

Congress Posters



A new app for smartphones to identify iberian trees

María Bellet ⁽¹⁾, Esther García⁽¹⁾, Felipe Castilla⁽¹⁾, Jesús Rodrigo⁽¹⁾, Maria Luisa Esteban⁽¹⁾, Leopoldo Medina⁽¹⁾, Elena Amat⁽¹⁾ Eduardo Actis⁽²⁾, Monica Lara⁽²⁾, Violeta Vicente⁽²⁾, (1) Real Jardín Botánico, CSIC and (2) Spanish National Research Council (CSIC), Madrid, Spain

(1) Real Jardín Botánico, CSIC and (2) Spanish National Research Council (CSIC). Madrid, Spain



SPECIFICATIONS

118 species included (all the autoctonous species and the most naturalized among aloctonous species)
For iPhone and android smartphones
Free of charge
Once downloaded, no more internet conection needed

Two kinds of botanical keys

Favs trees!

DISEMINATION



Around 100.000 downloads

76 press media impacts

Launched and press event in November 2014

Great and possitive feedback



Ideal para el aprendizaje del naturalista. La experiencia de observar la naturaleza no es completa ni comparable, si uno no es consciente de la riqueza y el alcance de la belleza de lo que esta viendo. :) Fran Gómez 21 de noviembre de 2014 ★★★★

Maravillosa De las mejores app que he tenido. La esperaba hace mucho. Enhorabuena por el trabajo, da gusto ver que el dinero de todos se invierte en cosas tan buenas.

OUR PUBLIC General public Schools Students

PREVIOUS REQUIREMENTS

Understandable by everybody

Scientific rigorous

Eye candy

Easy use

AND NOW ON New species Tecnical improvements Canary islands app FAQs



•	Sombradoble (ESDciencia : 29 de mar.	
	#Arbolapp app gratis	
	para identificar arboles q ofrecen	
	CSIC Y @RJBOTANICO	
	Al campo!	
	csic.es.bit.ty/1JGkszc	
	Analyse deformantic system 118 expected de la Presidente Dation y las John Balteries	
	DUTAN DENTRICA JUTIDINA	
	Antigen characteristic da una manda e constante in calcita presente de calcita constante de calcita	
	instante de la l'igarita province. Prostaja contrarrat, Antonne y las tata Balenes, Las especies antes impensates en 16 Suites nos longrafias, masse que muestres en qué provincies esté presente el éduc, un teste description y veries contenidades.	
	Consistent para para sandrare susante con o este conscientente de las tantes a puede tempe para instantes las fai conjugados el sus de un ferençado assençados sino el lapor situatificar. Notantes para faisme en instantes analizadas en es de faires de las de instantes de las de instantes de las de instantes de las de estas de las de estas de las de estas de las de	Appendix State and and appendix for plantic State. Francesco de copy o com.
	Para sherifibar ona espana, se posite engri wine dis tota in toppato. Una golda, si ta tos tog par anoger ni economi patolar la abrastina par maga desche da dalor par se para recorrecto y ni economico para da contrato abrastina para maga desche da tota, bas de tota abranto, para patolar economico abrastina para maga desche da tota, bas de dividgetter, la aplassite incluye administra para contrato da terminos tamanos.	Machine Color Colores and a second state of the first state of the first for Colores and the first state of the first state of the instantion of the first state of the first state of the first instantion of the first state
	4· 103 21 1: 16 ····	Ver foto















Contacto: María Bellet Serrano bellet@rjb.csic.es 0034 914203017 Pl. Murillo 2 28014 Madrid

