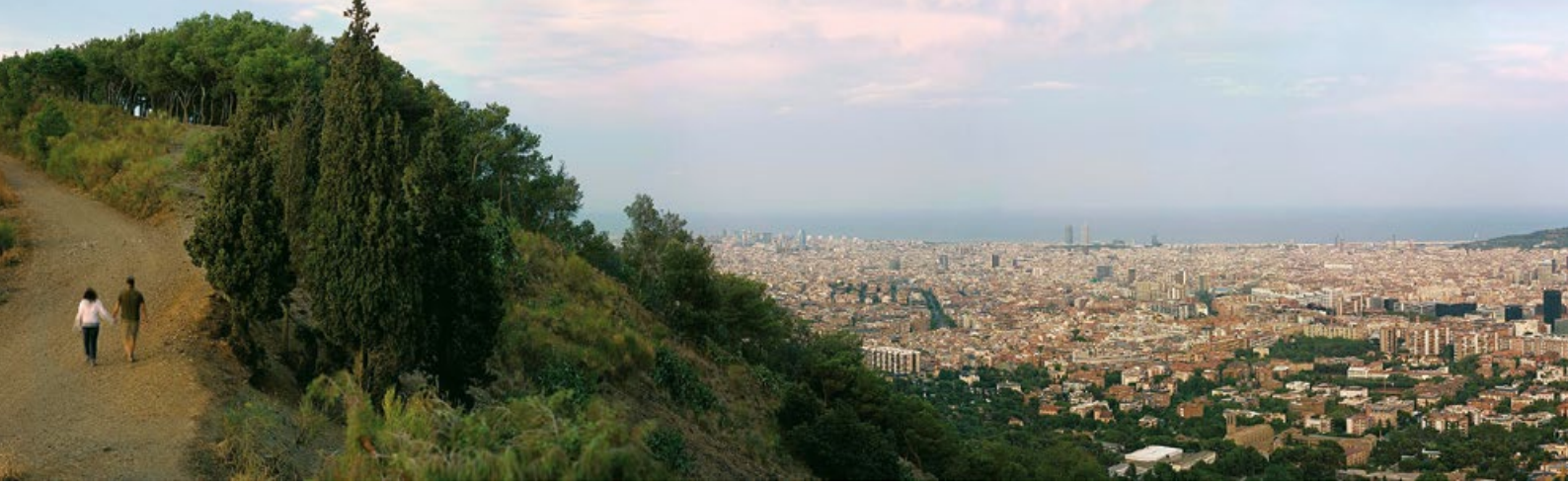
European Forum
on Urban Forestry
31st May - 2nd June

URBAN FOREST BOUNDARIES

Within, between and beyond the city

BOOK OF ABSTRACTS

Barcelona 2017



PRESENTATION

The European Forum on Urban Forestry (EFUF) celebrates its 20th anniversary in the metropolis of Barcelona. The congress is open to researchers and professionals who are interested in reflecting on the urban forest fringe areas as spaces of opportunities that can be connected with and contribute to the territory.

Twenty-first century cities have transformed their way of thinking: they have abandoned the idea of a central city with peripheral areas to now view the metropolis as a territorial mosaic of spaces, corridors and flows; a biophysical matrix where green infrastructure structures the territory to the detriment of the role of large transport infrastructure, and where spaces at the edge, on the limit, stop being administrative lines and begin to be seen as strategic spaces for ecology, leisure and production.

Under the title: “Urban Forest Boundaries. Within, between and beyond the city” we raise the importance of urban and peri-urban forests in building a sustainable and healthy landscape. We address issues such as ecological connectivity, compatibility of ecosystem services, biodiversity and disturbances, and the social aspects of forest management and planning those fringe areas in collaboration with the new culture of leisure. For all the above, we invite you to participate in our Congress, so that together we can address the latent problems in the contact and interaction between two realities destined to coexist: the city and open spaces.

Organized by

EFUF European Forum on Urban Forestry

CENTRE FORESTAL TECNOLÒGIC DE CATALUNYA

AMB

Supporting organisations

EFI

CREAF

ELFOCAT

icta Institut de Ciència i Tecnologia Ambientals · UAB

Universitat de Lleida

Institut d'Estudis Catalans

ICHN

Diputació Barcelona

Generalitat de Catalunya

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ORGANISING COMMITTEE

Ramon Torra i Xicoy
AMB General Manager

Degree in Architecture from the Superior Technical School of Architecture of Barcelona (1980). He currently holds the General Manager position at Barcelona Metropolitan Area and is Chief Executive Officer at IMPSOL (Metropolitan Institute for Land Development and Management). He was also an author of the Barcelona Metropolitan Territorial Plan and is a Professor at UPC and EAPC, teaching different Master's degrees and postgraduate courses.

Toni Trasobares
Director of Forest Sciences Centre of Catalonia (CTFC)

PhD in Forestry Management Planning and Economics from Joensuu University, Finland. Author of different scientific and technological-transfer publications in the fields of multifunctional forestry management, adaptation to climate change and forestry economics.

Montse Barniol
Forestry General Director of the Ministry of Agriculture, Livestock, Fisheries and Food of the Generalitat de Catalunya (Government of Catalonia)

Degree in Geography from Girona University, Expert in Business and Tourist Activities and also completed a postgraduate degree in Local Government. In 2003 she coordinated Asialink, a European project lead by Salzburg University (Austria).

Javier Retana
Director of CREAF (Ecological and Forestry Applications Research Centre)

Professor of Ecology at the Autonomous University of Barcelona. His research is based on the study of forestry dynamics and the effect of disturbances, particularly fire, on the wildlife and flora. At CREAF, he coordinates a research group on the "Dynamic of the forest ecosystems and fire ecology", which was awarded the title of Group of Excellence by the Generalitat de Catalunya (Government of Catalonia).

Jesús Calderer
Natural Spaces Joint Representative for Diputació de Barcelona (Barcelona Provincial Council)

Mayor of Cercs (Province of Barcelona). His professional career has focused on business activities combined with different institutional posts such as Chairman of the Association of Berguedà Municipalities for Biomass and Deputy Vice-president of the Berguedà Development Agency (Province of Barcelona).

Clive Davies
International consultant

Clive Davies is an international consultant and academic in Green Infrastructure and Urban Forestry. He has over 35 years' experience in both practice and research. Clive works extensively across Europe and is a member of COST Action 'GreenInUrbs' and EFUF. He is closely affiliated with Newcastle University (UK), GREENLAB at UNIBA (IT) and is Director of MD2 Consulting Ltd.

Albert Garduño
Head of Communications at EFIMED (Mediterranean Regional Office of the European Forest Institute)

Degree in PR, Advertising and Communication from Ramon Llull University and Master's degree in Human Rights, Democracy and Globalisation at the Open University of Catalonia (UOC).

Ramon Moliner
President of ELFOCAT (Forest Local Entities Association of Catalonia)

Senior technical telecommunications engineer. He is the Chairman of ELFOCAT and Vice-president of the European Federation of Municipal Forest Owners (FECOF) as well as the Mayor of Alp (Province of Girona) and Chairman of the Cerdanya County Council (Province of Girona).

Martí Boada
Professor at the Autonomous University of Barcelona

PhD in Environmental Sciences. He also completed a degree in Geography at the Autonomous University of Barcelona, studied Sociology in the Catholic Institute of Social Studies of Barcelona (ICESB) and Chemistry at the Barcelona Industrial School. He is also a member of the Spanish Committee of the United Nations Environment Programme (UNEP) and a professor and researcher at the Science and Environmental Technology Institute (ICTA) among other universities and Master's degrees.

LOCAL SCIENTIFIC COMMITTEE

Antoni Farrero

General Infrastructure Coordinator at AMB

PhD in Forest Engineering from the Polytechnic University of Madrid. His professional career has seen him work in depth on the planning, management and construction of projects related to the environment and public spaces, both for governing bodies and the private sector.

Cristina Vega

Researcher affiliated to the Forest Sciences Centre of Catalonia (CTFC)

Full University Professor of Landscape Forestry and Ecological Planning at Lleida University and researcher affiliated to the Forest Sciences Centre of Catalonia. She has worked on scenic valuation of forests and on the modelling of the threat of wildfires to landscape for its integration in multifunctional forestry planning, particularly in the urban-forest interphase and on its socio-economic impact.

Xavier Clopés

Joint Forestry Analyst for the Deputy Directorate General of Forestry of the Generalitat de Catalunya (Government of Catalonia)

Degree in Forest Engineering from the Polytechnic University of Madrid in 1984. His professional career has been associated with the forestry administration of Catalonia since 1987, with broad experience in private and public forestry management in all of its fields. Head of the Forestry Management Service from 2003 until 2011 and was Deputy Director General of Forestry of Catalonia until January 2017.

Carles Castell

Natural Spaces Management Expert at Diputació de Barcelona (Barcelona Provincial Council)

PhD in Biology and Master's degrees in Managerial Functions and Environmental Management in Rural Areas. He researched the dynamic of Mediterranean ecosystems for ten years at the Autonomous University of Barcelona and has participated in projects of protected natural spaces and territorial and urban planning in his role as Natural Spaces Management Expert at Diputació de Barcelona (Barcelona Provincial Council).

Joan Pino
Professor of Ecology at the Autonomous University of Barcelona

PhD in Biology from the University of Barcelona and Master's degree in Geographical Information Technologies from the Autonomous University of Barcelona. Currently, he is a Professor of Ecology at the Autonomous University of Barcelona, researcher at CREAF and Chairman of ICHN (Catalan Institution of Natural History). His research focuses on the ecology of metropolitan landscapes and their relation to the preservation of biodiversity and the provision of ecosystem services, as well as applying these results to territorial planning.

Roser Maneja
Researcher of Environmental Science at the Autonomous University of Barcelona

PhD in Environmental Science from the Autonomous University of Barcelona in 2010 and Master's degree in Environmental Science, specialising in Ecological Economy, also from the Autonomous University of Barcelona in 2007. She is currently a postdoctoral researcher at the Institute for Environmental Science and Technology (ICTA-UAB), mainly in the research fields of environmental education and scientific communication and dissemination. She was previously a member of the research group directed by Dr. Martí Boada since 2002.

Narcís Ribes
Director of ELFOCAT (Forest Local Entities Association of Catalonia)

Forestry engineer and consultant. Currently the director of ELFOCAT, he previously worked in the forest engineering business and his previous roles include Director-Conservator of the Garrotxa Volcanic Zone Natural Park (Province of Girona), Chairman of the Consortium for the Protection and Management of Alta Garrotxa (Province of Girona), Dean of the Forestry College of Engineers of Catalonia, Head of the Small Municipalities and Deprived Areas Programme of the Generalitat de Catalunya (Government of Catalonia) and Mayor of Montagut i Oix (Province of Girona).

Inazio Martínez de Aro
Head of Office at EFIMED (Mediterranean Regional Office of the European Forest Institute)

Degree in Biology/Biological Science and Terrestrial Ecology from the University of the Basque Country and Master's degrees in Territorial Planning from the Polytechnic University of Valencia and in Forest Science and Silviculture from Austral University of Chile. Former Executive Chairman of the Union of Foresters of Southern Europe (USSE). His previous roles include Coordinator of Forest Research and Researcher at the Basque Institute for Agricultural Research (NEIKER), Chairman of the European Institute for Cultivated Forests (IEFC) and Professor at University of Concepción, in Chile.

INTERNATIONAL SCIENTIFIC COMMITTEE

Cecil Konijnendijk

Professor of Urban Forestry, University of British Columbia, Canada.

He joined the Department of Forest Resources Management at the University of British Columbia in Vancouver, Canada, as a professor in Urban Forestry in July 2016. Dr. Konijnendijk is a Dutch national who moved to Canada from Sweden, where he headed the landscape department at the Swedish University of Agricultural Sciences.

