poziomek, Elżbieta Barbara Ostrowska
/ Instytut Badań Edukacyjnych

Zgodnie z zaleceniami Organizacji

Współpracy Gospodarczej i Rozwoju (OECD)

i Komisji Europejskiej (EC) kształtowanie i rozwijanie umiejętności stanowi podstawowy cel działań edukacyjnych. Obie te instytucje zakładają niezbywalne oparcie umiejętności na wiedzy (wiadomościach i ich rozumieniu) a więc przyjmują integracyjne rozumienie pojęcia umiejętności oraz zakładają priorytet umiejętności wobec wiedzy. Opanowanie określonych umiejętności jest warunkiem zdolności człowieka do uczenia się przez całe życie.

Zalecenia te dotyczą również edukacji przyrodniczej. Instytut Badań Edukacyjnych od roku 2010 zrealizował wiele badań, poświęconych między innymi kształtowaniu i rozwijaniu umiejętności uczniów. Część z nich poświęcona była rozwijaniu umiejętności myślenia naukowego i posługiwania się metodą badawczą w zdobywaniu wiedzy przyrodniczej. Badania dotyczyły zarówno form i metod prowadzenia szkolnych zajęć przyrodniczych (Diagnoza potrzeb nauczycieli przyrody w szkole podstawowej w zakresie wsparcia prowadzenia lekcji metodą badawczą, Licz się nauczyciele. Raport o stanie edukacji 2013) jak i efektów kształcenia, diagnozowanych standaryzowanymi narzędziami badawczymi (Laboratorium myślenia). Badanie Dobre praktyki w przyrodniczej edukacji pozaformalnej w całości poświęcone było kształceniem umiejętności uczniów określonych w podstawie programowej przedmiotów przyrodniczych na zajęciach w wybranych ośrodkach edukacji pozaformalnej. Wyniki tych badań pozwoliły na zdiagnozowanie

slabych stron przyrodniczej edukacji formalnej oraz mocnych stron edukacji pozaformalnej oraz sformułowanie rekomendacji dotyczących współpracy obu nurtów edukacji. Wnioski i rekomendacje zostały wykorzystane do opracowania konkretnych wskazówek dotyczących wyboru (dla nauczycieli) oraz przygotowania i prowadzenia (dla edukatorów) wartościowych, ubogających i cennych ofert dla szkół.

Prezentacja 2: *Ogród botaniczny organicznie*

Paweł Kojs / Polska Akademia Nauk

Ogród Botaniczny – Centrum Zachowania

Różnorodności Biologicznej w Powsinie;

Śląski Ogród Botaniczny w Mikołowie

Systemowość, procesualność, synergizm,

organizmalność, symbiotyzm to tylko niektóre

określenia, opisujące złożoność, z którą mamy do czynienia na wielu poziomach organizacji.

Nie dotyczy to jedynie systemów biologicznych,

ale coraz częściej systemów społecznych,

technologicznych, kulturowych czy też łączących

wszystkie powyższe: systemów przyrodniczo-społeczno-technologiczno-kulturowych (PSTK).

Im większa złożoność poszczególnych systemów,

czy też hybryd powstałych w wyniku

ich integracji, tym bardziej przypominają

one systemy organiczne. Organizmalność

jest bowiem adaptacyjną odpowiedzią systemu

na narastającą złożoność jego środowiska.

Złożoność środowiska wymusza coraz bardziej

precyzyjne reakcje adaptacyjne zależnych od

niego podsystemów. Nie inaczej jest w przypadku instytucji, takich jak ogrody botaniczne, funkcjonujących w dynamicznie zmieniającym się hybrydowym środowisku PSTK. Przyjmijmy, że ogród botaniczny jest organizmem. Jako organizm przechodzi ontogenezę, adaptuje się do zmieniających się warunków środowiska, początkowo przevažają procesy anaboliczne, następnie ustala się dynamiczna równowaga pomiędzy nim a środowiskiem PSTK, po czym zaczynają dominować procesy kataboliczne, prowadzące do dysfunkcji utrudniających adaptowanie się ogrodu botanicznego i w końcu doprowadzające do zakończenia jego działalności.

W takim ujęciu pracownicy ogrodu stanowią jego metabolizm i w oczywisty sposób decydują o adaptacyjnym potencjale ogrodu. W referacie tym postaram się odpowiedzieć na pytanie, jak organizacja pracy, merytoryczne przygotowanie pracowników oraz relacje w zespole ogrodu botanicznego mogą wpływać na jego zdolności adaptacyjne oraz jakie znaczenie w utrzymaniu jego funkcji ma inercja systemu wewnętrznego ogrodu i jego otoczenia. Wykorzystam do tego celu mikrobiomiczną definicję organizmu.

17:30

Transport *autobusowy do hoteli*

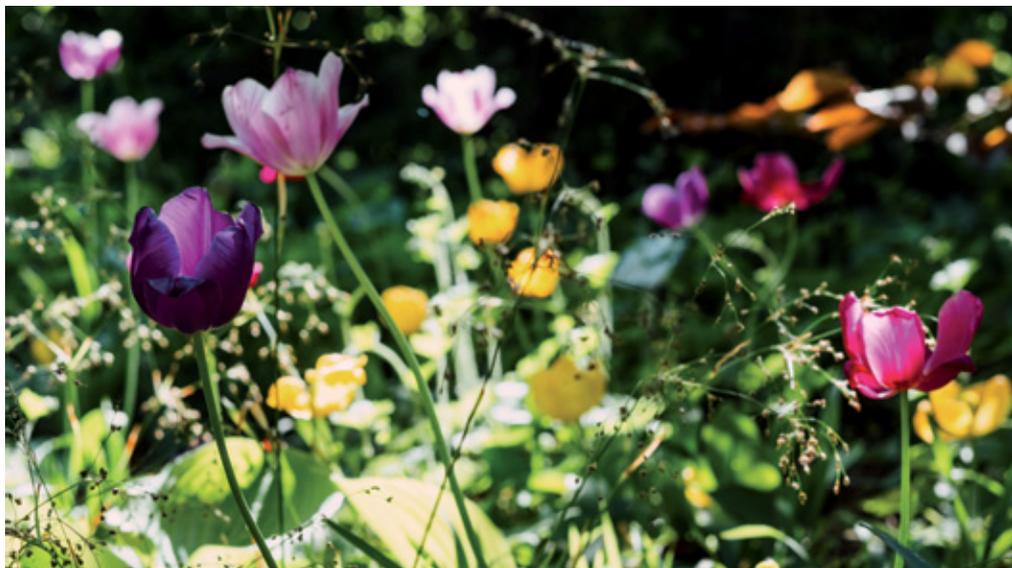
Atos/Portos/Aramis

ul. Mangalia 3b

18:45

Transport *autobusowy z hoteli*

Atos/Portos/Aramis na bankiet



19:30

Bankiet

Wydział Rzeźby Akademii

Sztuk Pięknych w Warszawie

Wybrzeże Kościuszkowskie 37/39

19:30

Powitalny drink

/ parter Wydziału Rzeźby ASP

Powitanie gości przez Kierownika Ogrodu Botanicznego Hannę Werblan-Jakubiec.

20:00

Koncert zespołu smyczkowego „Kameralna N-Harmonia”

Kameralna N-Harmonia jest ogólnopolską, kameralną orkiestrą smyczkową złożoną z uzdolnionych muzyków młodego pokolenia.

Składa się ze studentów oraz uczniów szkół II stopnia – członków czołowych orkiestr młodzieżowych zarówno polskich (Lutosławski Youth Orchestra, Polska Orkiestra Młodzieżowa LYO, Młoda Polska Filharmonia oraz International Lutosławski Youth Orchestra), jak i zagranicznych (European Campus Music Orchestra oraz International Regions Symphony Orchestra). Członkowie posiadają liczne osiągnięcia na konkursach krajowych, a także międzynarodowych jako soliści i kameraliści.

Skład:

I skrzypce:

Anna Toporkiewicz, Bartosz Czyżewski

II skrzypce:

Marcjanna Derentowicz, Wiktoria Detlaff

Altówki:

Kinga Wojdalska, Katarzyna Nowogrodzka

Wiolonczele:

Mateusz Błaszczyk, Maria Leszczyńska

Kontrabas:

Maciej Dobrzański

Goscinnie - Klarinet:

Piotr Thieu-Quang

Repertuar (30 minut):

Ottorino Respighi: *Antiche Danze ed Arie per Liute, suite nr 3, część I: Italiana*

Carl Maria von Weber: *Kwintet Klarnetowy*

B-dur op. 34, część I: Allegro

William Lloyd Webber: *Serenada na smyczki,*

części: Barcarolle – Romance – Elegy

Astor Piazzola: *Fuga y misterio*

(arr. na orkiestrę smyczkową)

/ aula Wydziału Rzeźby ASP II piętro



Wręczenie nagród za najciekawszy poster

Kongresu.

Otwarcie wystawy rzeźby prac

studentów i absolwentów Wydziału

Rzeźby ASP w Warszawie

20:45

Kolacja

/ foyer Wydziału Rzeźby ASP, II piętro

Podczas bankietu dodatkową atrakcją

będą mini-warsztaty „Ile Nóg?”

przygotowane przez Centrum Nauki Kopernik

(prowadzenie **Cezary Szmidke**)

Jednym z narzędzi najbardziej kojarzonych z naukowcami jest mikroskop. Wynaleziony w XVII wieku, dziś jest powszechnie dostępny. Tak powszechnie, że możemy go zbudować korzystając z naszych telefonów komórkowych! Z jego pomocą możemy obserwować obiekty mniejsze niż ziarno pieprzu, wśród nich małe skorupiaki – rozwielitki. W ślad za Karolem Linneuszem porównamy je z ich makroskopowymi kuzynami-stawonogami: owadami, pajęczakami i innymi „paskudami”.