Closer to Nature - The First Educational Program for Schoolchildren



Batumi, Georgia

Tamaz Darchidze, Zurab Manvelidze







Batumi Botanical Garden (BBG) is a vivid and distinguished monument of Georgia and Caucasian nature. It reveals diversity of Colchis humid subtropics as well as impress results of the centenary plant introduction in the Eastern Black Sea littoral. Its geographical location, soil-climatic conditions are favorable for open soil ex-sit conservation of the worldwide subtropical pants. From the day of its foundation (1912) Batumi Botanical Garden has represented one of the important centers for the development of scientific knowledge as well as the

source for implementation and cultivation of economically useful plants in the regional economy. The Garden is arranged over 108 ha according to phytogeographical principle and represents the departments of Australia, New Zealand, the Himalayas, Mexico, North America, South America, East Asia, Mediterranean and Caucasian Humid Subtropics, comprising a collection of live plants of over 2 000 species. Batumi Botanical Garden has been the member of BGCE since 1998. It conducts the activities in accordance with the objectives of the world botanic gardens, possesses a century-old herbarium, is included into the international system of seed exchange and has started the documentation of the existing collection (the field inventory is being registered and electronic database of phyto-information is created).

Activities

Since 2013 the measurements have been conducted for the final adjustment and compliance of the garden activities with the strategic programs of Global Partnership for Plant Conservation (GPPC) and Global Strategy for Plant Conservation 2011-2020. The Botanical

Garden is accomplishing the following programs at present: - Plant introduction and conservation;

- Local flora protection and conservation;
- Decorative gardening and floriculture;
- Plant protection, gardening selection;
- Ecoeducational events and toutism.





In 2014 the number of visitors reached 200 thousand. Regretfully, the Garden has lack of schoolchildren and students (about 10%) that was caused by the absence of educational activities and deficiency of information about the Botanical Garden among the youth.







Regional Eco-Educational Importance and Potential of Batumi Botanical Garden





The program of ecoeducational events is a new direction in the activities of the Batumi Botanical Garden. Its aim is the raise students' youngsters' and generally, public awareness in the issues of biodiversity and environment protection. Insufficient level of population awareness within the context of environment, forest and biodiversity protection determines the topicality of the program and the necessity for the further growth of the protection determines the topicality of the program and the necessity for the further growth of the educational function of the Botanical Garden.

By 2014 the following activities had been conducted: seminars on plant diversity, educational tours in the phytogeographical sections of the Garden, Garden nominal scholarship for the Batumi Shota Rustaveli State University students. The next stage is a systemic accomplishment of the educational activities and increase of youth engagement in the projects.

Since April 2015 the Garden has started to implement the first educational project "Closer to Nature"

Contents

This is a short-term course for the pupils of IX-XI grades of the public schools in Batumi;

- The course comprises: thematic lectures, seminars, master classes, practicum and field tours;
- The project will engage 144 pupils;
- With the support of "MercyCorp" 20 pupils from other municipalities of Ajara will participate in the project as well;
- The educational course comprises 4 days (2 week-ends), 32 academic hours and will be conducted in two stages (April-May and October-November, 2015);
- Project participants will be offered by the schools with relevant recommendations;
- The registration of the participants will be provided by the Batumi Resource Center of the Ajara AR Ministry of Education, Culture and Sport.

the Aim of the Project

- * Promotion of implementation of national strategy of Biodiversity Protection of Georgia, Botanic Gardens Conservation International Conservation International (BGCI) and Global Strategy of Plant Conservation (GSPC);
- * Raise awareness of biodiversity and environmental protection in the young generation;
- * Dissemination of information about the botanic gardens;
- * Promotion of learning about plant conservation and agro-technical measures for the young generation;
- * Popularization of the Batumi Botanical Garden.







Closer to Nature – Lectures, Practicum and Field

Tours

Project Opening, presentation of working plan Lecture – vegetation origin, development, dissemination, eco regions Lecture – Plant Diversity Practicum – Plant morphology, usage Master class - Seed-growing Sector

Lecture – Essence and Purpose of Botanic Gardens Lecture - Batumi Botanical Garden Field Tour – visiting phytogeographical sections

Field practice – Agro Technical Measures

Lecture – Endangered Plants Lecture - Plant Conservation Lecture – forests of Georgia Field Tour - Caucasian rare plants conservation plot Master class – Herbarium Fund

Lecture – Plant Protection and Biological Safety Field Practice - collecting grafts, seeds and self-seeds Field Practice – nursery and greenhouse activities Program summary, awards

Project supporters:

Day

III Day



The program will become tradition and give annual opportunities to schoolchildren;

In future the schoolchildren of the regional public schools will also have opportunity to be involved in the project;

Special educational program will be designed for children.