Clive Davies

International consultant

Clive Davies is an international consultant and academic in Green Infrastructure and Urban Forestry. He has over 35 years' experience in both practice and research. Clive works extensively across Europe and is a member of COST Action 'GreenInUrbs' and EFUF. He is closely affiliated with Newcastle University (UK), GREENLAB at UNIBA (IT) and is Director of MD2 Consulting Ltd.

Alan Simson

Professor of Landscape Architecture and Urban Forestry at Leeds Beckett University, UK.

He has been involved with landscape urbanism, urban forestry, urban greening, and urban design for many years. He chairs the White Rose Forest, a regional community forest project, and is an Executive Board Member of the Yorkshire West Local Nature Partnership.

Andrej Verlič

BSc in Forestry and PhD in Environmental Protection from the University of Ljubljana.

He works as a research assistant at the Department for Forest Ecology at the Slovenian Forestry Institute. He focuses his research on the governance of forest recreation, perception of forest environment and evaluation of the tourist and recreational use of forests. He was recently involved in an awareness-raising campaign regarding the impact of invasive alien species on forests.

Renate Susanna Spaeth

Forest Officer and Project Leader on urban forestry.

Member of several projects in the fields of forestry, environment, natural preservation in forests, gender and forestry, regional planning, urban forestry and urban greening.

Giovanni Sanesi

Full Professor at the University of Bari

Professor Sanesi is also Deputy of International Affairs at the University of Bari, fellow of the Accademia dei Georgofili, Italy; fellow of the Italian Academy of Forest Sciences (AISF), member of the Directive Committee of the Italian Society of Silviculture and Forestry Ecology (SISEF) and Chair of World Urban Parks applied research working group.

TECHNICAL AND SCIENTIFIC COORDINATION

Helena Sanz
Scientific coordinator

Degree in Architecture from the Superior School of Architecture of Barcelona. She also completed a postgraduate degree on “Territorial Project” of the European Master’s degree in Urbanism at the UPC Foundation and is currently completing her thesis for her Master’s degree in Urbanism and Territorial Planning at DUOT-UPC. She currently combines her tasks in the scientific dissemination of issues related with territory at AMB, with professional tasks in the fields of urbanism and territorial planning.

Eugènia Vidal
Scientific Coordinator

PhD in Architecture from the Polytechnic University of Catalonia (UPC) and Master’s degree in Urbanism from Columbia University (CU). She also has professional and teaching experience in Europe, the United States and Asia and is currently working at the Directorate of Urban Services at Barcelona Metropolitan Area, where she is part of the team of authors working on the Special Plan of Serra de Collserola Natural Park (Barcelona).

Elena Argelich
International Advisor at Barcelona Metropolitan Area (AMB)

Responsible for research and identification of new opportunities in the 2014-2020 UE Programs. Advice and support in international relations and management of European projects. Monitoring and participation on conferences and international networks.

Laura Bertran Arrufat

Architect by ETSAV of the Polytechnic University of Catalonia

She is currently working as an architect at the Innovation Service of the Barcelona Metropolitan Area, specializing in geographical representation and information systems (GIS).

Assu Planas

Head of Scientific Communication and Dissemination at Forest Sciences Centre of Catalonia (CTFC)

With a degree in Communication Sciences from UAB, she is the CTFC Head of Press and Protocol. She manages the CTFC blogs and social media accounts as well as different projects related to the entity. She also provides support in the management tasks and organisation of congresses and events that CTFC takes part in.

Carla Bellera

Scientific communication and dissemination at Forest Sciences Centre of Catalonia (CTFC)

She performs tasks related to the organisation and management of events, national and international congresses and dissemination activities related to developed research at CTFC. She also participates in the management tasks of CTFC's blogs and social media accounts and in the creation of digital contents. She completed a postgraduate degree in Public Communication of Science at UBA, has a Master's degree in Environmental Studies from Girona University and has a degree in Chemical Engineering from the Autonomous University of Barcelona.

PROGRAMME:

May 30th

Welcome

Meet the organisation and EFUF delegates in a welcome cocktail party.

19.30	Welcome cocktail | Gardens of the Royal Palace of Pedralbes Diagonal Avenue 686, 08034, Barcelona

May 31st

Connectivity and ecological value

The urban forest, especially the boundaries, can play a fundamental role in improving environmental conditions and in preserving biodiversity (regulation of erosion and hydrology, ecological connectivity, neo-ecosystems, etc.).

Keywords: *connectivity, biodiversity, new ecosystems, canopy, climate change, resilience.*

Location:	**Headquarters of the Barcelona Metropolitan Area (AMB)** 16-18, 62 Street. Zona Franca, Barcelona 08040 T. +34 93 223 51 51
8.00 - 9.00	Registration | Inscriptions
9.00 - 9.15	Welcome to the European Forum on Urban Forestry
9.15 - 9.45	Opening Conference **"Ecological values of Metropolitan forests; the case in Barcelona"** **Joan Pino**, Doctor in Biology and Professor of Information Technology at the UAB
9.45 -11.00	Plenary Session **"Connectivity and ecological values"**
11.00 - 11.30	Coffee break | Exhibition of posters and networking
11.30 - 13.30	PechaKucha Presentations 20×20 Room 1 | Connectivity and ecological values Room 2 | Social and economic values
13.30 - 14.00	Conclusions of the day
14.00 - 15.00	Lunch
15.00 - 18.00	**Guided excursion to the Llobregat River Park** You will visit the Llobregat River Park and discover its agricultural values during an interesting bike tour (limited availability). **Guided excursion to the Botanical Garden of Barcelona** Explore the world of Mediterranian climate through the species from arround the world (limited availability).

SPEAKERS MAY 31ST

9.45h | Plenary Session (Room 1)
Connectivity and ecological values

Antoni ALARCÓN, Consorci del Besòs
Ecological and landscape connectivity in the river areas.

Eugènia VIDAL-CASANOVAS, et al.; Barcelona Metropolitan Area, AMB
A multiple approach towards ecological connectivity: the future functional space of the Collserola Park as a case study.

Hans Dieter KASPERIDUS, UFZ
3D visualisation as a tool for improving species and structural diversity analysis in Leipzig's urban floodplain forest. Urban floodplain forest, forest inventory, 3D stand structure.

Josep LASCURAIN, SGM SL
Connecting what? Lessons learned from the Collserola-Marina divide.

Maria Beatrice ANDREUCCI, Sapienza Università di Roma
Growing the Urban Forest in Rome (Italy).

Thomas SMILEY, Bartlett Tree Research Lab
Root management in the urban environment.

11.30h | PechaKucha Presentation 20×20 (Room 1)
Connectivity and ecological values

Andrej VERLIČ, Slovenian Forestry Institute
LIFE ARTEMIS: Awareness Raising, Training and Measures on Invasive alien Species in forests.

Sara CORSINOVI, Università di Firenze
Monitoring the spread of phytophthoraspp, in water bodies of green parks areas of the Milan hinterland.

Jacob CIRERA, Barcelona Metropolitan Area (AMB)
Collserola and green metropolitan infrastructure.

Xavier MAYOR, Estudi Xavier Mayor et al. SL
Ecological configuration of public space to improve the population's ecosystem services.

Albert BACH PAGÈS, ICTA-UAB
Biogenic volatile organic compounds, forest air and forest management.

Naomi ZÜRCHER, Arbor aegis
Rethinking the urban green corridor: Connecting city streets with city edges via an urban forest web.

Pablo KNOBEL GUELAR, ICTA-UAB
Unveiling urban green heterogeneity. The Barcelona case study in a Mediterranean setting.

John PARKER, London Tree Officers Association
Surface materials around trees in hard landscapes.

Irina NĂSTASE, University of Bucharest
Evaluation of urban forests connectivity in relation to spatial patterns of urban green infrastructures.

Ignacio J. DÍAZ-MAROTO, Universidad de Santiago de Compostela
The role of the urban forests in ecological connectivity: Green belt of the Lugo city, Spain.

Salvatore MORICCA, Università di Firenze
Land use and climate change trigger phytophthora infestation in an amenity urban wood in Milan.

11.30h | PechaKucha Presentation 20×20 (Room 2)
Social and economic values

Giuseppe COLANGELO, University of Bari
Estimating tree structure and parameters using terrain laser scanner.

Dina ALSAWI ABBOUD, Barcelona Metropolitan Area (AMB)
Environmental and social values of metropolitan parks.

Pepa MORÁN NÚÑEZ, MBLandArch-UPC
Management methodology of the Parc del Riu: from plantation to managed ecosystem.

Giovanna LOGULLO, University of Lleida
Payment of ecosystem services: A tool for water resource protection in the region of Curitiba, Brazil.

Xavier NOGUÉS, et al.; Barcelona Metropolitan Area (AMB)
Section II of the Castelldefels seafront. Castelldefels dune regeneration.

Isabel RAVENTÓS, Collserola Park
Collserola, 30 years of management: Social use and preservation of natural systems.

Alessandra CAPRINI and Oscar ARROYO, ASPESIA SL
Landscape from infrastructure.

Steffen RUST, University of Applied Science and Art
Non-destructive tree risk assessment - recent developments and new approaches.

Sofia VALENZUELA FUENTES, Universitat Politècnica de Catalunya
Defending the skyline.

Roser CAMPENY, et al.; Minuartia Estudis Ambientals
Contribution of Parc de l'Alba to the ecological restoration and strengthening of green infrastructure in the Barcelona metropolitan area.

Samantha KWAN, Sarawak Forestry Corporation
Restoring a forest in urban Miri, Sarawak, Malaysia - The Piasau camp story.

June 1st

Social and economic values

Urban forest has many different social and economic functions, ranging from the provision of population with opportunities for leisure, health and welfare, to the contribution to energy savings in heating and cooling. Due to its nearness to urban zones, forest boundaries are also strategic metropolitan spaces.

Keywords: *health, leisure, social inclusion, equity, circular economy, local economy, economic valuation of ecosystemic services, cultural landscape.*

Location:	**Headquarters of the Barcelona Metropolitan Area (AMB)** 16-18, 62 Street. Zona Franca, Barcelona 08040 T. +34 93 223 51 51
9.15 - 9.45	Opening Conference **"One million urban trees, two million human voices"** **Cecil Konijnendijk**, professor of Urban Forestry in the Department of Forest Resources Management at the University of British Columbia - Vancouver (Canada)
9.45 -11.00	Plenary Session **"Social and economic values"**
11.00 - 11.30	Coffee break | Exhibition of posters and networking
11.30 - 13.30	PechaKucha Presentations 20×20 Room 1 | Complexity and management of urban forests Room 2 | Challenges of communication
13.30 - 14.00	Conclusions of the day
14.00 - 15.00	Lunch
15.00 - 18.00	**Guided excursion to the Collserola Natural Park** Discover a view of the metropolis from Collserola tower and discover Collserola Natural Park guided by the forester managers (limited availability). **Guided excursion to the Besos River Park** Enjoy a bike tour from the Can Zam Metropolitan Park to the Besos river mouth and find out the emblematic landscape restoration project (limited availability).
18.00 - 20.00	Free time
20.30	Forum Dinner Restaurant from the Sport Centre La Salut, 75 Mare de Déu de la Salut St, Barcelona

SPEAKERS JUNE 1ST

9.45h | Plenary Session (Room1)
Social and economic values

Eduard PLANA BACH, Forest Sciences Centre of Catalonia, CTFC
The relationship between peri-urban forests and society: management and communication of the risk of wildfires as a reason of dialogue.

Antoni FARRERO, et al., Barcelona Metropolitan Area, AMB
Linking agricultural and forest management to the preservation and enhancement of the built heritage: perspectives and possibilities from PEPNat.