14.09

Piątek

8:00 – 15:30

Rejestracja uczestników

Budynek kongresowy: Wydział Biologii UW
ul. Miecznikowa 1

8:00

Transport autobusowy do budynku

kongresowego dla osób zakwaterowanych
w hotelach Atos/Portos/Aramis (ul. Mangalia 3b)

9:00 – 10:00

Sala Audytoryjna 103B

Panel dyskusyjny

Sesja Polska 3

Prowadzenie: Justyna Wiland-Szymańska
/ Ogród Botaniczny Uniwersytetu Adama
Mickiewicza w Poznaniu

Prezentacja 1: Ogród Ginących Roślin Świata w Arboretum SGGW w Rogowie

Piotr Banaszczak / Arboretum SGGW w Rogowie
Ogród Ginących Roślin Świata to nowy
dział Arboretum SGGW w Rogowie łączący
edukację i ochronę *ex situ*. Powstał w 2017
roku w bezpośrednim sąsiedztwie alpinarium.
Obejmuje pawilon ogrodowy z ekspozycją

fragmentów pni niemal dwustu gatunków
drzew ściętych w Arboretum, pergolę
zbudowaną z 24 gatunków drewna, oczka
wodne z siedliskami roślin wodnych i bagiennych,
wzniesione rabaty okolone murkami oporowymi
z blachy Corten z kolekcjami roślin zielnych
i krzewów, nieduży amfiteatr i małą architekturę
ogrodową. Kolekcje roślinne powstałe
w ramach inwestycji uzupełniane są roślinami
pochodzącymi z uprawy własnej Arboretum
w ramach działalności statutowej.
Dział ten ma na celu przedstawienie złożoności
zagrożeń z jakimi zmagają się rośliny w różnych
częściach świata, a także zagadnień ochrony
różnorodności biologicznej na różnych
szczeblach – lokalnych, krajowych
i między państwowych i ogólnoświatowym.
Zanikanie gatunków i siedlisk mimo nagłaśniania
przez środowiska naukowe wciąż przybiera na
dynamice i osiąga poziom wręcz apokaliptyczny.
Zadaniem nowego działu jest między innymi
uświadamianie globalnej skali tego zjawiska
i wciąż przegrywania walki o ocalenie
różnorodności biologicznej na świecie.
Służą temu tablice edukacyjne umieszczone
w różnych miejscach Ogrodu ilustrujące
te zagadnienia, w tym tablica wykonana
z desek mahoniowca przedstawiająca założenia
konwencji CITES i zjawisko przemytu roślin,
etykiety z nazwami roślin oraz ich statusem
ochrony w różnych częściach świata. Całość
dopełnia nieduży amfiteatr będący miejscem
prowadzenia imprez edukacyjnych – Majówki
w Arboretum, czy też koncertów.

Prezentacja 2: Edukacja przyrodnicza w ogrodzie botaniczym UMCS jako most łączący pokolenia

Błażej Maciorowski / Ogród Botaniczny

Uniwersytetu Marii Curie-Skłodowskiej

Ogród Botaniczny jest jednostką naukowo-dydaktyczną Uniwersytetu Marii Curie-Skłodowskiej w Lublinie. Założony został w 1965 roku w zachodniej części miasta. Zajmuje ok. 22 ha malowniczego, bogato urzeźbionego terenu z fragmentem doliny rzeki Czechówki i naturalnymi, lessowymi wąwozami. Podzielony jest na tematyczne działy i kolekcje roślinne, w których zgromadzono prawie 7000 taksonów roślin pochodzących z całego świata.

W ostatnich latach celem przewodnim działań edukacyjnych podejmowanych w naszej jednostce jest aktywizacja i integracja różnych grup wiekowych. Wychodząc naprzeciw zadaniom stawianym współczesnym ogrodom botanicznym jak i oczekiwaniom społecznym,

Ogród podejmuje różnorodne działania:

- partnerstwo w programach dla rodzin wielodzietnych: „Ogólnopolska Karta Dużej Rodziny”, „Rodzina Trzy Plus”, seniorów: „Strefa 60+” oraz „Program Absolwent UMCS”, które daje nam możliwość dotarcia do szerszej grupy odbiorców;
- objęcie patronatem jednej z lokalnych szkół podstawowych;
- organizacja cyklu wakacyjnych warsztatów pod hasłem „Letnia Akademia Małego Przyrodnika”;

- udział w międzynarodowych i ogólnopolskich inicjatywach edukacyjno-kulturalnych tj. „Fascination of Plants Day”, „Noc Biologów”, „Noc Muzeów” i „Narodowe Czytanie”;
 - prowadzenie zajęć dla słuchaczy Uniwersytetu III Wieku oraz Uniwersytetu Dziecięcego UMCS;
 - tematyczne warsztaty florystyczne dla seniorów;
 - wspólne zajęcia dla seniorów i ich wnuków;
 - plenerowe wydarzenia cykliczne: „Majówka Rodzinna”, „Święto Pszczół”, „Wokół Zdrowia”;
 - skierowane do wszystkich grup wiekowych tematyczne konkursy m.in. plastyczne, literackie, fotograficzne;
 - comiesięczne, niedzielne spacery z przewodnikiem, o ściśle określonej tematyce połączone z poradami ogrodniczymi;
 - ścieżki edukacyjne: „Zobacz, poznaj i pomóż je chronić. Polskie rośliny chronione, rzadkie i zagrożone” oraz „Ścieżka zmysłów”;
 - warsztaty i zajęcia przygotowane dla grup z niepełnosprawnością intelektualną i ruchową;
 - czasowe wystawy o tematyce przyrodniczej.
- Cykliczne wydarzenia zyskały już stałych uczestników. Jednocześnie staramy się, aby każdy kolejny rok obfitował w ciekawe przedsięwzięcia i nowe formy edukacji, które będąc dobrym podłożem pod integrację międzypokoleniową, sprawiają, że nasz Ogród stale powiększa się o grono sympatyków w każdym wieku.

Współautorzy: *Monika Książek, Grażyna Szymczak, Mykhaylo Chernetskyu*

Prezentacja 3: *Ogród Roślin Leczniczych we Wrocławiu – nie tylko dla farmaceutów*

Adam Matkowski / *Ogród Botaniczny*

Roślin Leczniczych Uniwersytetu

Medycznego we Wrocławiu

Ogród Roślin Leczniczych Uniwersytetu

Medycznego we Wrocławiu powstał przed 1945 rokiem jako założenie ogrodowo-parkowe z botaniczną kolekcją roślin. Obecnie stanowi on obszerną bazę naukowo-dydaktyczną służącą zarówno pracownikom naukowym jak i studentom Wydziału Farmaceutycznego z Oddziałem Analityki Medycznej. Główne tematy badań w ramach studenckiego koła naukowego dotyczą fitochemii, bioaktywności oraz propagacji i aklimatyzacji roślin pochodzących z różnych stref klimatycznych jak również pozyskiwanych z hodowli *in vitro* prowadzonych w Pracowni Roślinnych Kultur Tkankowych. W toku realizacji programu studiów farmaceutycznych uczestnicy zapoznają się z żywymi okazami roślin i świeżymi surowcami farmaceutycznymi lokalnych i egzotycznych gatunków wykorzystywanych w ziołolecznictwie.

Rola edukacyjna OBRL nie ogranicza się do bezpośredniego kształcenia studentów Wydziału. W ramach współpracy z innymi uczelniami regionu, a także międzynarodowej, odbywają się na terenie Ogrodu praktyki dla studentów architektury krajobrazu, ogrodnictwa oraz pokrewnych kierunków. Wykonywane są także prace dyplomowe - licencjackie, inżynierskie, magisterskie, a nawet kilka

doktorskich, na przykład z ogrodnictwa – uprawy hydro- i aeroponicznej ziół leczniczych albo z entomologii – biologii błonkówek korzystających z bogactwa roślin nektarodajnych w Ogrodzie. Ogród jest także miejscem prowadzenia warsztatów dla szkół, na przykład z uprawy i rozpoznawania roślin aromatycznych, z ekologii pszczołowatych (we współpracy z organizacją pozarządową), ze znajomości roślin trujących. Jako miejsce położone na terenie mocno zurbanizowanym, blisko centrum życia studenckiego i budynków największych wrocławskich uczelni, a jednocześnie niedaleko Ogrodu Botanicznego Uniwersytetu Wrocławskiego, ZOO oraz przylegające do rozległych terenów parkowych o doskonałym skomunikowaniu z całym miastem, stanowi unikatowy obiekt o wysokiej i specyficznej różnorodności biologicznej, przyciągający nie tylko przedstawicieli *Homo sapiens* ale także inne zwierzęta dopełniające rolę w edukacji i popularyzacji wiedzy przyrodniczej.

11:00 – 12:30

Warsztaty

SezoNowość i jej rola w procesie edukacji

Sala: 301A

Prowadzenie: *Marianna Darzyńkiewicz-Wojcieszka* / *Ogród Botaniczny Uniwersytetu Warszawskiego*

Limit: 20 osób

Warsztaty opowiadające o tym dlaczego warto mówić o sezonowości w aspekcie

świadomości żywieniowej dzieci i młodzieży, i czy można to zrobić w Ogrodzie Botanicznym. „Jesteś tym co jesz”. Wiele osób myśli w ten sposób ale czy to motto przyświeca również młodemu pokoleniu? Co znajdziemy gdy zajrzemy do ich śniadaniówek? By odpowiedzieć na te pytania warto spotkać się z młodymi ludźmi i porozmawiać o tym w jaki sposób to robić tak by nas wysłuchano. Będzie to główne przesłanie tych warsztatów.

Przygotowując smakołyki z jesiennych owoców i warzyw, rozmawiając i smakując, zastanowimy się nad dostępnością owoców i warzyw w danych porach roku, pomówimy o drodze jaką musi pokonać produkt od wyprodukowania aż do momentu gdy dotrze do konsumenta, zastanowimy się nad tym w jaki sposób przekonać młode pokolenie do poszerzania swoich horyzontów żywieniowych, jak zachęcić ich do próbowania nowości i racjonalnego kupowania produktów a także jaka w tym rola szkoły, rodziców czy też Ogrodów Botanicznych.

Warsztaty

Ucząc się od drzew – edukacja w Ogrodzie Dendrologicznym w Przelewicach

Sala: 13D

Prowadzenie: *Katarzyna Misiak*
/ *Ogród Dendrologiczny Samorządowy*
Zakład Budżetowy w Przelewicach

Limit: 20 osób

Działalność edukacyjna Ogródu Dendrologicznego inspirowana jest dwoma pojęciami:

różnorodnością biologiczną i drzewem rozumianym jako żywy organizm istniejący w określonym środowisku i adaptującym się do niego.