Day

=

Day

 \geq

Botanical Research Faundation of Idaho Acknowledgement: We thank Christopher and Sharon Davidson for the support in participation of the Congress

6411. Batumi. Georgia, Mtsvane Kontskhi (Green Cape) Tel: +995 0422 270033; E-Mail: Info@bbg.ge

webpage: www.bbg.ge www.facebook.com/BatumiBotanicalGarden





All Rights Reserved C The project is fully accomplished by the Batumi Botanical Garden

Numeracy in the Landscape





Shelf Life is a collection of plants growing in the packaging of foods, drinks, cosmetics and medicines,



It is a reminder of our reliance upon nature

and prompts you to ask the question:



How many plants have I used today?



THANK YOU, PLEASE CALL AGAIN



http://chelseaphysicgarden.co.uk/learning/shelf-life/

Around the World

Forget the long airport queues and boring flights, you can travel all around the world in just one day at the Botanic Garden. Children pick up a plant passport from the ticket office and track down plants from all four corners of the globe, collecting stamps as they go.

Planet Botanic

Everyone knows about animal families like the Cat Family and the Dog Family but not many people realise that plants have families too. In this trail, children hunt for family crests and find out the house motto of seven important plant families.

Superpower Plants

Over millions of years plants have evolved some crazy adaptations to help them survive. This trail takes families to visit some unusual adaptations including pitcher plants and squirting cucumbers. The trail includes battle cards for children to collect and play with at home.

Giants of the Garden

For this trail families pay a special visit to six giant trees and discover the magical secrets of wand making. At each tree children are challenged to find a special kind of fallen item to give their wand special magical properties. Facts and stories about the trees are also included in the trail.

Be a Bee

Have you ever wondered what it's like to be a bee? In this trail, children find out how busy bees really are by exploring the Garden and seeking out bees' favourite plants and places.

PAH!

Plants, animals and humans all need other species to survive. In this trail, families explore the glasshouses to discover useful plants and complete the sticker puzzle in the trail booklet.

The Great Plant Pattern Hunt

Fractals, spirals, spots and stripes; patterns are everywhere in nature once you start looking. This trail challenges families to find different patterns and collect pattern rubbings from specially engraved stools.



*

The Weird and Wonderful World of Plants at Cambridge University Botanic Garden By Sally Lee, Bronwen Richards & Flis Plent

How can we ensure that there is always something fun for families to do when they visit our Botanic Garden? What can we do to encourage children to notice the amazing diversity of plant life? How can we encourage families to visit the less well-known places in our Garden?

At Cambridge University Botanic Garden we have attempted to solve these dilemmas by offering fun and quirky self-led trails that can be picked up free of charge from our ticket offices. With their colour-in covers, crazy facts, fun challenges, stickers, stamps, magic wands, battle cards and badges the trails have proved a big hit! Here we outline the trails we have run between summer 2013 and spring 2015.



Deputy Director, Horticulture & Education Department Nanjing Botanical Garden Mem. Sun Yat-Sen (NBG) P.O. Box 1435, Nanjing, Jiangsu, PRC

have been carried out in various ways. Scientific guides, exhibitions, lectures, training courses, popular science books as well Botanic gardens are important centres for education. Nanjing Botanic Garden (NBG), the first national botanic garden in China, puts emphasis on environmental education since the late 1990s. The environmental education programme of NBG as materials have been provided; various activities including summer camp have been organized. A summer camp called Journey of Plant Kingdom' held in last few years is introduced in details in this paper.



Thrill at the opening of the Camp



Carrying out tissue culture experiment



Watching specimen in the herbarium with 700,000 sheets of specimen



Growing potted plants



Demonstrating specimen made by children themselves



Searching for 'Green Treasure'

NBG in collaboration with Yangtze Evening Paper, one of the most influential local newspapers in Nanjing. It has been warmly carrying out tissue culture, search for 'Green Treasure', growing potted plants, picking tea leaves, making handicrafts with 'Journey of Plant Kingdom', is a very popular summer camp designed mostly for primary school students and held by plant materials, observing insects (cicada and firefly) at night etc. Besides, there are some attractive activities like 'Bridge welcomed by young kids and their parents due to its rich hands-on activities such as collecting and processing specimen, World' competition and CS shooting game which could bring campers great fun.