Arne ARNBERGER, University of Natural Resources and Life Sciences, Vienna
Forest insect impacts on visual preferences of urban forest visitors; emerald ash borer; discrete choice; urbanized viewscapes.

Erdoğan ATMIŞ, Bartin University
Changes in perception of urban forests in Turkey.

11.30h | PechaKucha Presentation 20×20 (Room 1)
Towards a comprehensive approach

Isabel TOMÉ, et al.; Barcelona Metropolitan Area, AMB
Three strategies along the Besós river.

Fabio SALBITANO, University of Florence
Research on urban forest and green spaces in the Mediterranean region: a review.

Bianca BAERLOCHER, Bern University of applied Sciences
ArboCityNet – A cross-sectoral and transdisciplinary Swiss urban forestry network.

Maria Luisa SOLSONA GILABERT, Barcelona Metropolitan Area, AMB
Can Ginestar Park.

Corina BASNOU, CREAF
Biodiversity and ecosystem services patterns in the province of Barcelona: implications for green infrastructure planning at the landscape scale.

Carles DALMASES, et al.; Diputació de Barcelona
Forest and land planning in metropolitan areas.

Carles CASAMOR, et al.; BAENA CASAMOR ARQUITECTES BCQ, SLP
Tres Turons.

Teresa GOMEZ-FABRA, et al.; Barcelona Metropolitan Area, AMB
The metropolitan edges: spaces for relationship and exchanges. Strategic PDU project.

Martí FRANCH BATLLORI, Estudi Martí Franch Arquitectura del Paisatge
Girona: the city edges. Practices and open methodology for implementing green urban Infrastructure in Girona.

Pepa MORÁN NÚÑEZ, MBLandArch-UPC
Methodology for urban forest landscape planning to reduce the risk of major forest fires.

Carlos HENRIQUES FERREIRA, Joana PEREIRA, FAUL-CIAUD
Territorial boundaries and urban challenges. New approaches in the peripheral areas of Lisbon.

Goran KRSNIK, Forest Sciences Centre of Catalonia, CTFC
Importance of urban forests for urban heat island management.

11.30h | PechaKucha Presentation 20×20 (Room 2)
Communication challenges

Rik DE VREESE, BOS+ & Vrije Universiteit Brussel (VUB)
#DokterBos #DoctorWoods - a Social media campaign to raise awareness on the impact of nature, forest and green on public health and well-being (Flanders, Belgium).

Xavier ESTIVILL, et al.; MOMENTUM
The public participatory process for the new Collserola Plan [PEPNat].

Ana Belén NORIEGA BRAVO, PEFC SPAIN
Sustainability & communication tools in urban forestry.

Joachim ENGLERT, SocialForest
Social urban forestry.

Isabel SALVÀ ROSSELLÓ, Ajuntament de Badalona
Urban commitment to spaces on the edge.

Antoni CASAMOR, BAENA CASAMOR ARQUITECTES BCQ, SLP
How to enjoy environment without disturbing it.

Johan ÖSTBERG, Swedish University of Agricultural Sciences
Urban Tree Inventories – What to do with data.

June 2nd

Complexity and management of urban forests

We need a comprehensive understanding of the benefits and multiple uses of the urban forest. The planning, design and management of the fringe areas should integrate in their approaches both the ecological and the socio-economic perspectives.

Keywords: *nature based solutions, adaptive management, citizen participation.*

Communication challenges

Communication plays a key role in decision making. Regarding urban forests, we should face the triple challenge of a highly changing ecological environment, a particular social perception of the agroforestry areas and a lack of technical references for the evaluation of environmental disturbances due to its proximity to urban spaces.

Location:	**Headquarters of Catalan Studies Institut** Carme Street, 47. Barcelona, 08001 T. +34 932 701 620
9.00 - 10.30	Plenary Session **"Complexity and management of urban forests"**
10.30 - 12.00	Plenary Session **"Challenges of communication"**
11.15 - 12.00	Coffee break - Brunch | Marketplace
12.30 - 13.45	20th anniversary of the EFUF **"Looking back and looking to the future"**
13:45 - 14:30	Announcement of the EFUF 2018 edition "Young Urban Forester of the year" Award Presentation of the EFUF association
14.40 - 15.00	Closing Conference

June 3rd

Metropolis Barcelona trip

For those who have time, we would like to invite you to an activity organised specially for participants. We will visit different emblematic spots in order to discover the green metropolitan infrastructure.

SPEAKERS JUNE 2ND

9.00h | Plenary Session (Room1-IEC)
Towards a comprehensive approach

Enric BATLLE, Batlle i Roig Arquitectura
Merging public space and nature. Constructing an efficient urban metabolism.

Robert NORTHROP, University of Florida
Science, Policy and Management

Carles CASTELL, Diputació de Barcelona
Urban forest as a key to metropolitan green infrastructure.

Matilda VAN DEN BOSCH, The University of British Columbia
Urban natural environments as Nature based solutions for improved public health – a systematic review of reviews.

Benedetto SELLERI, Pan Associati S.R.L.
The EXPO landscape in EFUF perspective: from 2013 to 2017.

Alan SIMSON, et al.; Leeds Beckett University
Polycentric city regions - Urban forestry & landscape structure planning.

10.30h | Plenary Session (Room1-IEC)
Communication challenges

Clive DAVIES, et al.; Newcastle University
Different approaches to governance of urban greenspace in Europe through a trans-sectional study.

Ana ROMERO CÀLIX; Barcelona Metropolitan Area (AMB)
Governance and educational value of transition spaces.

Sara FRYER BARRON, University of British Columbia
Future forest scenarios.

Chris BAINES, Chris Baines Associates Ltd
Domestic gardens as a key to biodiversity and public engagement in the urban forest.

Christoph SCHRÖDER, Malaga University
Social Innovation and Urban Forests - the role of science and social movements to influence decision making about urban forest design.

POSTER EXHIBITION FROM MAY 31ST TO JUNE 1ST

Connectivity and ecological value

Virgínia VALLVÉ CÁDIZ, Ajuntament de Cornellà de Llobregat
Cornellà Natura.

Enrique ÁLVAREZ DOMÍNGUEZ, CREAF
Spread to urban edges of ornamental alien plants planted in Barcelona gardens.

Jaume MARLÈS MAGRE, ICTA-UAB
Assessing the urban green factors influencing the nesting of passerines. The case study of a Mediterranean city in Catalonia, Valls.

Yolanda MELERO, CREAF
Butterfly biodiversity, dispersal and permeability.

Jordi CAMPRODÓN, Forest Sciences Centre of Catalonia, CTFC
Promoting biodiversity in urban green areas in Barcelona.

Social and economic values

Ignacio Javier DÍAZ-MAROTO, Universidad de Santiago de Compostela
Socioeconomic functions of urban forests and their landscape boundaries as areas of vital importance for conservation: Case study in Lugo city, Spain.

Joan ROVIRA BLANCO, Diputació de Barcelona
Participation of social third-sector organisations in the improvement of forest habitats in metropolitan environments (Parc de la Serralada de Marina).

Josep LASCURAIN, SGM SL
Perception vs evidence. Human induced impacts on the urban-forest fringe perceived human impact, #social-media listening, and recreation ecology.

Fermín J. ALCASENA URDÍROZ, Universitat de Lleida
The contribution of biophysical wildfire modeling and risk assessment to landscape and urban planning in the Wildland Urban Interface.

Towards a comprehensive approach

Joan Carles SALLAS PUIGDELLIVOL, Ajuntament de Cerdanyola del Vallès
Cerdanyola, the healthy city near Collserola Park.

Laura MARTÍN MARTÍNEZ, Ajuntament de Sant Cugat del Vallès
The application of the patch-corridor-matrix model in three territorial plans of three European urban regions.

Joan PINO, CREAF
Relevance of interstitial and edge spaces in the green infrastructure of the Barcelona metropolitan area.

Antoni MARTÍNEZ, Universitat de les Illes Balears
Green cooling corridor for the city of Palma (Mallorca, Spain).

Álvaro CLUA, Universitat Politècnica de Catalunya
Natural urbanity on the urban edge. Design considerations for Torre-Negra, Collserola.

Communication challenges

Rik DE VREESE, BOS+ & Vrije Universiteit Brussel (VUB)
Green Learning Environments for children with learning disabilities.

Ana ROMERO, et al.; Barcelona Metropolitan Area (AMB)
Urban forests? An educational proposal.

Lídia BARCELÓ, et al.; Barcelona Metropolitan Area (AMB)
The socio-environmental values of parks (tutorial).

Urša VILHAR, Gozdarski inštitut Slovenije
Optimizing water retention potential in urban forests.

Connectivity and ecological value

May 31st, 9:15 Opening Presentation

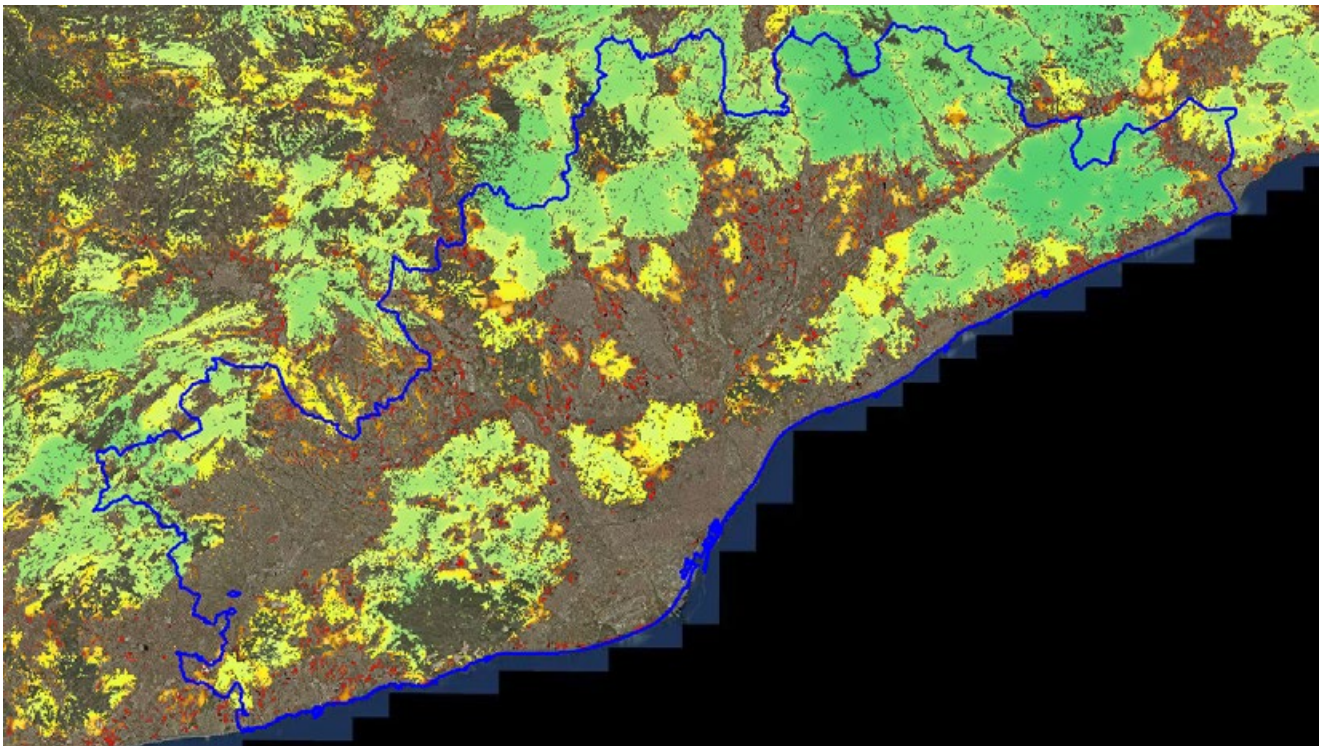
METROPOLITAN GREEN INFRASTRUCTURE

A FIT OF ANCIENT, NEW AND TRANSITION ECOSYSTEMS, IN BETWEEN THE URBAN FABRIC

Joan Pino

Professor of Ecology at the Autonomous University of Barcelona. PhD in Biology from the University of Barcelona and Master's degree in Geographical Information Technologies from the Autonomous University of Barcelona. Currently, he is a Professor of Ecology at the Autonomous University of Barcelona, researcher at CREAF and Chairman of ICHN (Catalan Institution of Natural History). His research focuses on the ecology of metropolitan landscapes and their relation to the preservation of biodiversity and the provision of ecosystem services, as well as applying these results to territorial planning.