Przyjęto, że o ile siłą przyrody jest różnorodność biologiczna, o tyle do skutecznego uczenia o niej niezbędna jest akceptacja różnorodności umysłowej jako siły człowieka. W praktyce oznacza to wypracowanie przez edukatorów postawy szacunku wobec przekonań, poglądów i zainteresowań osób edukowanych. Szacunek taki wyraża się przez umiejętność dostrzeżenia specyfiki danej grupy odbiorców, dostosowanie przekazywanych treści do potrzeb odbiorcy oraz zachowanie prawa edukatora do własnych poglądów i suwerennych decyzji i przyznanie tego prawa edukowanym.

Przyjmując drzewo za wzorzec edukator określa, jakie miejsce zajmuje i jaką rolę w Ogrodzie spełnia edukacja. Stara się stale zachować świadomość, że działalność edukacyjna nie istnieje jako odrębny byt, ale jest częścią większej całości i musi uwzględniać dobro całego „drzewa”, oraz że samo „drzewo” zmienia się z roku na rok i edukacja musi za tymi zmianami nadążyć. Zdaje sobie również sprawę, że Ogród nie istnieje w próżni. Tak jak drzewo funkcjonuje w określonej sieci zależności i z tego względu oferta edukacyjna musi być stale modyfikowana w oparciu o sygnał zwrotny od edukowanych oraz o potrzeby samego Ogródu. Dzięki sygnałom zwrotnym – rozmowom, zadawanym pytaniom, prośbom o przeprowadzenie konkretnych zajęć – ofertę w Przelewicach wzbogacano między

innymi o rękodzieło, gry strategiczne, ćwiczenia językowe, techniki malarskie, zadania matematyczne.

Żywy organizm nastawiony jest na celowość i skuteczność działań. Podobnie konkretne zajęcia i tematy sprawdzane są zawsze pod kątem spójności z ogółem działań Ogrodu. Przykładowo zajęcia rękodzielnicze zawsze weryfikowane są pod kątem skutecznego przekazania wiedzy botanicznej a dopiero w drugim rzędzie zwraca się uwagę na kwestie estetyczne, kształcenie sprawności manualnej itp.

Całość warsztatów będzie realizowana w formie działań praktycznych, które pozwolą uczestnikom na naszym przykładzie przemyśleć się w nowy sposób do własnych ofert edukacyjnych.

12:00 – 14:00

Lunch oraz Targowisko Wielkiego Pikniku

Big Picnic

Podczas lunchu zapraszamy na Targowisko Wielkiego Pikniku, na którym Partnerzy Projektu będą prezentować niektóre z działań i materiałów wystawienniczych opracowanych podczas projektu.

Big Picnic (Wielki Piknik) jest koordynowanym przez BGCI projektem, wspieranym przez europejski program Horyzont 2020. W projekcie uczestniczy 19 partnerów z 13 krajów świata (12 w Europie i 1 w Afryce). Big Picnic skupia opinię publiczną, naukowców, decydentów i przemysł, aby wspólnie stawić czoła globalnym

wyzwaniom związanym z bezpieczeństwem żywnościowym. Ogrody botaniczne, z pomocą innych partnerów, realizowały szereg wystaw i imprez z udziałem ludzi z różnych środowisk, aby stworzyć dialog i budować lepsze zrozumienie bezpieczeństwa żywnościowego. Nasze wspólne podejście ma na celu udzielenie głosu dorosłym i młodym ludziom, przekazywanie ich poglądów decydentom, dzielenie się pomysłami, zachęcanie do debaty na temat przyszłości naszej żywności i dążenie do odpowiedzialności w badaniach i innowacjach.

14:00 – 15:00

Ceremonia zamknięcia

Przewodniczący: Paul Smith / Botanic

Gardens Conservation International

Wręczenie nagród

Marsh Christian Awards

Słowa pożegnalne

Wystąpienia: Marcin Zych / Ogród Botaniczny

Uniwersytetu Warszawskiego, Liliana Derewnicka,

Helen Miller / Botanic Gardens Conservation

International

Przedstawiciele Ogrodu Botanicznego

Uniwersytetu Warszawskiego i BGCI

wspólnie zakończą 10. Międzynarodowy

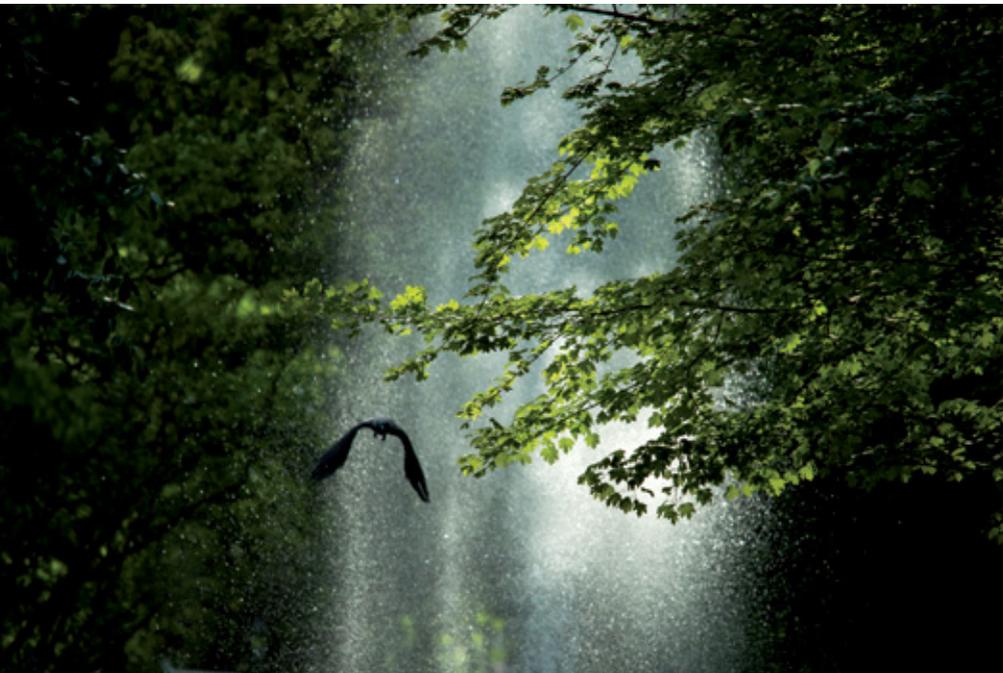
Kongres Edukacji w Ogrodach Botanicznych.

W tej sesji podkreśliły kluczowe tematy

i wiadomości z wydarzenia oraz przedstawimy

zdjęcia ukazujące wydarzenia, sesje, miejsca,

ludzi i rośliny, aby zastanowić się nad zakresem



działań, dyskusji i pomysłów, które miały miejsce w całym mijającym tygodniu.

15:00 – 15:30

Transport autobusowy z budynku

kongresowego do Ogrodu Botanicznego UW

15:30 – 17:00

**Zwiedzanie Ogrodu Botanicznego
oraz poznawanie jego sąsiadów**

/ Al. Ujazdowskie 4

Zapraszamy do uczestnictwa w wycieczkach z przewodnikiem. Do wyboru trzy rodzaje wycieczek oraz warsztaty:

Ogród Botaniczny Uniwersytetu Warszawskiego / wycieczka

Poznaj nasz Ogród Botaniczny i jego bogate zbiory z kuratorami i edukatorami z Ogrodu. Odkryj Różankę i Ogród Lecznicy. Zobacz unikatową kolekcję flory niżowej Polski i roślin zagrożonych, chronionych na mocy układu CITES. Pokażemy również nasze plenerowe przestrzenie edukacyjne: kuchnię plenerową i edukacyjny kompost. Odwiedź szklarnie, z których najstarsze zbudowane zostały pod panowaniem ostatniego króla Polski Stanisława Augusta Poniatowskiego i zawierają kolekcje sukulentów i roślin śródziemnomorskich.

Prowadzenie:

Joanna Bogdanowicz, Katarzyna Roguz,
Justyna Ryniewicz, Dorota Szubierajska
/ Ogród Botaniczny UW

Wycieczka prowadzona w języku polskim
oraz angielskim.

Park linowy w Arboretum Ogrodu Botanicznego / warsztaty

Uczestnicy będą mieli szansę wziąć udział w przejściu przez park linowy, co zaplanowane zostało jako element rozwoju osobistego i budowanie zespołu. Liny są zawieszono nisko nad ziemią, przez co przejście nie wymaga upręży, co jednak nie umniejsza wyzwaniu. Programy wykorzystujące parki linowe odgrywają ważną rolę w tak zwanej edukacji eksperymentalnej i edukacji na świeżym powietrzu. Jest to sposób na poznanie podejmowania decyzji, pewności siebie, pozytywnego podejmowania ryzyka, zaufania, współpracy i pracy zespołowej. Doświadczenie pokonywania przeszkód fizycznych i rozwiązywania problemów łatwo przełożyć na relacje interpersonalne, na przykład w szkole lub w pracy.

Prowadzenie:

Monika Babis / Pracownia Nauki i Przygody
Warsztaty prowadzone w języku angielskim.

Jazdów – Ogród Miejski Jazdów, Centrum Sztuki Współczesnej Zamek Ujazdowski i Inicjatywa Otwarty Jazdów / wycieczka

Centrum Sztuki Współczesnej Zamek Ujazdowski przekształcił swój park w projekt “Ogród Miejski Jazdów”. W tegorocznej edycji projektu zapraszamy do poznawania przyrody w środowisku miejskim wraz z artystami i botanikami. Ostatnie zmiany w prawie o ochronie przyrody w Polsce ożywiły debatę społeczną na temat odpowiedzialności za środowisko naturalne i nieuniknionej zależności człowieka od natury. Między innymi, wzbudziło to poważne kontrowersje dotyczące statusu drzew w miastach. Wycieczka przybliży nam komentarze artystów na temat debaty, opracowane we współpracy z biologami z Ogrodu Botanicznego Uniwersytetu Warszawskiego. Z zamku przeniesiemy się do sąsiedniego Jazdowa. Ta niewielka społeczność mieszkaniowa otoczona bogatymi ogrodami przetrwała dzięki interwencjom obywatelskim przeciwko rozwojowi budownictwa. To tutaj wiele warszawskich inicjatyw i organizacji pozarządowych rozwija się wśród mieszkańców Warszawy, wśród nich ogrody i centra kulturalne.