Picking tea leaves in Laoshan National Forestry Park



Observing and catching insects at night



Relevant article published in Yangtze Evening Paper

organization and effective propaganda. This programme is also a good example of successful cooperation between NBC and the local media. As one model of NBG's educational programme, it won the Liang Xi Prize of Popular Science (in category of The three-day 'journey' has been regarded as a memorable interesting experience, its success also attributes to good activity) by Chinese Association of Forestry in 2013.



BOTANICAL ACCLIMATION GARDEN OF RABAT (JEB-RABAT) FOR GENETIC RESOURCES CONSERVATION, **EDUCATION AND RESEARCH**

INRA Avenue Ennasr Rabat. Maroc

Established in 1914 on a total area of 17 hectares in the centre of Rabat, the Garden of botanical essays (Jardin d'Essais Botaniques : JEB- Rabat) contains biological treasures of exceptional value. It was the subject of a seven year rehabilitation program (2006-2013) to strengthen its role as a genetic resource center for scientific research and also to protect plant collections for biodiversity conservation. The Garden of botanical essays of Rabat (JEB- Rabat) is an experimental field of INRA answering many tasks including: conservation, research and environmental education. It also has a "Maison mauresque" (Moorish house) with typical al-Andalus architecture and a permanent museum highlighting themes around water.



The Botanical Garden offers educational activities on its history, but also in relation to educational programs on various themes such as water, useful plants, medicinal and aromatic plants, gardening technics.









Tél : +212 0537 77 26 54 Fax: +212 0537 77 00 49



The Botanical Garden of Rabat helps promote civic education, respect for nature and the development of eco-tourism.









ut National de la Recherche Ad

It is both an educational center for environmental issues and an ideal place to promote the Moroccan biological heritage.



The Botanical Garden of Rabat displays to its visitors part of the infinite plant biodiversity of our planet. It is a place of discovery and initiation to Nature.



It includes over 650 ornamental and fruit species of various origins: local, tropical, subtropical and from arid lands.







Alessandra A. Resende^{1*}, Flávia S.Faria¹, Túlio César Teixeira Ferreira¹, Pedro Henrique Ribeiro da Silva¹ ¹ Natural History Museum and Botanical Garden of the Federal University of Minas Gerais, Belo Horizonte, MG, Brazil. *E-mail: aleresende@mhnjb.ufmg.br

Introduction

This project BGGS was created by the Brazilian Botanical Gardens Network and deployed at the Natural History Museum and Botanical Garden of the Federal University of Minas Gerais (MHNJB/UFMG) in 2012. Its objective is to establish an educational process with the school community through actions of environmental education in order to promote the role of Botanic Gardens (BGs) in biodiversity conservation and the environmental sustainability. The project also aims to arouse the sense of ownership and reinforce the school educational project. The choice of the target public, the school community surrounding MHNJB, occurred after detection of the lack of promotion the work and the importance of BGs in schools, and the little use of these spaces to develop the program content in context of the local reality.

Results The results of project during 2012-2014 were:

Partnership with 3 public schools in Belo Horizonte, MG, Brazil and other 2 educational institutes;

Education of 150 teachers and 2000 students;

14 sub-project executions with varied themes such as water, recovery of degraded areas, ethnobotany;

Production of 3 Science and Culture Fairs;

Participation in scientific events of basic and graduate education;

Professional and academic education of 6 Biology and Geography graduate students.

Metodology



Project evaluation step by step \rightarrow quali and quantitative techniques are used: observation, group dynamics, questionnaires and interviews



1. Chest of Life: For the implementation of sub-projects with students, the school can count on the BG staff and the several educational materials, including books, videos and games provided by BG which compose the Chest of Life.