Open spaces that occupy most of the metropolitan area are responsible for the maintenance of a very interesting biodiversity and provide essential ecosystem services to citizens. However, the alterations that came along with the historical and contemporary transformations of the metropolitan landscape have influenced the ecosystems. The case of Barcelona will illustrate the conference: the general situation of these ecosystems will be evaluated, focusing on the need to preserve them. The conference will also show a few examples on how the alterations have determined the structure and composition of the metropolitan ecosystems, where lots of very different species can be found (very demanding species together with species that belong to humanised landscapes, often exotic), leading to new ecosystems with their own new rules and features.



May 31st, 9.45h Plenary session

THE RIVER BESOS. BIODIVERSITY AND ECOLOGICAL CONNECTIVITY

Antoni Alarcon Puerto

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Since 2013, He is a manager of a public corporation, the Besos Consortium. It was created in 1998 by the city councils of Barcelona and Sant Adrià de Besòs, and in 2012 was expanded with the addition of the municipalities of Santa Coloma de Gramenet and Montcada i Reixac and finally Badalona. The main element of this territory are the 10 linear kilometers of the river Besòs.

He had worked for the public agency Barcelona Regional, Metropolitan Agency for Urban Development and Infrastructures, since 1995 until 2013, where he were the Director of Environmental Projects and Deputy Manager. He worked in projects related to environmental and regional planning. He had codirected the entire environmental recovery process of the final stretch of the Besos river. Also, he had coordinated the Master Plan writing of the future Barcelona Sea Zoo and he worked in the environmental aspects of several projects in the metropolitan area. He developed projects for the recovery of the Besòs coastline related to Forum of Cultures 2004, such as the recovery of the Barcelona seabed

Objectives
Urban spaces are surrounded by nature. In the Besos, the situation is the opposite; nature is surrounded by city. This differential situation requires special attention on dealing with the ecological values of this area given that, due to the special conditions of its recovery, the improvement of biodiversity and connectivity is a priority issue. The green infrastructure deserves special attention. This is a network of spaces with different functions which contributes to the ecological, social and environmental improvement of this territory. If planned strategically, designed and managed adequately, it can help to provide a wide range of ecosystem services.

Results
Years after the establishment of the Besos River Park, its success is clear in terms of recovery of the biodiversity lost. In relation to vertebrate fauna, seven fish species have been described; in addition to the presence of up to four species of amphibians, some eight species of reptiles. However, the majority group, which has been continuously monitored over the last 15 years, is that of birds. Over 200 species have been detected in the Park, of which some 15 breed in the Park itself.
As for mammals, their presence is mainly in the form of micro-mammals, although it is worth highlighting the presence in the river of the polecat which, together with the wild boar and the European rabbit, reveal how the most natural part of the River Park acts as a biological corridor.

Conclusions
The Besos River Park represented a turning point in the recovery and transformation of the final section of the Besos basin. In this time, an important environmental and landscape improvement has been obtained, and it has moreover been an unprecedented social success. Thousands of citizens visit it each year, it being a setting where you can walk, observe nature, ride a bike or practise all kinds of sports and leisure activities.

A MULTIPLE APPROACH TOWARDS ECOLOGICAL CONNECTIVITY: THE FUTURE FUNCTIONAL SPACE OF THE COLLSEROLA PARK AS A CASE STUDY

Keywords: urban forest boundary, social and ecological connectivity, Collserola Park

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PhD in Architecture from the Polytechnic University of Catalonia (UPC) and Master's degree in Urbanism from Columbia University (CU). She has practiced and taught in Europe, United States and Asia and she is currently working at the Barcelona Metropolitan Area in the new plan for the Collserola Park.

Objectives
Collserola Park is located amid the Barcelona metropolitan area. It is a well preserved, 8.000 hectare natural space, surrounded by a large population. Its central location entails spatial fragmentation as well as significant human pressure. As a result, it is a park with a highly anthropised boundary, scarce ecological continuity with other open spaces and a substantial internal fragmentation. At the same time, much of its importance lies in the accessibility of its values. Both aspects, high social pressure and ecological isolation set Collserola apart from other European parks.

Framework
The future environmental plan defines an adjacent functional space in order to reduce the impact on the park. The definition of this external area of transition is very complex since it has to take into account issues of different scale, territorial scope and focus, such as the connectivity with the green infrastructure, the social use of the space, or the contact with the urban areas. Moreover, the functional space must involve and guide the various stakeholders and authorities, among them nine different municipalities, concerned with the Collserola Park.

Results
The functional space responds both to the social use of the park as well as to the preservation and improvement of its ecological values. The proposal contains the definition of its boundaries, six guidelines and a list of actions. Boundary: The functional space includes areas adjacent to the park that, either by its characteristics or by its functionality, are likely to establish synergies with the preserved space. The areas of study include key spaces in relation to fragmentation and ecological connectivity, areas with pending transformations, and spaces in contact with urban centers. Guidelines: Future plans and projects in the functional space will have to consider the following guidelines: 1. Promote the ecological connectivity of the Collserola Range with other open spaces 2. Strengthen the ecological values of the boundary and avoid internal fragmentation 3. Reduce geological hazards, fire and flood 4. Minimize disruptions and the impact on the park of the urban fabric and the buildings nearby 5. Give continuity to the metropolitan network of open spaces and green corridors 6. Support leisure activities within the outer boundary of the park. Actions: The plan currently being defined for the functional space establishes a series of proposals that relate to urban planning, restoration (or physical intervention) and management. These proposals are organized, according to their general or particular character, into either projects types or specific local determinations.

Conclusions
The functional space of Collserola comprises a multiple approach towards ecological connectivity. It establishes a common framework for the various stakeholders involved and provides a comprehensive treatment of the boundaries of the urban forest.

Keyref
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3D VISUALISATION AS A TOOL FOR IMPROVING SPECIES AND STRUCTURAL DIVERSITY ANALYSIS IN LEIPZIG'S URBAN FLOODPLAIN FOREST.

Kasperidus Hans Dieter

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Studied Landespflege (landscape ecology and landscape architecture) at the Technische Universität München in Freising, Germany and has since worked in a variety of interdisciplinary and international research activities. Research focus is on the development of concepts and management strategies for urban green spaces, urban forests, and in floodplain ecology to support sustainable urban development in European cities

Objectives
Contemporary society is increasingly impacted by trends in automation as technical developments in computer hardware and software make it possible to automate many jobs that otherwise would have been carried out by a human (Parasuraman et al., 2000; Bayat

Framework
In this presentation, we will focus on forest inventory data of these plots that show the stand structure of the forest with help of a 3D-visualisation tool in combination of selected indices of species and structural diversity. The particular tree and stand structure of a plot gives additional meaning to ecological conditions and indices gained from the field survey because it influences substantially the further development of the forest stand. In multilayered and mixed stands as we usually can found in the project area it is necessary to take the 3D stand structure into account for a better interpretation and evaluation of standard diversity indices. This is particularly important to determine if future developments of the forest stands is an effect of the planned river revitalization or caused by other environmental conditions.

Results
For this purpose forest stand level data, like species, diameter, crown base height, tree height, and additional parameter relating to tree dominance and health conditions were recorded. Each tree can be identified by precise x,y,z-location within the plots which have been determined with help of satellite und optical surveying. With these data we can calculate species and structural diversity indices and produce 3D-representations of each plot with a view from all cardinal points. On 60 plots, each with an area of about 0,25 ha, we measured more than 6000 standing trees with a diameter at breast height of 5 cm and greater. The preliminary analysis of the inventory data base shows following results. It includes trees and shrubs of about 25 species. Most dominant species in numbers are Acer pseudoplatanus, Fraxinus excelsior, and Ulmus spp. On about 20 plots we can find 10 to 15 species. The 3D-Visualisation shows very diverse stand structure in the different locations. The calculation of the diversity indices is in progress and will be presented at the conference.

Conclusions
The first results of the evaluation process shows that the combination of 3D-visualisation and analysis of key diversity indices of forest stands is useful to get a better understanding of the current ecological status of Leipzig's urban floodplain forest.

Keyref
Pretzsch, H. 2010: Forest Dynamics, Growth and Yield – From Measurement to Model, Springer Heidelberg, 664 p. further information can be obtained from the project website: www.lebendige-luppe.de.

CONNECTING WHAT? LESSONS LEARNED FROM THE COLLSEROLA-MARINA DIVIDE

Keywords: Novel ecosystems, landscape change, connectivity

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Landscape ecologist. Founded SGM s.l. on 1999. Member of the OPERAs project (FP7 EU funded) devoted to fill the gap between Ecosystem services science and practice.

Objectives
The "wildlife viaduct" concept is very popular because its power to epitomize the way a connectivity "gap" can be "bridged". But a previous analysis of the ecological context can give a different picture. Different studies funded by Barcelona Regional and the Metropolitan Administration of Barcelona, showed the importance of four main drivers: the physical characteristics of infrastructures acting as barriers, landscape change, the novel ecosystem condition, and how social use can interfere with ecological connectivity.

Framework
On a first stage the studies consisted on camera trapping and fieldwork to study the detailed structure of the "barrier" zone. Those initial results led to a further analysis of landscape change, and the analysis of the role of the concept of novel or emerging ecosystems (with completely new sets of species and their relative abundances).

Results
More than 7.000 hours of camera trapping (including different studies funded by the previously cited institutions) showed two unexpected outcomes: the big asymmetry between both sides of the barrier (defined as the feed-back between a channelized river, roads, trails and fences) in terms of species abundance; and the overwhelming role of unleashed dogs and feral cats. The disappearance of the rain-fed traditional landscape both in form of agricultural patches embedded on the forest matrix, or forming a previously extensive agricultural ring, has been previously cited as a factor of biodiversity loss; however the new outcome was that the last remaining agricultural patches where the most intensively visited areas by unleashed dogs and feral cats. Fieldwork showed the relevance of very localized connectivity bottle-necks where the removal of marginal human activities could boast ecological connectivity. The novel ecosystem context showed the urgent need to control the wild boar overpopulation that is causing biodiversity loss by the disappearance of trophic resources needed by other species.

Conclusions
In order to avoid local extinctions due to ecological fragmentation in fast transforming urban-forest landscapes; and also to avoid wasting money in expensive projects of low efficiency, there is a need to take into account and weight the roles of four main drivers: landscape change, the structure of the barrier system, the novel ecosystem condition, and cultural use. The case study of the Collserola-Marina divide showed the striking result that the restoration of the ecological connectivity was not the most needed action. The first priority was to restore agricultural patches rich in hedgerows at Collserola. Then the need to control the impact of unleashed dogs and feral cats. Only after restoring the conditions where defragmentation projects have sense, the restoration of the permeability of the bottle necks would make sense.

Keyref

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"GROWING THE URBAN FOREST IN ROME (ITALY)"

Keywords: Urban Forest, Adaptive landscape design, Research through Design

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Researcher (Urban Green Blue Infrastructure), Adjunct Professor (Environmental Technological Design), Practitioner (Registered Landscape Architect). Focus on urban regeneration through Urban Green Blue Infrastructure planning and design. Economic Valuation of Ecosystem Services and UGBI is also a key field of author's activities and scientific interests. Member on international professional (IFLA, IALE) and research groups (COST Action GreenInUrbs, FAO Silva Mediterranea WG7, etc.).