Prowadzenie:

Krystyna Jędrzejewska-Szmek
/ Ogród Botaniczny UW, Anna Czaban
/ CSW Zamek Ujazdowski, Maciej

Łebkowski / Otwarty Jazdów

Wycieczka prowadzona w języku angielskim.

Muzeum Łazienki Królewskie /wycieczka

Łazienki Królewskie były letnią rezydencją ostatniego króla Polski. Ten klasycystyczny zespół parkowo-pałacowy posiada spektakularne ogrody, podzielone na trzy części: królewski ogród, rozległy park krajobrazowy i modernistyczny ogród. Tutaj przyroda i kultura prawdziwie współistnieją: Muzeum organizuje liczne wydarzenia edukacyjne takie jak festiwale, wystawy i warsztaty, z których wiele koncentruje się na przyrodzie. Park jest wyjątkowym przykładem niezwykłego bogactwa biologicznego w centrum stolicy, a także siedliskiem wielu dzikich zwierząt. Na terenie znajdują się stawy połączone kanałami, a trawniki, łąki i drzewa pokrywają 80 hektarów.

Prowadzenie:

Tomasz Nadratowski / Muzeum

Łazienki Królewskie

*Wycieczka prowadzona w języku polskim,
z tłumaczeniem symultanicznym na język
angielski.*

17:00

Pożegnalne przyjęcie plenerowe

Zapraszamy do wspólnej zabawy pożegnalnej, której towarzyszyć będą dwa koncerty:

Hot Plasma Orchestra

Zespół Hot Plasma Orchestra gra muzykę w stylu „gypsy swing” – spopularyzowaną przez Django Reinhardta i jego Hot Club de France w latach trzydziestych.

Muzycy, o różnych profesjonalnych zainteresowaniach, od plazmy mikrofalowej po spektrometrię plazmową, spotykali się jako uczestnicy konferencji naukowych, dzieląc się radością z grania muzyki na żywo podczas wieczornych spotkań.

Niedawne koncerty, na których dołączyli do składu wokaliści, pozwoliły na liryczne rozszerzenie repertuaru.

Hot Plasma Orchestra

Waldemar Surosz – wokal

Agata Szumielewicz – wokal

Jarosław Grodowski – gitara cygańska

Edward Reszke – cygańskie skrzypce

Piotr Zegadło – gitara cygańska

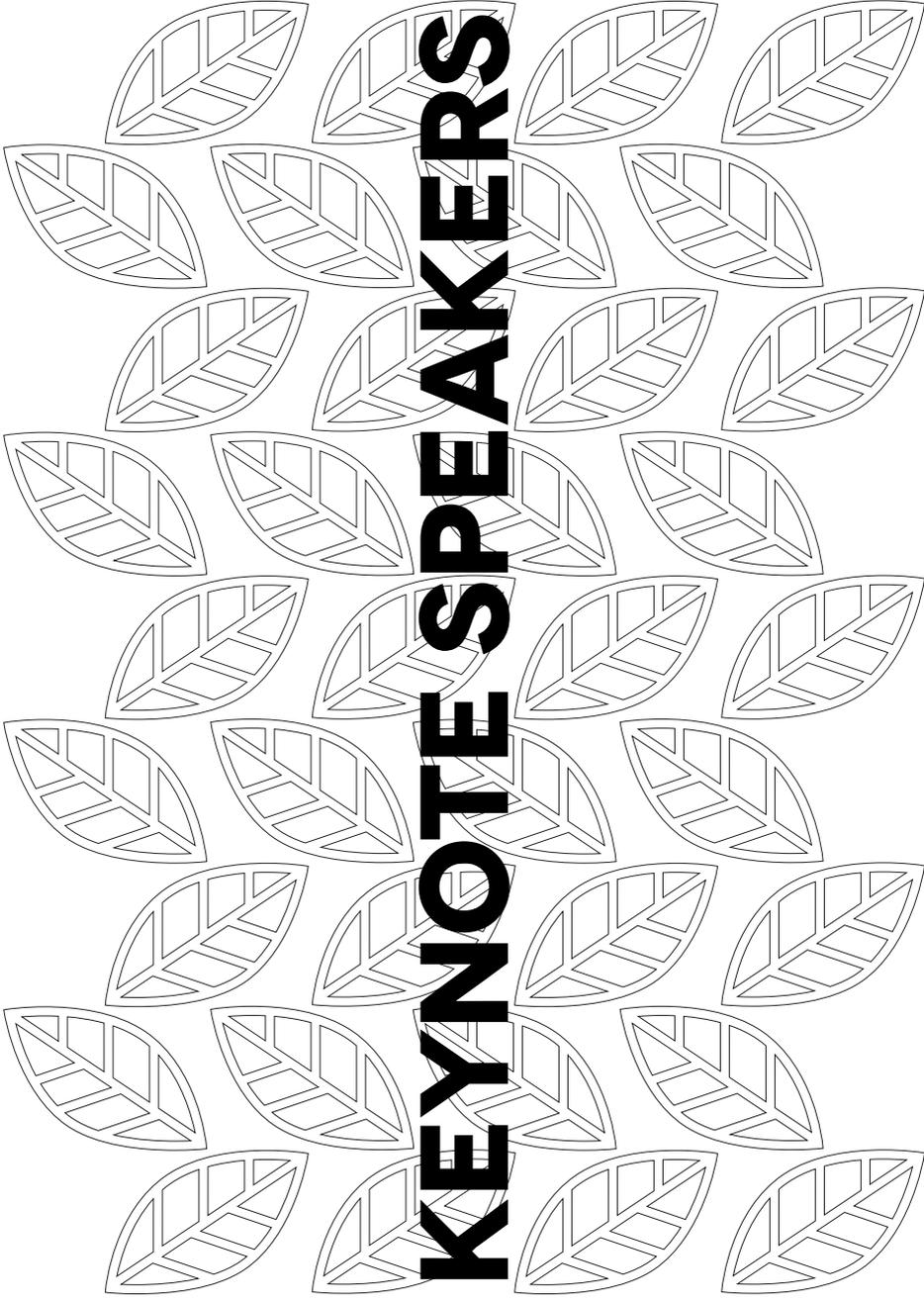
Jan Woźniak – cygański kontrabas

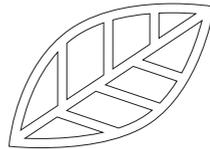
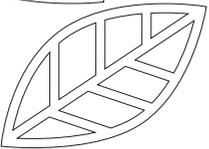
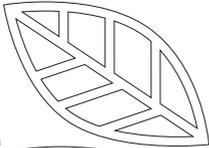
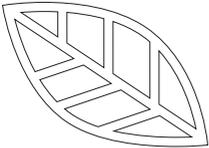
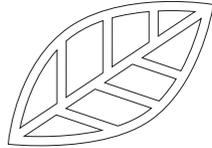
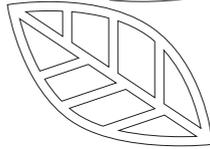
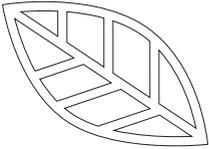
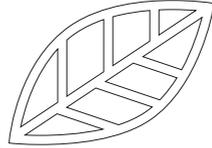
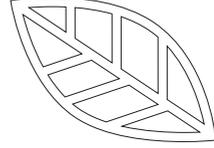
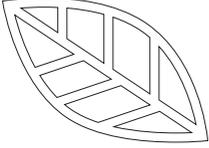
Dopuszczalny Poziom Bluesa

Zespół Dopuszczalny Poziom Bluesa powstał z inicjatywy gitarzysty i architekta krajobrazu Dariusza Wyrwickiego (obecny z-ca kierownika OBUW) w 2011 roku. Wkrótce do zespołu dołączyli: Iwona Pieczyńska (ogrodniczka OBUW, śpiew), Alina Krzemieniecka (śpiew), Piotr Walerowski (gitara basowa), Paweł Czapla (perkusja) i Paweł Dąbrowski (gitara).

Zespół od kilku lat koncertuje w Ogrodzie Botanicznym grając autorski repertuar, głównie blues, rock'n'roll i ballady do tekstów napisanych przez Dariusza Wyrwickiego

KEYNOTE SPEAKERS







KEYNOTE SPEAKERS

Marianne Krasny / Opening Keynote

Cornell University

Marianne E. Krasny is professor in the Department of Natural Resources and Director of the Civic Ecology Lab at Cornell University. Her recent books include *Civic Ecology: Adaptation and Transformation from the Ground Up* (with K Tidball), *Urban Environmental Education Review* (with A Russ), and *Grassroots to Global: Broader Impacts of Civic Ecology*. She has served as lead instructor for multiple environmental education online courses for international audiences, and was director of EECapacity, EPA's National Environmental Education Training Program, and of the Garden Mosaics community gardening intergenerational education program. Dr Krasny is a Public Voices Fellow with The Op-Ed Project and an International Fellow of the Royal Swedish Academy of Agriculture and Forestry.

Nico Wissing / City Gardens

Greenm2 and NL Green Label

Adding the designer's perspective to the programme, Nico Wissing is founder and owner of Greenm2 and NL Green Label and has acquired more than 30 years experience in garden design, layout and maintenance. He regularly holds lectures in the Netherlands and abroad, and is seen as a 'visionary in green'. Wissing uses innovative thinking in relation to green applications and materials such as concrete, steel, glass, ecoplastics, wood, etc. Green as the guiding principle; not for decorative purposes but to add value. From the very start of the planning process, green occupies a leading role.