2. Teachers Education; 3. Creating vegetable garden at school; 4. Planting aromatic and medicinal herbs in PET bottle; 5. Learning about composting in the MHNJB/UFMG seedling nursery; 6. Project Child Authors and its products (7,8); 9. Biodiversity in a drop of water; 10. Younger biologists; 11. Recycled paper workshop.

Final Considerations

 \succ The educational project process includes the concepts of extension and citizenship. The MHNJB/UFMG as experimental workspace enables work with diverse knowledge, conceived in trials, questions and empirical investigations for the social emancipation of the individual, the contact with the object of study favors and promotes the (re) structuring of the subject, so also as the object.

Bibliografy

CERATI, T. O Jardim Botânico vai à escola: a experiência dos Jardins Botânicos brasileiros. Secretaria do Meio Ambiente do Governo do Estado de São Paulo, 2011; ROSA VIEIRA, M. J. F. O jardim botânico vai à escola: Uma atitude de responsabilidade social. 2006. Artigo em Hypertexto. Disponível em: <http://www.infobibos.com/Artigos/2006_2/JB/Index.htm>. Acesso em: 1/2/2012; Marandino, M. Museus de Ciências, Coleções e Educação: relações necessárias. Museologia e n.2 Patrimônio v 2 jul/dez de 2009 Disponível em: http://revistamuseologiaepatrimonio.mast.br/index.php/ppgpmus. Acessado em 25/10/2010.

Acknowledgment

Thanks to the school community of the State Schools Instituto Agronômico and Presidente Dutra and to the Municipal School Profa. Maria PRÓ-REITORIA Modesta Cravo for the partnership; and to the other graduated students who worked in this project, Ricardo, Bárbara e Cristiane.









Botanical Garden of Tver State University

"KNEEL DOWN BEFORE THE PLANTS!" -SCIENTIFIC, SOCIAL AND ECOLOGICAL **PROJECT OF THE BOTANICAL GARDEN OF THE TVER STATE UNIVERSITY**

Russian Federation, 170100, Tver, Zhelyabova St. 33, +7 (4822) 52-53-18 ulayspirina@mail.ru naumtsev@mail.ru http://garden.tversu.ru

Bryophytes are the second numerous group of species among land plants. They play very important environment-forming role in diverse range of ecosystems. Nevertheless, they are neglected by the people, human awareness of bryophytes biodiversity, life cycle and specific features still remains very poor. Consequently, people do not understand the importance of this group and its conservation.



Realizing these points, 15 years ago we started a multipurpose project dedicated to studies and conservation of bryophytes entitled "Kneel down before the plant!" in the Botanical Garden of the Tver State University. At the first step of this project we set up four main areas of the

work: 1. Studies of the biodiversity of regional flora of bryophyles; 2 Educational bryological programs for school children and university



The main trends of bryophytes biodiversity researches are the studies of regional bryoflora diversity, studies of branch development in pleurocarpous mosses and peristome development (in collaboration with the Main Botanical Garden of RAS, Moscow) and studies of mosses as bioindicators in urban



In 2000 in the Garden the special display named "Secret Garden" was created as a multipurpose approach to the bryophytes ex situ conservation and as a possible way of the usage of mosses in landscape design. ືÐhis experimental work is still quite unique among the activities of botanical gardens located in the ternitories with continental climate. In recent time we can see creation of mosses displays in others botanical gardens e.g. in the Berlin-Dahlem Botanical Garden, in the Helsinki University Botanical Garden, in the Botanical Garden of the Moscow State University.We know about the presence of bryophytes displays in the gardens with humid climate and in the green houses, but the methods of bryophytes growing there are easier than in sharply continental conditions



students 3. Methods of ex situ conservation of bryophytes and approaches to the use of these plants in landscape design; 4 Ecological educational programs and projects for local society aiming at raising awareness of people on study and conservation of







Furthermore, live bryophytes collections are nearly absent in botanical gardens. We came to the conclusion that mosses that are present on botanical gardens displays appear as additional accompanying species. These mosses in most cases are not the objects of special studies and observations



since 1998 bryophytes collection is held in the Botanical Garden of the Tver State University. Now it contains 51 species, including mosses, liverworts and a hornwort. 8 of them are rare and endangered bryophytes offiver region. We clearly understood that we won't be able to attract people's attention to these plants only by conducting scientific research that is why we were active in all four areas of the project from the very beginning.