Objectives

Environmental risks, such as climate change, reduced biodiversity, changes in weather during pollen seasons can cause both biological and chemical changes to pollens and have direct adverse consequences on human health by inducing disease exacerbations, especially in urban and polluted regions. Allergic reactions caused by pollen emissions from urban vegetation are one of the main ecosystem disservices of green infrastructure, with an estimated impact on 30% of the urbanites. The economic burden of allergy is also very high, both in terms of direct and indirect costs. Effective policies to reduce carbon emissions have so far developed slowly, and landscape architects should try to re-imagine their projects as active, risk-adaptive solutions to polluting, energivorous, and soil consumption-driven processes, that also encourage active participation and conscious learning processes by the people. From this perspective, the availability to landscape architect of quantitative and qualitative data regarding the urban forest is of capital importance.

Framework

The United Nations states that urban and peri-urban forestry (UPF) is "the practice of managing forests, groups of trees and individual trees in and around urban areas to maximize their economic, livelihood, social, cultural, environmental and biodiversity values" (FAO 2016). In order to implement sustainable, adaptive nature-based solution in urban planning and design, it is crucial that landscape architects, together with other professionals from related disciplines, contribute flexible green infrastructure design that leverage appropriate technologies, in order to mitigate negative impacts and strengthen urban ecosystem resilience.

Results

The proposed contribution - building on the results of a recent research about potential allergenicity of Mediterranean (Portugal, Spain, Morocco and Italy) urban forests and parks (Cariñanos et al., in press) - presents detailed results of applying a new index to estimate the potential allergenicity to urban parks of different typology (historical, modern boulevard type or newly built, 10 ha maximum) in Rome. The index allows the characterization of tree species based on their allergenic behavior, highlighting among those with a maximum value some of the most representative species of the Mediterranean climatic conditions, such as Oleaceae, Cupressaceae and Fagaceae families. Through the detailed illustration of specific design solutions and suggested best management practices, the study provides also evidence in support of informed nature-based solutions for more resilient and adaptive designed ecologies in selected parks of the city of Rome (I), aiming at contributing with recommendations and guidelines to the on-going international debate in landscape architecture and urban design, promoting inclusive green blue infrastructure for more resilient, healthy and prosperous urban ecosystems.

Conclusions

Without scientifically sound and detailed sources of information about Urban Forests and related green infrastructure (i.e. the Natural Capital), it would be almost impossible to intervene with appropriate adaptive design and related site management plan in the layered urban fabric, which traditionally characterizes most cities and towns worldwide. From the results obtained in selected urban parks Rome, in particular, specific adaptive nature-based solutions able to minimize the impact of pollen emissions on public health have been identified. Selected strategies for the city of Rome's urban parks include those that (i) promote one's ability to mitigation of air pollution of the species themselves; (ii) incorporate species with different pollination strategies; (iii) increase elements of blue infrastructure; and (iv) promote sustainable management of species characterized by high water requirements.

Keyref

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ROOT MANAGEMENT IN THE URBAN ENVIRONMENT

E. Thomas Smiley

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Dr. Tom Smiley is a Senior Arboricultural Researcher at the Bartlett Tree Research Laboratory in Charlotte, NC and an adjunct professor of Urban Forestry at Clemson University. Dr. Smiley is active in the arboriculture industry and has co-authored many of the ISA's Best Management Practices. His research has lead to improved methods of increasing sidewalk longevity near trees, protecting trees from lightning damage, improving tree root growth, and reducing tree risk.

Objectives
Roots are essential for tree development. In the urban environment there are many challenges associated with root growth. These include limited soil volumes, soil compaction, lack of water and lack of nutrients. In these times of climate change and urban heat islands, it is critical to develop sustainable ecosystems that are resilient to these changes. The best place to start is with new development at the edges of our cities and with urban redevelopment projects.

Framework
This presentation will include data from several long term research projects regarding tree and root development in urban plaza setting. In addition it will include information from two new International Society of Arboriculture Associations Best Management Practices for urban soil and root management.

Results
Data from our urban plaza research will show that there are significant variation in tree development that are directly related to the soil that is installed under the pavement. In our 10 year study that compared suspended pavement, to structural soil we found significantly more tree growth in the suspended pavement plots. In a second ongoing trial that compared tree growth in two different suspended pavement, gravel based structural soil and sand based structural soil, we are finding similar results, the suspended pavement trees are growing significantly better than other trees. Our research information will be but into a theoretical context presented in the ISA BMP on Soil and Root Management. These new publications have condensed research findings into a practitioner accessible format. Examples and illustrations will be presented.

Conclusions
It is possible to grow large trees in areas with limited surface availability to the soil. This talk will present the most viable options for doing this and show the results of other options. If more cities will incorporate the superior options, we will have less impact from the urban heat island and global warming. In addition, larger trees can sequester more carbon, which again, can mitigate the impacts associated with increased atmospheric carbon dioxide.

Keyref
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May 31st and June 1st , 11h-11.30h Poster exhibition

CORNELLÀ NATURA

Keywords: Naturalisation, biodiversity, connectivity, environmental or ecosystem services, mobility, environmental quality, climate change, resilience

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Environmental expert and Master's degree in Environmental Sciences. She worked for 3 years in an environmental consultancy firm and almost 12 years in Cornellà de Llobregat City Council as an environmental expert. Since 2017, she is the technical coordinator of the municipality's Environmental Studies and Actions Agency, whose main objective is to develop the Cornellà Natura strategic project. She regularly collaborates and teaches at the Environmental College of Catalonia.

Objectives
How can we naturalise and improve the environmental quality of a densely populated city such as Cornellà de Llobregat? Networking of all the stakeholders involved.

Framework
Cornellà Natura is a strategic project that, inside a 10-year timespan (2016-2026), will try to naturalise the city by highlighting its environmental, social and landscape values in order to humanise it. At the same time, it will attempt to improve the municipality's sustainable mobility and the environmental quality. The reserves of open spaces forecast in the approach have configured a series of civic routes that link squares, facilities and parks. However, as well as the green areas linked to the approach, the city has a series of spaces that are spaces that are susceptible to being developed or redeveloped as green areas, boulevards, civic paths, public building and facility settings... which can complement the qualified green areas. Boosting these routes means giving them maximum physical and formal continuity, incorporating all urban spaces which, regardless of their urban qualification, integrate themselves within these axes. The development of these green areas forecast in the approach and the development and redevelopment of these complementary urban spaces will boost the city's structuring landscape, environmental and connectivity values. In this sense, it has been decided to boost development in a series of civic paths, among which there are 5 which are identified as "Green Axis".

Results
The challenge of the Cornellà Natura project is to increase and improve the city's naturalisation and green areas. Doubling the amount of green areas, streamlining them and connecting them with each other and with the natural spaces that the city has is a target that must be achieved within the next 10 years, by 2026. Once the project has finished, the city would go from having 9.74/m^2 of urban green spaces to 15.52 m2/hab. However, the objectives of Cornellà Natura do not end with the implementation of these "axes" and green spaces, but rather start with them, with the will to become the starting point for the development of actions and policies designed to guarantee the improvement and quality of the environment, the increase in biodiversity and the search of more pleasant and natural mobility formulas. All in all, the achievement of a city that will become the city of the future, with more biodiversity, resilient and sustainable.

Conclusions
The creation of an environmental studies and actions agency as a transverse body which involves different professionals with environmental competences in the city must allow for the execution of a strategic project such as Cornellà Natura to be developed in the next 10 years.

Keyref
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SPREAD TO URBAN EDGES OF ORNAMENTAL ALIEN PLANTS PLANTED IN BARCELONA GARDENS

Keywords: plant invasion, risk invasion protocols, urban green infrastructure

Enrique Alvarez Dominguez

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I am a technician at CREAF since 2008. I graduated with a degree in Biology from the Universitat of Girona. I have focused my work on botany, especially exotic flora, and geographical information systems. I participated in several studies about exotic plants in Barcelona and Girona coasts, Barcelona region, and Barcelona metropolitan area. I have also been working in land-use maps of 1956 from the Barcelona region.

Objectives

Biological invasions are a key component of global change and a serious threat for native species and habitats. Horticulture is one of the most important pathways of alien plant introduction, and it accounts for almost 50% of the naturalized alien plant species in Spain (Sanz-Elorza et al., 2004). Barcelona accounts for a Green Infrastructure and Biodiversity Plan aimed at deploying a green infrastructure to provide essential ecosystem functions and services to the citizenship, while being connected to the surrounding natural protected areas to improve the biodiversity of the city. However, this raised concerns about the potential spread of ornamental alien plants from the Barcelona gardens to these adjacent areas. Thus, protocol risk analyses and specific sampling are needed to assess, respectively, the invasion potential (i.e. invasiveness) of these species and their actual spread in the Barcelona surroundings.

Framework

Invasiveness of the majority of alien species planted in Barcelona gardens was assessed through the calculation of the Australian WRA (weed risk assessment) index in a previous project (Pino et al. 2015). The present work was aimed at determining the actual spread of these species in the Barcelona surroundings and its relationship with the estimated invasiveness of these species. A total of 52 transects (1 km length) have been set up along the main natural areas within and surrounding the Barcelona conurbation (Collserola and Marina ranges, Montjuïc and Tres Turons parks, and Llobregat and Besòs low river courses). Each transect was divided into 10 sections (100 m in length), in which all alien plants observed in a strip of 25 m were recorded and the following data were registered: introduction pathway (horticultural, agricultural, forestry, and unintentional); species cover (<1%, 1-10%, 10-20%, and >20%), and invasion status (non-established, established, spread). Species richness per transect and section were computed. For each species, an invasion index (I) was calculated by multiplying its percentage of occupied transects by its average invasion status (i.e. the mean value in the occupied transect sections).

Results

Results show that horticultural plants are the major component of the alien flora in the Barcelona urban edges, as they make up the majority (58%) of alien plants detected in our study transects. These species exhibit a similar degree of spread in transects and invasion status as the rest of the alien flora. At species level, results show the spread of species of ancient introduction, but also of some recently introduced species. The most frequent species are Olea europaea, Opuntia ficus-indica, Prunus dulcis, Araujia sericifera, Celtis australis, Agave americana, and Ficus carica. Also relatively frequent are Ailanthus altissima, Laurus nobilis, Senecio angulatus, Iris germanica, Arundo donax, Ipomoea indica, Robinia pseudoacacia, Agave americana variegata and Ligustrum lucidum. There is a direct association, yet marginally significant, between species invasiveness (i.e. WRA index) and actual invasion status (i.e. I

index). At transect level, results show a large concentration of horticultural alien plants in the large parks within the city (Montjuïc and Tres Turons), while natural protected areas in the periphery of the city also are highly invaded by these plants. Some of these areas close to the large parks (e.g. central Collserola) show a especially high risk to be invaded by propagules coming from these parks.

Conclusions
Results confirm that horticultural flora is a potential source of plant invaders of natural protected areas located in the periphery of large conurbations like Barcelona. This highlights the need of developing management protocols for these species, which must preferably be based on preventive actions like weed risk assessment protocols and early detection of new invaders rather than on the ex-post control.

Keyref
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ASSESSING THE URBAN GREEN FACTORS INFLUENCING THE NESTING OF PASERINES. THE CASE STUDY OF A MEDITERRANEAN CITY IN CATALONIA, VALLS.

Keywords: Urban biodiversity, nesting, ornithofauna

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Objectives
Some birds find urban systems a suitable habitat under optimal conditions: appropriate microclimate, large quantities of food resources, less competences between species and less predation in the nesting areas. The vegetation within the city provides sheltering and food provisions to some birds. The current project studies different socio-ecological factors related with urban green management that can influence the passerine nesting.