Richard Deverell / Working Together

Royal Botanic Garden, Kew

After reading Natural Sciences at Cambridge Richard worked in management consultancy for a few years before spending 20 years at the BBC. During his time at the BBC he helped to launch and then ran the BBC News website, he ran the BBC Children's Department (CBBC and CBeebies) and, in his final role, he helped to set up a new division, BBC North, at Salford. During this period, he was also a Trustee of RBG Kew for six years, serving on the Finance and Audit and Risk Committees. He joined RBG Kew as Director in September 2012, the first in this role to be an organisational leader rather than a professional botanist. He has led a period of significant change including the appointment of Kew's first Director of Science and the publication of Kew's Science Strategy. He has also focussed on returning Kew to financial health, in particular growing self-generated income (from visitor, commercial and philanthropic activities) and securing a 4-year funding settlement from Defra (RBG Kew's sponsoring department in Government). During the congress, Richard will be discussing "Kew in the 21st Century, how do we engage the public with biodiversity?"

Chris Thorogood / Working Together

Oxford Botanic Garden and Harcourt Arboretum

Chris is Head of Science and Public Engagement at Oxford Botanic Garden and Harcourt Arboretum. “Building public engagement into the design and conduct of research is becoming increasingly crucial in the work we do. The University of Oxford is committed to embedding high quality and innovative public engagement as an integral part of our research culture. In line with this, Oxford Botanic Garden and Harcourt Arboretum are building a Public Engagement strategy, in collaboration with the Department of Plant Sciences. This strategy is designed to inform and inspire the public e.g. through participation in festivals, talks and presentations, and digital engagement.”

Krzysztof Spalik / Supporting Formal Education

University of Warsaw

Krzysztof is a professor of botany in the Department of Molecular Phylogenetics and Evolution at the University of Warsaw. His research focuses on the systematics, biogeography and evolution of the economically important family Apiaceae. He is also involved in educational research and coauthored the national curriculum for secondary education as well as several school textbooks.

Ian Edwards / Reaching New Audiences

Royal Botanic Garden Edinburgh

Ian Edwards is Head of Public Engagement at the Royal Botanic Garden Edinburgh. Having trained (many years ago) as a research ecologist he is still surprised to find himself running an art programme, cultural events and a community engagement programme for more than 100,000 people each year. He is passionate about the relationship between diversity and resilience, and the need to create a diverse culture and ecology better able to adapt to environmental change.

Katarzyna Winter / Reaching New Audiences

The Zachęta National Gallery

Katarzyna Winter is a sociologist, qualitative and quantitative researcher, responsible for audience services and research at Zachęta – National Gallery of Art y of Art.

Paul Smith / Measuring Impact panel session chair

Botanic Gardens Conservation International

With a career spanning 25 years working in conservation, Paul joined BGCI as Secretary General in March 2015. He is the former Head of Kew's Millennium Seed Bank (MSB) and, during his nine years at the helm, seeds from more than 25,000 plant species were conserved in the MSB. In addition, Paul promoted the concept of seed banks as a resource for human innovation, adaptation and resilience, and, today, seeds from the MSB and its partner seed banks are being used in agriculture, horticulture, forestry and habitat restoration. Paul will be chairing a panel session on Measuring impact and will introduce BGCI's Technical Review on this subject which is due for publication in late 2018.





WELCOME PARTY

September 9th

18:00

Location: *University of Warsaw Botanic Garden*

Address: *Aleje Ujazdowskie 4*

Pre-registration

starts at 16:00

in the Botanic Garden

Transport:

/ **from Congress hotels;** Atos, Portos, Aramis (Mangalia 1) walk to bus stop Mangalia 02 and take either bus 116 in the direction of Chomiczówka or E2 in the direction Płocka. Alight at bus stop Plac na Rozdrożu 02. From the bus stop walk back south along Aleje Ujazdowskie, cross Agrykola street and walk another 100m through the main entrance to the Botanic Garden gate.

/ **from Chopin Airport** take bus 188 in the direction Gocławek Wschodni. Alight at bus stop Plac na Rozdrożu 05, take the steps up, turn left, walking south, cross Agrykola street and walk another 100m through the main entrance to the Botanic Garden gate.

/ **from Warsaw Central train station** (Warszawa Centralna) take bus 525 in the direction of Międzyzlesie or bus 520 in the direction of Marysin. Alight at bus stop Plac na Rozdrożu 05, take the steps up, turn left, walking south, cross Agrykola street and walk another 100m through the main entrance to the Botanic Garden gate.

10:00 – 18:00

Craft Fair in the Botanic Garden

We hope you will enjoy the botany and education books, beautiful graphics, oil paintings, hand decorated porcelain, decorative flint jewellery, clay and wood crafts, rose petal and Cornelian cherry condiments and excellent Polish honey, all sold by the craftspeople and producers.

16:30 and 17:00

Guided Tour of the Botanic Garden

We invite Congress participants to two sightseeing tours around the Botanic Garden, guided by our curators and educators.

18:00

Welcome Party

/ **Welcome speech** by Dr Hanna Werbaln-Jakubiec, Director of University of Warsaw Botanic Garden, and BGCI. At the party we will serve wine, beer and liquors made by Garden employees and friends.

/ **Highlights of the event** include: the official unveiling of the sculptures presented to the Garden by Barbara Kobylińska, to honour the 200th anniversary; a presentation of ink paintings by Konrad Świtala; and a contest with prizes of vouchers for the Copernicus Science Centre.

/ A **200th anniversary exhibition** will also be on display, boards with photographs and engravings from the past will stand in that same spot illustrating the changes the Botanic Garden has witnessed over the two centuries.

/ Finally **unique botanical illustrations** selected from our archive collection, Flore Tropicale, will be on display.

To learn more about Flore Tropicale see: www.ogrod.uw.edu.pl/floratheca.

CONGRESS DINNER

September 13th

19:30

Location: *Faculty of Sculpture of the Academy of Fine Arts*

Address: *Wybrzeże Kościuszkowskie 37/39*

Transport:

Buses will transport participants from the Faculty of Biology to the Congress hotels at 17:30. At 18:45 the buses will be waiting at the Congress hotels to transport participants to the Congress dinner venue.

19:30

Welcome drink

/ ground floor of the Faculty of Sculpture

Welcome speech

/ by Dr Hanna Werblan-Jakubiec,

Director of the University of Warsaw Botanic Garden

20:00

Performance

/ by "Kameralna N-Harmonia" String Ensemble

/ assembly hall of the Faculty of Sculpture, 2nd floor

Kameralna N-Harmonia is a chamber string ensemble of talented young musicians. It consists of students of secondary and tertiary music schools - members of leading Polish youth orchestras (Lutosławski Youth Orchestra, Polish Youth Orchestra LYO, Young

Polish Philharmonic Orchestra and International Lutosławski Youth Orchestra) and foreign students (European Campus Music Orchestra and International Regions Symphony Orchestra). Its members boast numerous achievements at national and international competitions as soloists and chamber musicians.

I violin: Anna Toporkiewicz, Bartosz Czyżewski

II violin: Marcjanna Derentowicz, Wiktoria Detlaff

Violas: Kinga Wojdalska, Katarzyna Nowogrodzka

Cellos: Mateusz Błaszczak, Maria Leszczyńska

Double bass: Maciej Dobrzański

Guest clarinet: Piotr Thieu-Quang

Repertoire (30 minutes):

Ottorino Respighi: *Antiche Danze ed Arie per Liute, Suite No. 3, Part I: italiana*

Carl Maria von Weber: *Clarinet Quintet in B flat major Op. 34, part I: Allegro*

William Lloyd Webber: *Serenade for strings, parts: Barcarolle – Romance – Elegy*

Astor Piazzola: *Fuga y misterio (arr. for string orchestra)*

Award ceremony

for the best poster of the Congress

20:45

Dinner

/ foyer of the Faculty of Sculpture, 2nd floor

Mini-workshop ‘How many legs?’

/ by Cezary Szmídke (Copernicus Science Center)

/ foyer of the Faculty of Sculpture, 2nd floor)

One of the tools most associated with scientists is the microscope. Invented in the 17th century, today it is so widely accessible we can use one on our mobile phones.

Under a microscope we can observe objects smaller than peppercorns, among which are daphnia – tiny crustaceans. Following Carl Linnaeus’ footsteps, we will compare them with their macroscopic brethren – arthropods: insects, arachnids and other such “monsters”.

EXPLORING THE BOTANIC GARDEN AND ITS PARTNERS

September 14th

15:30-17:00

Location: *University of Warsaw Botanic Garden*

Address: *Aleje Ujazdowskie 4*

Transport:

Coach from Faculty of Biology building at 15:00

To explore our Garden and to get to know our partners, we invite you to join one of the following activities:

1. The Botanic Garden and Greenhouses / two parallel groups

Explore our magical Botanic Garden and its rich collections with the Garden's curators and educators. Discover the rose garden and the medicinal garden. See the unique Polish lowland flora collection and CITES endangered plants in the greenhouses. Learn about our workshops in our outdoor education sites: the open air kitchen and composting area. Visit the greenhouses, the oldest of which was built under the reign of our last king, Stanislaw August Poniatowski, and hosts a collection of succulents and Mediterranean plants.

Guided by:

Justyna Ryniewicz, Katarzyna Roguz, Dorota Szubierajska, Joanna Bogdanowicz

/ University of Warsaw Botanic Garden

2. Jazdów City Garden – Ujazdowski Castle Centre for Contemporary Art and Open Jazdów Initiative.

The Ujazdowski Castle Centre for Contemporary Art has transformed its park into a project titled 'Jazdów City Garden'. In this year's edition of the project visitors are invited to explore nature in an urban environment guided by artists and botanists. Recent detrimental changes in nature conservation laws in Poland have revived the public debate on human intervention and dependence on nature. Among others, this has prompted serious controversy over the status of trees. The tour will show us artists' comments on the debate, developed in collaboration with biologists from University of Warsaw Botanic Garden. From the castle we will move to neighbouring Jazdów. This small housing community surrounded by rich gardens, survives thanks to citizens' interventions against construction development. Here many grassroots initiatives and NGO's thrive alongside Warsaw residents, among them community gardens and cultural centres.

Guided by: *Krystyna Jędrzejewska-Szmek / University of Warsaw Botanic Garden, Anna Czaban / Ujazdowski Castle Centre for Contemporary Art, Maciej Łebkowski / Open Jazdów Initiative*

3. Royal Łazienki Museum

Royal Łazienki park was the summer residence of Poland's last king, This classical park and palace complex features spectacular gardens, divided into three parts: the Royal garden, a vast landscape park and a modernist garden. Here nature and culture truly coexist, the museum organises numerous educational events: festivals, exhibitions and workshops, many of which are focused on nature. The park is a unique example of extraordinary biological wealth in the centre of the capital and habitat for many wild animals. The grounds have ponds connected by canals, and the lawns, meadows and trees cover 80 hectares.