> In the Garden the special educational program, was created for school children and students. During the lessons we pay a special attention to morphological, and taxonomic diversity of beyophytes, to specificity of its life cycle and to importance of ecological role of bryophytes. Lessons on bryology take place not only indoors but on the displays of the Garden in the conditions similar to the natural environment of the objects under study. At the lessons our students not only get a theoretical knowledge but they also become involved in experimental work in the Garden.

"Kneel down before the plantst" - the title

of the project - speaks for itself and

kinds of our visitors. Small plant for small garden – it is a symbolic approach. This

small bryophytes make people kneel down

before the nature, even literally. People

impression.









bryophytes.

Community Mapping: Changing Perspectives and Shifting Norms

Given the plethora of competing social and economic issues, what is the best way to engage communities on the topic of local biodiversity?

This poster highlights a series of Gardenconvened and Garden-facilitated teacher summits and workshops conducted in 2014, held in collaboration with more than 20 community partner organizations, that challenged educators to visualize their local landscapes as outdoor learning labs and stewardship sites.

As part of their experience, teachers used Google Earth and other accessible technologies to map their schoolyard campus in the context of their immediate community/ neighborhood. Participants were prompted with questions and concepts about:

- local flora and fauna
- ecological functions of landscapes
- current realities and challenges
- their own capacity to act

The mapping and visioning exercise was designed as replicable and scalable for a variety of audiences, enabling citizens to literally see the bigger picture and how they fit into it.





2014

Nature in our

Veighborhood

July 14-July 16

MINIBUR SCIANCAL GARRIN

STEMpact

@ main A



- Convene the local early childhood community around the topic of ensuring positive, frequent experiences with nature during the early learning years
- Facilitate dialogue, encourage new thinking, enable new experiences, foster new collaborations, spark change
- Convene K-12+ educators around the topic of urban biodiversity as a community-wide issue affecting quality of life of the region
- Explore how STEM investigations by local students and teachers can contribute to urban biodiversity in the region
- Facilitate dialogue, encourage new thinking, enable new experiences, foster new collaborations, spark change
- Challenge STEMpact teachers to rethink (and map) the nature in their campus/ community as an outdoor STEM lab

Technologies we played with:

- Free mapping software: ArcGIS, Google Earth, Microsoft Virtual Earth
- Misc. apps : iNaturalist, eBird, YardMap, Journey North
- Paper, pencils, and pens!

Technologies we look forward to playing with:

- EPA's EnviroMapper, EPA's MyWaters mapper
- TileMill (from Mapbox), CartoDB, Nature Passport



Objectives

Participants

- 81 educators, parents, district-level staff
- Representing 20+ preschools, centers, universities, and organizations
- 73 educators, districtlevel staff, community professionals
- Representing 40+ K-12 schools, universities, and organizations
- 120 K-8 educators
- Representing 12 districts and 40 schools

Feedback/take-aways

"You need to insist all administrators attend a similar summit. Open their eyes!"

"The energy to champion the cause of promoting more outdoor learning is boosted after realizing the joy I found in exploring the outdoors over these three days. The experts made readily accessible these days were an invaluable resource."

"This summit has been a huge motivator to make change on campus."

"An energizing experience that has motivated me to press the issues discussed with my school's administration."

"The apps that were shared are great. I had no idea that some existed."

"Thank you for designing this opportunity for educators to come together to plan, learn and discuss the importance and future of environmental/nature exploration education. Connecting to others in the St. Louis region and hearing their successes and struggles makes the process of adopting or further developing nature classrooms seem an organic growing process and a verification that we are headed in the right direction with our efforts. The summit was re-energizing."

How can different scales prompt different thinking? Different questions? Different actions?









Can nature-mapping connect neighborhoods?

In 2015-2020, we intend to keep pursuing this question by...

- Enabling and inviting all citizens to nature-map online
- Following up with the mapping efforts of 2014 teachers and engaging district-level leadership/administration
- Engaging underserved communities/neighborhoods