Framework
Methods The study area is the Mediterranean city of Valls (S Catalonia). Firstly, the urban green has been characterised quantitatively and qualitatively; secondly, the nests from the passerine birds have been collected and identified (information about the location, height, tree species and pruning type was gathered per nest); finally, the socio-ecological factors influencing the nesting process were analysed.

Results
Results The values of the urban green biodiversity indices calculated (Shannon Weaver and Simpson) for the city of Valls match with the standard values of other Mediterranean cities. A total of 300 nests were identified and belonged, mostly, to the family of Fringillidae and Sylviidae, all from agroforestry systems from the Mediterranean area. Regarding the nesting processes observed, the majority of the nests were found in road trees within the historical centre of the city. Moreover, the studied birds show preference to nest in certain tree species and choose those with a medium height and size. Considering pruning type, the studied birds seem to preferably nest in trees that have been pruned severely. Furthermore, the identified birds nest in the vegetation that is attacked by some insect that can become a pest.

Conclusions
The results from the identified nests suggest that in order to strengthen the studied bird diversity, urban green management should promote regular size trees and certain types of pruning. In addition, phytosanitary treatments to control pests that are not affecting the tree should be avoided. All these results contribute to urban planning and management strategies that aim to reconcile urban development and urban biodiversity promotion.

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BUTTERFLY BIODIVERSITY, DISPERSAL, PERMEABILITY

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I am an ecology researcher currently working on the effect of urbanised environments on the metapopulation dynamics. The expected growth of urbanised areas will increase functional distances and decreased biological connectivity among populations, which decreases their survival. My current research focuses on these effects and on how different degree of natured metropolitan areas could enhance persistence and viability the populations.

Objectives
With the expansion of urban areas and the increasing valuation of ecosystem services for the citizenship, promoting biodiversity conservation and ecosystem functioning in cities is now a priority. As such, many municipalities are working towards a better adapted management to design sustainable urban environments that increase biodiversity. However, the presence of wild species in urban areas highly depends on their connectivity to the natural areas and on their own landscape permeability, especially for species with limited dispersal ability.

Framework
We modelled the effect of the urban landscape on predicted occupancies and distributions of three butterfly species representing low-to-high dispersive species in the urban area of Barcelona. Predictions were done using spatially-explicit individual-based modelling, which also evaluated the effectiveness at increasing species occupancy, abundances and distribution of three simulated management scenarios consisting of increased levels of garden quality.

Results
The negative effect of the built matrix was the main driver constraining garden occupancies by these species. However, the high dispersive species achieved maximum occupancies independently of the landscape composition. Our results suggest a strong effect of the matrix impedance on the dynamics of medium, and especially, low dispersive species, followed by the positive effect of the percentage of source areas. Enhancing garden quality increased the occupancy of low and medium dispersive species (maximum x1.65 and x1.22) and the population sizes of all three species (max. x2.25, x2.10 and x2.75).

Conclusions
Although difficult to set up, managing the built matrix can be a useful conservation measure, especially for low and medium dispersive species. Potential solutions are the creation of new gardens and garden corridors in selected areas to increase connectivity to source areas and reduce the impedance of the matrix.

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PROMOTING BIODIVERSITY IN URBAN GREEN AREAS IN BARCELONA

Keywords: connectivity, biodiversity, new ecosystems, canopy, climate change, resilience

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Jordi Camprodon develops his research activities in the Forest Technology Centre of Catalonia. His research focuses in the analysis of interaction between the biological conservation and the forestry and others land-uses at local and landscape scales. His activity focuses on the applied research and the transfer the results to the land management. Interactions fauna-habitat in forest ecosystems The variability of the internal composition and structure of the habitat at stand scale is the main ecological factor that explains the richness, abundance and diversity of the faunal communities and populations of species. He was worked in the relations fauna and the changes of his habitats in the Mediterranean, Eurosiberan and Alpine ecosystems and landscapes, using birds and mammals as a bioindicators. At the same time, he focuses the research from the point of view of the ecology and conservation of endangered species, as the capercaille, woodpeckers and forest bats in relation with the structural variables of the habitat (recovery of vegetation stratus and species, density and diametric distribution of the trees, volume and type of dead wood and availability of cavities in trees) in different management or natural perturbation scenarios. Structure of the landscape and faunal distribution In a more extensive scale - complementary of the stand scale - the distribution of species depends of the adjacent habitats configuration. This point of view allows making a zoom that goes from the scale of agricultural and forest patchworks until a regional scale. The research in this field goes on bioindicators and species with a high conservation value, addressed to analyze the incidence of the forest planning and, more in general, the country planning. Two examples or his research is to analyze the gradient between fragmentation and increase of birds and bats richness of the agroforestals mosaics in sub-Mediterranean landscapes and the other one, the interaction among the distribution of vital ranges of capercaille and the forest planning. Transference of the applied research in habitat management and restoration Our research on biological indicators is used in the realization and monitoring of projects for habitat restoration in private and public forest lands, as used for the fluvial restoration. In other hand, we offer the results of the research in the management plans and silvicultural methods. In the In the Mediterranean region the forest landscapes have experienced great transformation along the history. In the last decades the changes have speed up because of the rural abandonment, the fires on a large scale and the changes in the uses of the resources (wood, biodiversity, tourism). The conservation of the biodiversity has become a key question in the revalorization of the forest products. The final aim of his researches is providing forest and environmental managers with adequate tools to help them to preserve the social, economic and environmental functions of forest ecosystems in the next future. Also he develops projects of restoration of habitats, per example in riparian forest or to improve habitats for threatened species.

Objectives

The Barcelona City Council aims to test a biodiversity restoration plan for urban green spaces in the municipality of Barcelona. The purpose of this project is the achievement of more sustainable green spaces and the promotion of biodiversity. It will be carried out between 2016 and 2017 in 20 selected areas, representative of the different green spaces within the city. Its objectives are:
1) To promote biodiversity in urban green spaces, following current trends in wildlife gardening. This involves bringing the current vegetation closer to the structural complexity of a forest.
2) To promote ecosystem services for citizens; providing health benefits associated with the access to nature; making urban ecosystems more resilient, less vulnerable and enhancing climate change adaptation.
3) Long-term monitoring biodiversity in the restored spaces using selected bioindicators.

Framework
The project is part of the Barcelona City Council's strategy to increase urban biodiversity and ecosystem services. It is a pioneering project in the city and adopts a policy followed by other major cities. In order to monitor biodiversity trends, we have selected the following biological indicators: vascular flora, vegetation structure, pollinators, soil invertebrates and birds. We use BACI methodology both in restored areas and control areas. Methodology includes flora and forest inventories, bowl traps for pollinators, pitfall traps for soil invertebrates and line transects for birds in spring and autumn of 2016. In 2018 we will carry out new surveys once all the restoration projects are executed.

Results
We show the partial results before the treatments. We found 260 species of flora, with 116 native, 50 naturalised and 90 cultivars. Although the number of native species is relatively high, their coverage was lower than the cultivar species and their presence was variable according to the typology of the area: they were more abundant near the forested hills and scarcer in downtown urban gardens. The occurrence of birds was 33 species in two seasons (spring and autumn). The more interesting birds were the forest specialists (for ex. warblers, thrushes, tits and treecreepers), associated to different vegetation substrates. The invertebrates are waiting for determination during 2017. Before restoration practices, results indicate a simplified community of herbaceous vegetation dominated by some native and non-native species, with some scattered bushes. In areas where grass is regularly cut, diversity is particularly low. The greater diversity of forest birds is associated with high shrubs, hedges and borders, walls with ivy and scattered trees.

Conclusions
The results of the first biodiversity samplings recommended to practitioners the adoption of forest structures: substitution of lawns or turf for wildflower meadows with seeds from natural habitats in the area, planting shrubs, the conservation of grasslands in unused plots, the creation of diverse hedges with species that attract wildlife, the conservation of large trees with holes and some standing and dead wood. The assessment after the restoration projects will indicate if they were effective to promote biodiversity and will provide corrective guidelines. The project will be followed by social awareness surveys to citizens and a long-term biodiversity monitoring program that may be done by volunteers.

Keyref
Connectivity and ecological value The urban forest, especially the boundaries, can play a fundamental role in improving environmental conditions and in preserving biodiversity (regulation of erosion and hydrology, ecological connectivity, neo-ecosystems, etc.)

May 31st, 11.30h PechaKucha Presentation

LIFE ARTEMIS: AWARENESS RAISING, TRAINING AND MEASURES ON INVASIVE ALIEN SPECIES IN FORESTS

Keywords: urban forest; invasive alien species; forest biodiversity; awareness raising

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Objectives

Invasive alien species (IAS) are a present threat to urban forests and may affect their biodiversity, ecosystem services and increase maintenance costs. Altered forests affect the identity and overall resilience of the cities. A specific site-based campaign will engage volunteers to participate in a survey and eradication of alien plants in an urban forest, which is part of a protected area Landscape park Tivoli, Rožnik and Šišenski hrib in Ljubljana, Slovenia.

Framework

The LIFE ARTEMIS project started in July 2016 and aims at contributing to the reduction of the harmful impacts of invasive alien species on biodiversity by increasing public awareness and by setting up an efficient Early Warning and Rapid Response (EWRR) framework for invasive alien species in forests. Core actions aim at 1) increasing awareness of the public, in particularly of private forest owners, of threats caused by invasive alien species to forests 2) establishing an efficient national institutional framework for early detection and rapid response for alien species in forests and 3) improving the national capacity for early detection of alien species in forests by mobilising and training professionals and volunteers. Providing an example of a site-based IAS action plan: the inventory/survey protocol, development of the action plan and its integration into the management of the protected area will be an example of good practice for other protected areas in Europe.

Conclusions

By increasing awareness and training of professionals and volunteers the LIFE ARTEMIS project will develop an efficient national EWRR system for alien species in forests. The project will not only target tree pests and diseases, but also alien plants which invade forests and can greatly alter ecosystem structure and functioning. Target audiences and key stakeholders will become more aware of the threats posed by IAS and with increased knowledge they will be able to detect and in due time report IAS. This will enable us to detect alien species in early stages of invasion and respond in early stages of invasion, either by eradicating the species, or if this is not feasible, taking measures to prevent further spread. Preventing introduction and spread of new alien species will reduce the damage to forests and contribute to maintenance of ecosystem services. Furthermore, prevention of introduction and rapid response is also expected to have positive economic impacts with reducing the economic damage to forests and management costs.

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MONITORING THE SPREAD OF PHYTOPHTHORA SPP. IN WATER BODIES OF GREEN PARK AREAS OF THE MILAN HINTERLAND

Keywords: Environmental monitoring, oomycetes, Phytophthora, climate constraints

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Abstract
The Phytophthorae are extremely harmful micro-organisms affecting various plants. They live in an aquatic environment and are both passively and actively water-borne. The recent discovery of a number of these harmful pathogens in parts of the Milan hinterland has prompted a study to determine the extent to which the water in this area has been contaminated by them. The water bodies of various areas in the outskirts of Milan were studied: the Parco Boscoincittà, the Parco dei Fontanili, the water purification plant 'Nord Milano', the Termovalorizzatore, the Giretta wood, and the Parco delle Cave. All these areas were examined with the baiting technique and detected 85 Phytophthora isolates. The oomycetes were identified by both conventional and molecular methods. On the basis of the macro- and micro-morphological characteristics of the colonies, the most representative of the isolates were selected. They were characterised by PCR-amplification of the ITS region of ribosomal DNA and of a fragment of the coxI gene of mitochondrial DNA. The amplicons were subjected to RFLP. The following species were identified: P. acerina, P. megasperma, P. lacustris, P. inundata, P. taxon PgChlamydo and P. gonapodyides. The discovery of these mico-organisms is all the more worrying as some of them are known to cause serious damage to plants. Some of these pathogens were found for the first time in the areas examined, and this seem to indicate that climate change is now favouring the extra-range dispersal of many of these parasites. In view of the reproductive biology of the Phytophthorae, and the many ways in which these organisms are able to spread, it seems imperative constantly to monitor the areas found to be at risk, and also to take steps to limit the spread of these oomycetes as much as possible.