Guided by:

Tomasz Nadratowski / Royal Łazienki Museum

4. Low Rope Course in the Arboretum

Participants will conquer a low rope course, designed as an outdoor personal development and team building activity. The course is strung just above the ground and does not require a harness, This does not make it any less challenging. Programmes using the low rope course play an important role in the arboretum's experimental education and outdoor education. It is a way to learn decision-making, self-confidence, positive risk-taking, trust, cooperation and teamwork. The experience of overcoming physical obstacles and solving problems is easy to translate into interpersonal relationships, for example at school or work.

Guided by: *Monika Babis*

FAREWELL BBQ

September 14th

17:00

Location: *University of Warsaw Botanic Garden*

Address: Aleje Ujazdowskie 4

All participants are invited to the Farewell BBQ, at which two music ensembles with close ties to our Garden will entertain you.

Hot Plasma Orchestra

Hot Plasma Orchestra is playing a gypsy swinging music – this style has become popular thanks to famous Django Reinhardt and his Hot Club de France in thirties.

Musicians with different professional backgrounds, from microwave plasma to plasma spectrometry, were meeting as participants of several scientific conferences, sharing joy of playing live music on the evening events.



Recent performances, featuring additional vocals, extended band repertoire reaching for more poetic songs and themes.

The band will consist of:

Waldemar Surosz – vocal, Agata Szumielewicz – vocal, Jarosław Grodowski – gypsy guitar, Edward Reszke – gypsy violin, Piotr Zegadło – gypsy guitar, Jan Woźniak – gypsy double bass.

Dopuszczalny Poziom Bluesa / Acceptable Level of Blues

The Dopuszczalny Poziom Bluesa band was formed in 2011 by guitar player and landscape architect Dariusz Wyrwicki (and Assistant Director of our Botanic Garden). Soon the ensemble was joined by its other members:

Iwona Pieczyńska – vocals, Alina Krzemieniecka – vocals, Piotr Walerowski – bass guitar, Paweł Czaplą – percussion and Paweł Dąbrowski – guitar.

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MID-CONGRESS TOURS

Sightseeing tours

September 12th

Warsaw historic parks and natural areas

/ included in the fee

I Sightseeing tour:

Warsaw / *cultural heritage & city parks,*

Wilanów Park / *Museum of King Jan III's Palace at Wilanów*

PAS Botanic Garden in Powsin

13:30–14:30 – transfer from Faculty of Biology building to Wilanów, bus sightseeing of the Royal Route

14:30–16:30 – welcome by the Museum Director and tour of gardens with Education Department specialists and presentation of the history of the gardens and their conservation

16:30–17:00 – transfer from Wilanów to the Polish Academy of Sciences (PAS) Botanical Garden Centre for Biological Diversity Conservation in Powsin

17:00–19:30 – exploration of PAS Botanical Garden Centre for Biological Diversity Conservation

19:30–21:00 – dinner at PAS Botanical Garden Centre for Biological Diversity Conservation

21:00–21:30 – return to Warsaw

/ Wilanów

This Royal palace was built by Polish King Jan III Sobieski and then developed by generations of other noble owners. It is one of the best examples of Polish baroque architecture and landscape design to have survived the turmoil of Polish history. The style, inspired by Versailles, looked also to Italian villa suburbana and other Polish noble seats of the period. In 1805, the owner, Stanisław Potocki, opened the art collection to the public, thus forming the first public museum in Poland. The park is divided into two contrasting parts; terraced baroque gardens extending from the palace towards Wilanów Lake and a surrounding romantic, landscape park. The palace and gardens host concerts and other prestigious cultural events.

/ Polish Academy of Sciences Botanical Garden Centre for Biological Diversity Conservation in Powsin

The PAS Botanical Garden Centre for Biological Diversity Conservation in Powsin was founded in 1970. It is located in the southern outskirts of Warsaw and occupies an area of 40ha. The garden holds extensive collections of Polish flora, with a special focus on the *Ericaceae* family, fruit trees, vegetable cultivars and ornamental plants. It is also famous for its National Collection of Rose Cultivars. The greenhouses hold collections of Mediterranean and tropical plants. The garden is very active in the field of science and biodiversity conservation. The key research areas include: collection and storage of genetic resources of wild plants and crops and their use in science and agricultural production; *ex situ* conservation of rare, endangered and protected Polish species; population genetics and analysis of genetic diversity of plants; and plant bioengineering. The PAS Botanical Garden established the wild-flora seed bank in Poland for plant diversity conservation using the cryogenic technique. Educational activities include lectures for university students, a variety of workshops and educational trails for schools. Plant exhibitions and cultural events attract a wide public throughout the year.

II Sightseeing tour:

Warsaw – “Nature wonders in the city”

Kampinos National Park

13:30–15:00 – transfer from Faculty of Biology building to Granica village

15:00–18:00 – sightseeing of the Kampinos National Park, museum complex,
tower with panoramic, tour of nature reserve

18:00–18:30 – transfer for evening meal

18:30–21:00 – supper at agrotourism complex, Agrokultura Korfowe

21:00–22:30 – return to Warsaw

/ Kampinos National Park

Kampinos National Park is the second largest national park in Poland, located on the Mazovian Lowland to the north east of Warsaw. Its landscape is dominated by sharp contrasts between swamp and dune areas. Numerous plant communities host species typical for both continental and Atlantic climates. *Linnaea borealis* and *Chamaedaphne calyculata* represent the remains of glacial flora. Among the 74 protected plant species *Daphne mezereum* and *Lilium martagon* stand out with their striking colour and fragrances. The moose is the park's symbol, but raccoon, lynx, roe deer and bats are also frequently encountered. Characteristic bird species include stork, corn crake and the lesser spotted eagle.

The park has numerous trails for walking, bicycle and horseback rides. Along the trails visitors encounter cemeteries and monuments to WWII. Another trail ends at Żelazowa Wola, the birthplace of Fryderyk Chopin.

The park acquired the status of European bird refuge in 1999. In 2000 Kampinos National Park was written into the UNESCO World Heritage List as a World Biosphere Reserve titled 'Puszcza Kampinowska'. It has been protected as a Natura 2000 area since 2004.

POST-CONGRESS TOUR TO NATIONAL PARKS IN EASTERN POLAND

14.09 / Biebrza National Park

11:00–14:00 – travel from Warsaw (meeting at the Faculty of Biology building)

to Biebrza National Park; packed lunch provided,

14:00–17:30 – guided tour in the park

17:30–19:00 – transfer to “Lipowy Most” hotel

19:00 – dinner

15.09 / Wigry National Park

07:30–08:30 – breakfast

08:30–11:00 – transfer to Wigry National Park

11:00–11:30 – welcoming at the park Director’s office in Krzywe village,
with a short presentation of education in Wigry National Park

11:30–12:30 – walk down education trails „Las” i „Suchary”

12:30–12:45 – transfer to Stary Folwark village

12:45–13:30 – sightseeing of Wigry Museum in the old Hydrologic Station
building in Wigry

13:30–14:30 – dinner (regional, traditional dishes) at „Pod Sieją” restaurant

14:30–15:00 – transfer to Stupiańska Bay of the Wigry Lake (Łysocha Peninsula)

15:00–16:30 – walk down education trail „Jeziora” and visit at Environment Education
Center of Wigry National Park, farewell

16:30–19:00 – return to ‘Lipowy Most’ hotel

19:30 – dinner

16.09 Białowieża National Park

06:30–07:30 – breakfast

07:30–09:30 – transfer to Białowieża National Park

09:30–12:30 – walk in strict nature reserve

12:30–13:30 – sightseeing of the Bison Show Reserve

13:30–14:30 – Białowieża National Park – panel discussion
on nature conservation issues

14:30–16:00 – dinner

16:00–20:00 – return to Warsaw / central railway station, airport

/ Biebrza National Park

Biebrza National Park is the biggest national park in Poland. It protects vast areas of swamps and mires of Central Poland and Central Europe located along the Biebrza river. The slow flowing lowland river forms numerous meanders creating niches for various types of wetland habitats. A total of 600 km of tourist trails can be enjoyed by foot, bicycle or kayaks.

The nature reserve is home to over 90 rare and endangered Polish flora species, among them: *Betula humilis*, *Salix lapponum*, *Huperzia selago*, *Pinguicula vulgaris*, *Iris aphylla*.

The forests are composed of alder, birch, hornbeam and oak stands.

The wetlands host the biggest bird reserve in Central Europe, with over 270 species, among them: aquatic warbler *Acrocephalus paludicola*, greater spotted eagle, *Aquila clanga*, and also ruff, *Philomachus pugnax* the symbol of the park. There are special observation towers for birdwatchers. Other interesting animal species include the most numerous in Poland moose *Alces alces* population, Eurasian otter *Lutra lutra*, raccoon *Procyon genus*, stoat *Mustela erminea*.

Biebrza was listed in the Ramsar Convention on Wetlands in 1995. BirdLife International has granted it European status of a bird refuge. Biebrza Valley is protected by Natura 2000 since 2004.

/ Wigry National Park

Wigry National Park is located in north-eastern Poland, and is its youngest park. It is home to precious aquatic ecosystems, the spectacular Wigry lake and its subsidiary the Czarna Hańcza river. Overlooking the lake is the park's landmark, a XVII century cloister.

In the areas around the lake and the river are numerous small forest lakes covered with floating layers of Sphagnum moss. Over half of the area is covered with pine and spruce forests. The park is home to 75 protected plant and 300 animal species. Plants include 22 orchid species with critically endangered *Herminium monorchis* and *Neottianthe cucullata*. Animals include the lynx, gray wolf, moose and eurasian beaver that is the symbol of the park. Predatory birds include the black kite, red kite, white-tailed eagle. Rare fish species include the common whitefish and vendace.