ECOLOGICAL CONFIGURATION OF PUBLIC SPACE TO IMPROVE THE POPULATION'S ECOSYSTEM SERVICES

Keywords: Biodiversity, connectivity, nature-based-solutions

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Xavier Mayor is an expert in ecology. At Estudi Xavier Mayor et al. (1999), together with Júlia Barba and Clara Montaner (Environment specialists), he works with applied ecology and sustainability in the fields of knowledge and development of proposals related to open spaces, urban planning and public space.

Objectives
Typically, cities were not designed taking ecological principles into account. However, that is exactly what they are: our main habitat. Their design, often considerably deficient and with few eco-environmental services, generate a poor environment which has an impact on the people's living conditions. On the other side, urban habitats can be defined with ecological criteria in order to improve living standards.

Framework
Ecology provides solid principles and criteria to do so: introducing species (biodiversity), which are the basis to establish ecosystems, in this case urban ones; increasing ecological complexity by considering the different factors that condition that species can live in a habitat (environmental conditions, resources and the interactions they require); and modulating their disruption system, which allows for more species to have their place in urban habitats. This allows them to formulate simple proposals that are applicable to the urban habitats which integrate this complexity and for them to increase urban ecosystem services for the citizens.

Results
In fact, the project of the future Plaça de les Glòries (Barcelona) is based on different strategies to favour biodiversity (nodes and canopy) from its design. Complex ecosystems will be configured with different layers of vertical development that guarantee a wide range of conditions, resources and interactions as well as a high capacity for self-regulation and resilience. Also, the modulation of the environmental disturbance levels has been actively considered. The result will be an environmentally comfortable space for uses which will also provide ecosystem services: thermal and acoustic comfort, CO2 gathering, water infiltration, landscape improvement... The achieved benefits will go far beyond the square itself, since it's designed to act as a drain and as a biodiversity diffuser, boosting its strategic-enclave role to achieve the urban ecological connectivity of the Sagrera-Ciutadella corridor.

Conclusions
Today, the possibilities of applying eco-environmental aspects to the design of urban spaces are important. Therefore, these considerations must be incorporated under an essential principle: maximising the living standards of citizens and the quality of the environment without affecting its functionality. It's a proposal that solidly approaches a so-called sustainable city.

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BIOGENIC VOLATILE ORGANIC COMPOUNDS, FOREST AIR, FOREST MANAGEMENT

Albert Bach Pagès

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Albert Bach holds a bachelor degree in Environmental Sciences and a Master course in Managing and Restoring Natural Ecosystems. He is currently working as a PhD student in the research group of Biodiversity, Conservation and Global Change in the Institute of Environmental Science and Technology. His research has been focused in studying the effect of natural resources use on biodiversity.

Objectives
Nowadays the potential of forests as a source of health is an emerging focus that has started to be approached by the scientific community. Among other features and forest elements, one of the axis of these potential effects on humans' health are the Biogenic Volatile Organic Compounds (BVOCs) produced by plants. Although research has been conducted focused on the potential effects on humans' health few is known about the mechanisms that determine BVOC emissions and concentrations in forest air. Studies in this sense are scarce and have been carried out only in Asia, where tree species, forest type and abiotic factors influencing BVOCs emission may be different from other locations. In addition, no research has been done regarding the effect of forest management on BVOCs emissions and concentrations in forest's air. If, as some authors showcase, priorities change from forest protection and production to forest recreation and healing within the coming years, forest management will need a new approach and data to support it. Therefore, the main goal of the current project is to characterise the BVOCs air concentration in different forest types under different management regimes to unveil the relations between forest structure and BVOCs emissions and concentrations.

Framework
The project will be conducted in Montseny, a natural area approximately 50km north-east from the city of Barcelona. Within this area, 6 different forest types will be sampled: Evergreen forest, Oak forest, Beech forest, Cork oak forest, Coniferous forest, and one mix formations. The forest variables chosen to be studied in this project are those that are thought to potentially effect the BVOCs emissions and air concentrations in woodlands: tree density, diameter and height; vegetation covers and layers; and dominant species. Furthermore, abiotic variables such as temperature, wind speed and humidity will be as well monitored. The forest characterisation is going to be performed in circular plots of 50 meters of radius. The central point of the plot will be the same point where the forest air sample is going to be taken. Regarding air sampling, this will be conducted at all different forest types, close to walking paths and at a regular height of 1,6 meters. Forest air is going to be absorbed by solid phase micro-extraction technique (SPME) and characterised by Gas Chromatography-Mass Spectrometry (GC-MS).

Results
The current project starts on March 2017. Therefore, no results are available now. Preliminary results are expected by the congress date.

Conclusions
Although no results are available yet, the contribution of this study might be remarkable for the congress. We think that the outcomes of the project might help to valorise the peri-urban forested areas of the cities trying to clarify aspects related to human health and forests.

Keyref

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RETHINKING THE URBAN GREEN CORRIDOR: CONNECTING CITY STREETS WITH CITY EDGES VIA AN URBAN FOREST WEB.

Keywords: Urban Forest, green connectivity

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Naomi Zürcher, as an Urban Forester and a Consulting Arborist, has been involved for over 3 decades with the advancement of Urban & Community Forestry (U&CF) and its implementation in both the United States and in Europe, developing and chairing U&CF Educational Programs, chairing NYC Root Zone - a Professional education-oriented not-for-profit, authoring guidelines, protocols and procedures for Tree Ordinances , UF Management Plans and forest health-oriented Federally-funded Public Awareness programs. She is presently active in both COST Action GreenInUrbs and EFUF.

Objectives
Forest remnants and peri-urban forests that exist at varied cities' edges are important elements for recreation and residents' well being. Having said that, it's important to remember that the Urban Forest begins with the curbside tree that exists in front of the place where you live - your personal nexus - which connects you with the entirety of the Urban Forest in all its multiformity.

Framework
Our "green ways" tend to be linear in design and construct, guiding us to verdant edges. What if we, instead, thought about green in an "everywhere" sense, encouraging greening within every neighborhood from its own unique cultural perspective so that citizens would be able to follow a meandering Urban Forest Ribbon - a Green Web of urban life that connects their street with those forest remnants at city's edge via a web-like construct of street trees, planted plazas and parks, gardens and vacant lots, providing green experiences and cultural diversity throughout the City.

Results
Green Web strategies have been implemented in various American and European cities from Public Easement Gardening in Ann Arbor Michigan and its use of varied size public spaces to encourage neighborhood beautification to Grünes Netz Hamburg, the Hamburg German Land Use Program, concerned with linking park facilities sports grounds, cemeteries and graveyards through broad or narrow green belts. A more comprehensive undertaking is exemplified by Berlin's Biotope / Green Area Factor (BAF) which provides a "bottom up" decentralized strategy to green connectivity planning. According to the BAF program "for the protection of the landscape and of species, an important goal of urban development in Berlin is the reduction of the environmental impact in the city center. Improving the ecosystem's functionality and 9 promoting the development of biotopes, while maintaining the current land use, are central to this endeavor."

Conclusions
This Practitioner presentation, citing examples from existing research and implemented programs, offers strategies for the planning, implementation and management of a Green Web that abandons the linear approach and embraces the needs of all residents, regardless of where they live in the city or their economic situation.

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UNVEILING URBAN GREEN HETEROGENEITY. THE BARCELONA CASE STUDY IN A MEDITERRANEAN SETTING.

Keywords: Biodiversity, heterogeneity, green spaces

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Pablo Knobel Guelar is an environmental scientist, holder of a master's degree in ecological economics and currently PhD candidate at ICTA-UAB. In 2016 was co-author of three chapters in the "State of the World 2016: Can a city be sustainable?" focusing on the role of urban biodiversity on the sustainability of cities.

Objectives

The link between urban green spaces and human health is attracting increasing attention in the face of the ongoing urbanization worldwide coupled with current changes in climate. A main limitation of the available evidence on such a link is overlooking of the heterogeneity in the urban green spaces (i.e. assuming all green spaces to be the same) while such heterogeneity can have important impacts on the association between green spaces and health. This study aims to characterize the heterogeneity amongst urban green spaces in Barcelona in order to facilitate its inclusion in future health studies.

Framework

This will be carried out through a battery of indicators including a wide range of biotic and abiotic factors. The indicators will be divided in two blocks: a) Space Indicators, which include characteristics such as the total area, accessibility, amenities, aesthetic features (e.g. fountains), walking/cycling path, or sport facilities; b) Biodiversity Indicators, which focus on the characteristics of the present vegetable species (e.g. if they are allergenic or if they have a relevant fauna attraction potential).

Results

Two main results will be generated from this study: a) a comprehensive battery of indicators and a grounded methodology and; b) a Barcelona case study including 88 urban parks and their characteristics.

Conclusions

The case study in Barcelona will pave the path for the development of a methodology to characterize heterogeneity in urban green spaces in other settings that would enable future health studies to generate more robust evidence on health services and disservices associated with urban green spaces which can be of importance to policymakers and urban planners.

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SURFACE MATERIALS AROUND TREES IN HARD LANDSCAPES.

Keywords: Connectivity, canopy, resiliance.

John Parker

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John Parker is Senior Technical Specialist - Arboriculture & Landscape at Transport for London and Chair of the London Tree Officers Association (LTOA). He sits on a number of working parties and industry groups and a regular contributor to conferences and events such as the 2016 European Forum on Urban Forestry, the UK National Tree Officer Conference and quarterly LTOA seminars.

Objectives

Maximising the ecosystem services trees in the urban forest can deliver is reliant on having a healthy population of trees. When it comes to street trees in particular, a significant factor in the successful establishment of trees is in selecting the right surface material around the tree. In an urban environment the needs of the tree – permeability of air and water etc. – need to be balanced with the needs of the pedestrian – robustness and safety. Selecting the right materials can help resolve the conflicts often associated with tree roots and paving, to the benefit of trees and people.

Framework

When selecting a surface material around a street tree in the hard landscape there is a wide range of considerations relating to the size, age and species of the tree, the nature of the surrounding environment, level of pedestrian footfall, presence of street sweeping machines or similar, local character and aesthetics to name but a few. The London Tree Officers Association (LTOA) identified a need for guidance in these matters so that those responsible for selecting an appropriate material are able to make an informed choice. In 2017 the LTOA are launching a new best practice guidance document: Surface materials around trees in hard landscapes. The purpose of the document is not to be a prescriptive, how-to guide but a practical tool to help decision makers assess a given situation and think about the advantages and disadvantages of each different material. The document was produced by a working party of tree officers and LTOA members, with input from the UK arboricultural industry as well as experts from design, engineering and landscape architecture.

Results

This is not an academic paper so the ‘major results’ category does not really apply.

Conclusions

Selecting the right surface material around a street tree is of huge importance, but there is no one material which is suitable in all situations. The decision-making process needs to take into account multiple factors to give urban trees the best chance of establishment and success, maximising the environmental, social and economic benefits of trees. If canopy cover targets are to be met then a healthy urban forest is required; good tree pit design and material selection is an important part of this. Of equal importance is the relationship between people and trees; a common point of conflict is created by the interaction between tree roots and the surrounding footway material, and the associated problems this can cause for pedestrians and other road users. The needs of the trees and people have to be balanced. Selecting the right surface material around trees in hard landscapes can help mitigate these issues; the LTOA document Surface materials around trees in hard landscapes contributes to this process and should be of considerable benefit to arboriculture and the urban forest.