The park can be accessed by car, bicycle, kajak, horseback or by foot via numerous tourist trails, many of which are educational trails. Wigry National Park was listed in the Ramsar Convention on Wetlands in 2002. Wigry Park is protected by Natura 2000 since 2004.

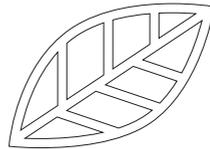
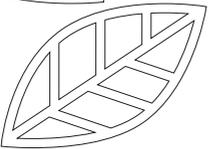
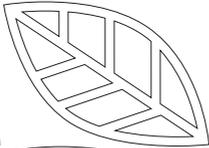
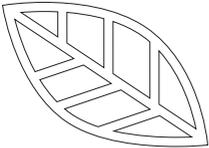
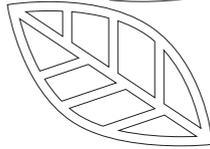
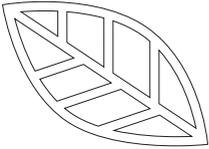
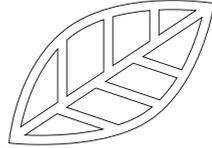
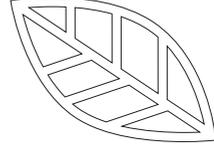
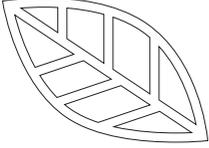
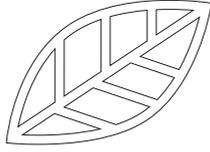
/ Białowieża National Park

Białowieża National Park is the oldest national park in Poland and one of the first to be established in Europe. It is located in eastern Poland and Western Belarus. The park protects one of the last fragments of primary forest of the European Lowlands and its unique biodiversity. The forest is full of ancient trees, including those dead and decomposing. There are hornbeam and oak stands, with dominant forests of ashes, elms or alders on the more humid sites. In total more than 800 plant species can be found in the park. The European bison is the symbol of the park, saved from extinction in the 1920's. A special bison reproduction centre was founded in the park, now home to the most numerous population in the world. Other important animal species include the lynx, grey wolf, and moose.

There are walking and bicycle paths, education trails and showcase enclosures with animals. Other points of interest include the Forest Museum and landscape style Palace Park, previously part of Tsar Hunting lodge. In 1977 Białowieża National Park became the first natural site on the UNESCO World Heritage List and was granted World Biosphere Reserve status.

WARSAW





EXPLORING WARSAW

Fascinating history, modern architecture, friendly infrastructure, creative inhabitants and a rich palette of cultural events are the beating heart of Poland. Whether you are visiting Warsaw for business or for pleasure, the city offers all the attractions you need to make your trip a perfect one.

You can discover a rich history of the city while walking around picturesque Old Town, entered onto the UNESCO World Heritage List, strolling along the Royal Route, or visiting one of many interactive museums and art galleries. You can experience the buzzing atmosphere of the city centre, or take a more relaxing stroll along the banks of the Vistula, offering eight municipal beaches, and evenings of music and film. Warsaw guarantees loads of fun and attractions that you just cannot skip, whether it is cooking classes, a sightseeing tour in old-school cars, or a piano concert of Chopin music.

The city is worth exploring. Simply get lost in the backstreets and discover something fascinating. Warsaw is constantly changing and updating. However, some of its quirky character and many of its cult places are still there to be discovered.

The Royal Castle is one of the most eagerly visited attractions. In summertime, the Old Town is filled with coffee gardens and numerous cultural festivals are held in the Old and New Town Squares and the Castle courtyard. In Winter, the Old Town and the Royal Route glitter with captivating illuminations. Warsaw is a perfect place for history and art lovers who can choose from over one hundred museums, including the popular Warsaw Rising Museum or National Museum. In the very heart of the city is Warsaw's most recognisable

building – the Palace of Culture and Science, where you can admire the whole panorama of the Polish capital from the viewing deck located on the 30th floor. The Royal Łazienki Museum and Museum of King Jan III's Palace at Wilanów are also “must see” points on Warsaw's map. These royal residences are some of the most attractive palace and park complexes in Europe. In addition to the most recognisable city attractions, visitors can also find traces of Warsaw's rich history behind almost every corner.

No matter what you think you know about Warsaw, the city will surprise you. It is dynamic and forward looking, constantly changing and always offering great potential for the future.





TRANSPORTATION

During the dates of the Congress (09-16.09.2018), Congress participants are entitled to use Warsaw public transport (bus, tram, subway) in the 1st ticketing zone **free of charge**. Congress participants wishing to take advantage of free public transport are required to carry and present (when requested) their Congress name badge along with a photo identification document such as a passport/identity card or driving licence.

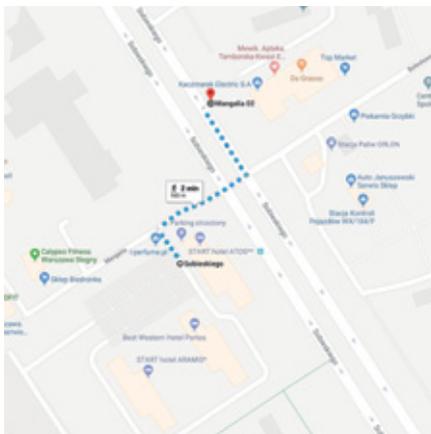
HOW TO GET TO:

01

/ From Congress hotels:
Atos, Portos, Aramis
(Mangalia 1)
to Botanic Garden
(Aleje Ujazdowskie 4):

Mangalia 02 bus stop at Sobieskiego street (map no 1a), buses: 116 (in the direction: Chomiczówka) or E2 (in the direction: Płocka – Szpital) to Plac Na Rozdrożu 02. From Plac na Rozdrożu go back along Aleje Ujazdowskie, cross Agrykola street and follow the garden fence up to the main entrance gate and then on to the Botanic Garden (map no 1b).

1a



1b



2a

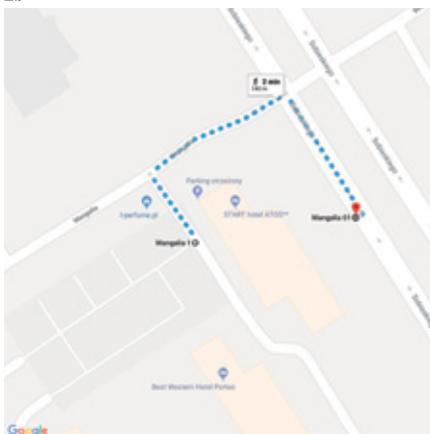


02

/ From Botanic Garden
(Aleje Ujazdowskie 4)
to Congress hotels:
Atos, Portos, Aramis
(Mangalia 1):

Plac Na Rozdrożu 01 bus stop (map ni 2a), buses:
116 or E2 (in the direction: Wilanów) to Mangalia
01 bus stop at Sobieskiego street (map no 2b).

2b



03

/ From

Congress hotels:
Atos, Portos, Aramis
(Mangalia 1 street)
to Faculty of Biology
(Miecznikowa 1):

Mangalia 02 bus stop (map no 1a) at Sobieskiego street, buses: 116 (in the direction: Chomiczówka) or E2 (in the direction: aPłocka – Szpital) to Plac Na Rozdrożu 02. Here you will need to change buses – take the stairway down to the Trasa Łazienkowska to the Plac Na Rozdrożu 06 bus stop (standing with your back to the Aleje Ujazdowskie, go down the stairway on the left, map no 3c), take the bus 188 (in the direction: Airport – Terminal Autokarowy) alightat Banacha – Szpital 01 bus stop at Żwirki i Wigury street; follow the map to Faculty of Biology (map no 3a)

07: from Mangalia 02 bus stop (map no 1a) at Sobieskiego street take bus 519 (in the direction: Dw. Centralny) to Metro Politechnika 08 bus stop. Go to the Metro Politechnika 02 bus stop (map no 3b). Take bus 188 (in the direction: Airport – Terminal Autokarowy) to Banacha – Szpital 01 bus stop at Żwirki i Wigury street; follow the map to Faculty of Biology (map no 3a).

3a



3b



3c



04

/ From Faculty of Biology (Miecznikowa 1 street) to Congress hotels: Atos, Portos, Aramis (Mangalia 1):

from Banacha – Szpital o2 bus stop at Żwirki i Wigury (map no 4a) street take bus 188 (in the direction: Goławek Wschodni) to the Plac Na Rozdrożu o5 bus stop. Here you will need to change buses – go up the stairway to Plac Na Rozdrożu, from Plac Na Rozdrożu o1 bus stop (map no 4b) and take buses: 116 or E2 (in the direction: Wilanów) to Mangalia o1 bus stop at Sobieskiego street (map no 2b)

OR: from Banacha – Szpital o2 bus stop at Żwirki i Wigury street (map no 4a) take bus 188 (in the direction: Goławek Wschodni) to Metro Politechnika o1 bus stop. Go to the Metro Politechnika o5 bus stop (map no 4c). Take bus 501 (in the direction: Stegny) to Mangalia o1 bus stop (map no 2b).

4a



4b



4c



5a



5b



05

/ From Congress hotels: Atos, Portos, Aramis (Mangalia 1 street) to Faculty of Sculpture of Academy of Fine Arts (Wybrzeże Kościuszkowskie 37): from the Mangalia 02 bus stop at Sobieskiego street (map no 1a) take bus 116 (in the direction: Chomiczówka) to Ordynacka 02 bus stop at Nowy Świat street. From Nowy Świat –Uniwersytet Metro station at Świetokrzyska street (map no 5a) go to Metro Centrum Nauki Kopernik station (in the direction: Dworzec Wileński). From the station follow the map to the ASP Building (map no 5b).

06

/ From Faculty of Sculpture of Academy of Fine Arts (Wybrzeże Kościuszkowskie 37 street) to Congress hotels: Atos, Portos, Aramis (Mangalia 1 street):

6a



from Metro Centrum Nauki Kopernik station go to the Metro Nowy Świat – Uniwersytet station (in the direction: Rondo Daszyńskiego). Go to the Ordynacka 01 bus stop Świątokrzyska street (map no 6a). Take bus 116 (in the direction: Wilanów) go to the Mangalia 01 bus stop (map no 2b)



DINING

Warsaw boasts a wide range of restaurants and cuisines. Visitors can choose according to their preferences: from Michelin star awarded restaurants Atelier Amaro and Senses to outdoor food markets such as the currently popular Night Market. Furthermore, this city is famous for its vegan and vegetarian restaurants, offering vegan takes on traditional Polish cuisine as well as Asian and Middle-Eastern flavours.

Polish cuisine has been influenced by many cultures and nationalities that live and lived in the country and Warsaw has its own distinct tastes that can be found in many contemporary restaurants seeking to revive Polish culinary traditions. The traditional Polish meal always starts with soup, you will therefore find a variety of soups on the menus, among them żurek – a traditional rye sourdough soup and rosół – a traditional chicken broth and tripe à la Varsoviennne. Other starters include pickled herring and steak tartare. For the main course Pierogi, a form of dumplings, are perhaps the most famous dish, they come in many shapes and with a variety of fillings: meat, potato and cheese, sauerkraut and mushrooms. You will also find kluski śląskie and knedle – potato dumplings with meat or plum stuffing. Finally, wuzetka - a chocolate sponge filled with whipped cream, is a dessert that was fashioned in Warsaw to celebrate the opening of the East-West road.

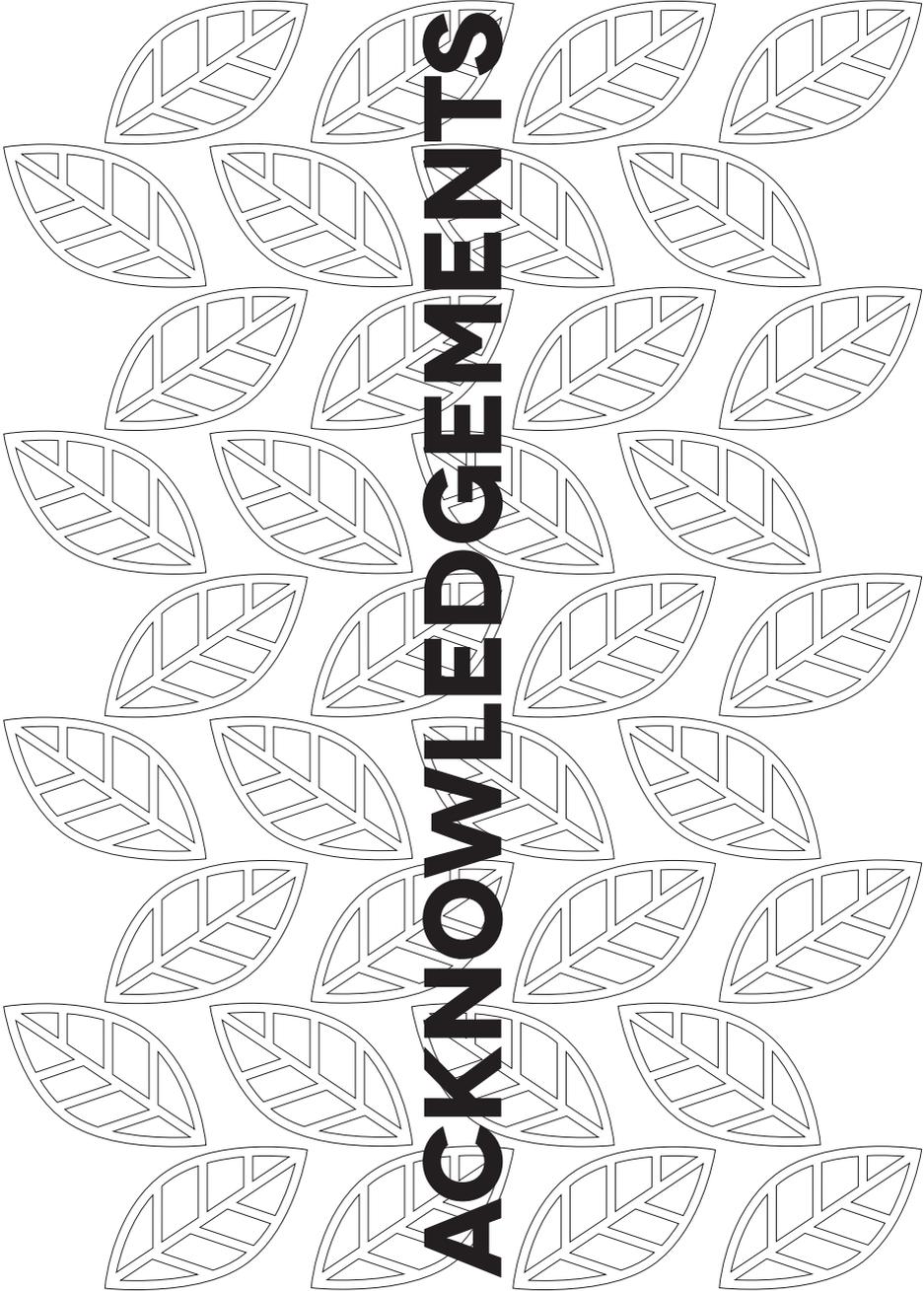
/ Traditional Polish Cuisine and Fine Dining

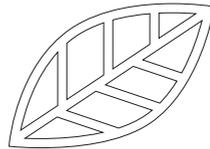
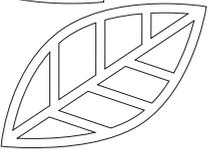
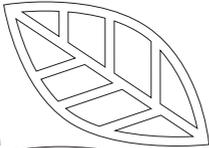
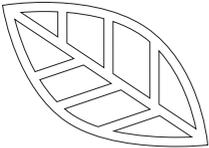
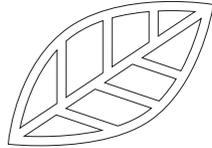
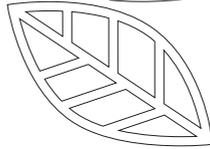
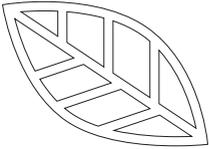
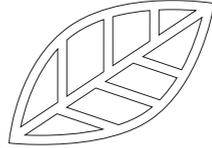
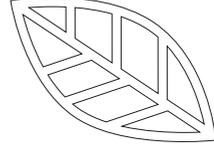
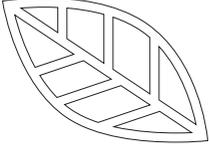
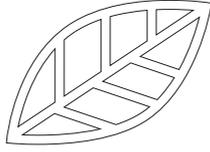
- Ale Gloria / plac Trzech Krzyży 3 / \$\$
- Ale Wino / Mokotowska 48 / \$\$
- Atelier Amaro / Agrykola 1 / \$\$\$
/ requires booking
- Bez Gwiazdek / Wiślana 8 / \$\$
- Brasserie Warszawska / Górnośląska 24 / \$\$\$
- Café Mozaika / Puławska 53 / \$
- Chłopskie Jadło / plac Konstytucji 1 / \$
- Folk Gospoda / Waliców 13 / \$\$
- Gospoda pod Kogutem / Rakowiecka 43A / \$
- Hala Koszyki / Koszykowa 63 / \$\$
- Nocny Market / Towarowa 3 / \$
- Pierogarnia / Bednarska 28/30 / \$
- Polka, Świętojańska 2 / \$\$
- Pub Lolek, Rokitnicka 20 / \$\$
- Qchnia Artystyczna, Jazdów 2 / \$\$
- Restauracja Delicja Polski /
Krakowskie Przedmieście 64 / \$\$
- Restauracja PAPU /
al. Niepodległości 132/136 / \$\$
- Restauracja Różana / Chocimska 7 / \$\$
- Restauracja Stary Dom / Puławska 104/106 / \$\$
- Restauracja Zielnik / Odyńca 15 / \$\$
- Senses / Bielańska 12 / \$\$\$
/ requires booking
- Smaki Warszawy / Żurawia 47/49 / \$\$
- Zoni / Plac Konesera 1 / \$\$
- Żurawina / Żurawia 32/34 / \$\$

/ Vegan and Vegetarian Restaurants

- Chwastfood / Waryńskiego 9A / \$
- Falafel Bejrut / Nowolipki 15 / \$
- FalafeLove / Złota 6 / \$
- Jaskółka / Plac Wilsona 4 / \$
- Krowarzywa / Marszałkowska 27/35 / \$
- Loving Hut / Waryńskiego 3 / \$
- Mango Vegan / Bracka 20 / \$
- Mezze / Różana 1 / \$
- Momencik Vegan Burrito / Poznańska 16 / \$
- Mr. Falafel / Radomska 3 / \$
- Ośma Kolonia / Słowackiego 15/19 / \$
- SHUK / Grójecka 107 / \$
- Syryjka / Puławska 20 / \$
- Tel Aviv Urban Food /
al. Niepodległości 142A / \$
- Vegemiasto / al. Solidarności 60A / \$
- Wars i Sawa / Madalińskiego 10/16 / \$
- Wegeguru / Marszałkowska 28 / \$
- Wegeneracja / Domaniewska 22A / \$
- Żywa Kuchnia / Raclawicka 99 / \$

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University of Warsaw Botanic
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Justyna Ryniewicz

Dorota Szubierajska

Hanna Werblan-Jakubiec

Włodzimierz Winiarski

Dariusz Wyrwicki

Marcin Zych

Warm thanks to all employees and friends

of the University of Warsaw Botanic Garden.

Congress Tours

Kampinos National Park
Lazienki Royal Garden
Museum of King Jan III's Palace at Wilanów
Polish Academy of Sciences Botanical Garden –
Center for Biological Diversity Conservation
in Powsin
Wigry National Park

International Review Panel

Krystyna Jędrzejewska-Szmek
Iwa Kołodziejska
Dareen Matwani
Abby Meyer
Philip Pettitt
Felicity Plent
Sheila Voss
Sue Wagner
Xiangying Wen

Botanic Gardens Conservation International

Liliana Derewnicka
Helen Miller
Paul Smith

Session Chairs

Botanic garden educators from around
the world who have enthusiastically
facilitated the panel sessions.

Volunteers

Immense thanks to all our volunteers for your
commitment and energy, a special word of thanks
to Zofia Szubierajska.

Sponsorships

BGCI and the University of Warsaw Botanic
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Poster Prize

Plants, People, Planet

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