Keyref

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EVALUATION OF URBAN FORESTS CONNECTIVITY IN RELATION TO SPATIAL PATTERNS OF URBAN GREEN INFRASTRUCTURES

Keywords: Connectivity, urban forests, urban green infrastructures

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I am a PhD student at the Faculty of Geography, University of Bucharest. My research interests are urban landscape ecology, urban planning, urban forestry and spatial analysis. My PhD project focuses on the relation between urban forests and urban expansion.

Objectives
Urban planning's purpose is to achieve a sustainable development of cities which must take into account the management of natural resources such as urban forests. The connectivity of urban forests is a topic of interest because it supports biodiversity in urban areas. Their integration into the urban green infrastructures network enhances the social, economic and environmental benefits provided to the urban community. Our study aims to evaluate the spatial relation of urban forests with other urban green spaces in order to see how urban green infrastructures can improve forests connectivity. Firstly, we conduct a comparison analysis between several study cases in terms of urban forests connectivity and we discuss how the differences relate to the pattern of urban green spaces. Secondly, we discuss how the spatial configuration of urban functions influences the planning of urban green infrastructure and can have an impact on urban forests connectivity.

Framework
The analysis was performed on seven Romanian cities which covered all the ranks of the national urban network hierarchy. The data used consisted in cities master plan which offered information regarding the urban planning. We applied spatial analysis GIS tools to compute indicators regarding connectivity and distances between urban forests and urban green spaces. Using parametric and nonparametric statistical analysis we identified which indicators of urban planning can play an important role on the connectivity issue within the study cases.

Results
The major findings of the study show a strong relationship between connectivity indices and distance to other urban green elements. The pattern of urban green spaces planned influences the connectivity within the urban green infrastructures network. Other urban functions have the potential to increase the overall connectivity through their specificities. Residential areas, which were highlighted as the most common urban function planned near urban forests, can play an important role in developing scenarios to maintain and emphasize the connectivity of urban forests with the rest of the city.

Conclusions
The connectivity of urban forests plays an important role in the provision of benefits to the urban community. Understanding the relationship between urban forests and the way cities are spatially planned in terms of urban functions gives useful information and supports the decision-making process to obtain a sustainable development.

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THE ROLE OF THE URBAN FORESTS IN ECOLOGICAL CONNECTIVITY: GREEN BELT OF THE LUGO CITY, SPAIN

Key words: green infrastructures, biodiversity conservation, stakeholders, urban world

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The European Green Infrastructure Strategy is a "strategically planned network of natural and semi-natural ecosystems with other environmental features designed and managed to offer a wide range of ecosystem services areas" (European Commission, 2013). At present, it is promoting a framework that incorporates the biodiversity conservation within green infrastructure, despite the initial restrictions (Hostetler et al., 2011). At the same time, the interest of researchers, professionals and decision-makers in the structural and functional connectivity of the urban and peri-urban forests is also claimed, as well as in the quality of their surroundings (Pirnat and Hladnik, 2016). The urban forests perform a basic role in improving environmental requisites and biodiversity conservation (erosion control, hydrology regulation, ecological connectivity) (Capotorti et al., 2017). To this end, these "ecosystems" must face a triple challenge: i) a changing ecological environment, ii) a lack of technical tools to assess environmental perturbations due to its proximity to urban areas, and iii) a social perception, particularly favorable (Maes et al., 2016).

This work is based on the knowledge to properly planning the particular values of these areas, in an environment where urban pressure on them should be strictly regulated. Our aim is to generate a debate analyzing the main functions of urban and peri-urban forests in sustainable development of the urban world, studying a particular case: Green Belt of the Lugo city (Spain). This question is complex because it involves different aspects –social, economic, and environmental–, being necessary that there is adequate coordination between all stakeholder groups (Sunderlin et al., 2005). On the other hand, urban forests and green open spaces have increasingly strategic importance for improving the quality of life in an entirely society urban (Chiesura, 2004). In fact, increasing evidence indicates that the presence of natural assets (e.g., urban and peri-urban forests, greenbelts) within an urban context, contributes to improve the quality of life in many different ways (Capotorti et al., 2017). In addition to essential environmental services such as purification of air and water, noise abatement, or stabilization of the microclimate, natural areas provide social services crucial to the livability of our cities and the welfare of its inhabitants (Chiesura and de Groot, 2003; European Commission, 2013).

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LAND USE AND CLIMATE CHANGE TRIGGER PHYTOPHTHORA INFESTATION IN AN AMENITY URBAN WOOD IN MILAN

Keywords: Acer decline, oomycetes, Phytophthora, climate constraints

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Objectives

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Framework

A plant-health survey was carried out to discover the cause of a widespread decline of trees in a park in the southwestern periphery of Milan. The park area had previously been used to grow Gramineae (including rice) but was forested starting in the 'seventies, in response to the urging of environmentalists, to create a city park. In the last few decades, many single trees, especially maple (Acer pseudoplatanus) began to show signs of stress, which was mostly attributed to summer drought.

Results

To counteract this problem, during the hottest months of the year, whole groups of these trees were watered, using the water that flows abundantly through the park. Declining trees exhibited extensive dieback of the branches, and sticky exudates oozing from the base of the trunks. When the bark was stripped off, large and conspicuous necrotic areas were observed. A serological test (Pocket Diagnostics) was positive for Phytophyhora spp. Samples of positive tissue yielded in purity a hitherto unknown species of Phytophthora.

Conclusions

This new taxon was named P. acerina, after the host-tree it came from. Indicator plants placed under the crowns of declining trees yielded the same species, indicating that the soil was highly contaminated with it. An examination of the roots of declining trees showed that the fine roots had been destroyed and their absorbent capacity impaired by the pathogen. Consequently, these trees were unable to absorb and exploit the water in the soil around them, even though it was available in abundance. It is considered that the conversion of the soil from agricultural to forest land, and also changes in climate, which have put the trees under stress and made them more susceptible to parasites, as well as the decision made to water large parts of the wood, were all factors in predisposing trees to P. acerina attack.

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Social and economic values

June 1st, 9:15 Opening Presentation

ONE MILLION URBAN TREES, TWO MILLION HUMAN VOICES

Dr. Cecil Konijnendijk

He joined the Department of Forest Resources Management at the University of British Columbia in Vancouver, Canada, as a professor in Urban Forestry in July 2016. Cecil is a Dutch national who moved to Canada from Sweden, where he headed the landscape department at the Swedish University of Agricultural Sciences.

Urban forests is obviously about trees, but it is even more about people. Urban foresters operate in forests of many different voices and opinions. Cecil Konijnendijk's keynote will discuss the impact of increasing socio-cultural diversity in cities on our urban forests. Moreover, he will highlight how increasing diversity should be incorporated in governance and economic thinking about urban forests. Cecil will draw upon examples from across the globe, but will give special attention to Canadian cities such as Vancouver. The latter is a highly multicultural city – and one with a strong 'green agenda', as reflected in the ambition to expand the urban forest with 150,000 trees by 2020. Yet, the city's tree canopy has been decreasing due to economic development and densification.

How can this trend be reversed – and what are the opportunities for new alliances and engaging with diversity communities?

June 1st, 9.45h Plenary session

THE RELATIONSHIP BETWEEN PERI-URBAN FORESTS AND SOCIETY: MANAGEMENT AND COMMUNICATION OF THE RISK OF WILDFIRES AS A REASON OF DIALOGUE

Keywords: risk management, social vulnerability, strategic communication

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Eduard Plana Bach is a forest engineer with a Master's degree in Wildland Fire from the University of Lleida and a founding member of the Pau Costa Foundation. He is currently Head of the Department of Forest Policies and Environmental Government of the Forest Sciences Centre of Catalonia. He has organised and coordinated different international conferences and projects on natural risks, particularly wildfires. His work pays particular attention to the social and inter-sectorial aspects of forest planning and the challenges of wildfire-risk management from the perspective of the changes suffered between forests and society.

Objectives

Wildfires (WF) are a natural risk that is present in many ecosystems around the world, particularly in the Mediterranean region. The expansion of forests on land that used to be cultivated due to the abandonment of agricultural activity and urban planning diffused in rustic lands have increased the risk of wildfires in society, increasing the vulnerability of inhabitants of residential areas and settlements as well as their homes and the infrastructure in contact with the forests. Formulas must be found to reduce the growing social and physical vulnerability of the urban and forest interface, particularly in a context of changing climate and uses that makes this threat increasingly present.

Framework

The wildfires phenomenon expresses a complex relation of cause-effect factors with multiple intertwined environmental, social and economic factors. The method developed during research assumed natural risks as regulating elements of the territory and dealt with the risk management from the narrow relation of the factors that are part of its definition; danger management, the reduction of vulnerability and the increase in response capacity. As part of this conceptual framework, the project raises the question and finds the answer on how to improve wildfire-risk management in urban and forest interphase areas with a holistic, integrating and positive vision.

Results

The project offers a roadmap on how to effectively integrate the risk of wildfires in urban and territorial planning, paying special attention to reducing the vulnerability of the urban and forest interphase and boosting the preservation of social and environmental functions of peri-urban forests. It includes aspects related to the planning tools and processes as well as considerations on the risk's cost-efficient management, its communication, social prevention and the inclusion of new public and private stakeholders in the socialisation of risk management.

Conclusions

The territory, which changes over time, needs to be jointly interpreted from another physical and social perspective, with interaction between both elements, how society understands and relates to their nearest environment. Without understanding and assuming this indivisible link between natural and social phenomena, it will be very difficult to face the complex challenges and problems posed by the scenarios of changing climate and uses in the fields of natural risks and civil protection on a territorial level. Wildfires

in the Mediterranean context are a clear and specific expression of the need to understand and largely redefine the relationship between forests and society. Communication is an excellent tool to re-establish the relationship between forests and society in a context of risk, focusing on society as part of the solution and not the problem. Attention and concern towards wildfires offer an opportunity to jointly build risk-management policies, establishing the role of the parties and the rights and duties in risk mitigation or expansion. Urban and territorial planning offer a framework of procedure and tools that is appropriate and capable of dealing effectively with the transversality of the wildfire phenomenon. However, certain operational information needs have still not been properly resolved from the expertise of the risk of wildfires. Some procedural aspects should also be revised. Therefore, wildfire risk management offers an opportunity to connect urban society with the reality of forests and make them participants of their adequate management and preservation.

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LINKING AGRICULTURAL AND FOREST MANAGEMENT TO THE PRESERVATION AND ENHANCEMENT OF THE BUILT HERITAGE: PERSPECTIVES AND POSSIBILITIES FROM PEPNAT

Keywords: forest management; heritage, Natural Park

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PhD in Forest Engineering from the Polytechnic University of Madrid. His professional career has seen him work in depth on the planning, management and construction of projects related to the environment and public spaces, both for governing bodies and the private sector.

Objectives
In 2010 the Collserola Park was established as a protected space. As a result of this new legal status, a new environmental and land use plan [PEPNat] is currently under consideration.

Framework
The preservation and enhancement of the natural values of the park together with the built patrimony are two key aspects of the future plan. The aim is to establish synergies between these two aspects and manage them in accordance with the objectives of the preserved area.

Results
This communication deals with the definition of a comprehensive model for a private-public management of the park. The main goal is the improvement and conservation of the built heritage in association with the agroforestry management of the land. This linkage is based on the introduction in the existing buildings of new uses compatible with the social and ecological values of the park in conjunction with the control of the disturbances.

Conclusions
The discussion focuses on the challenges of linking the uses of the built patrimony with the use conditions and active management of the land. It explores the possibilities and limitations of this kind of management by posing qualitative and quantitative arguments. It also describes the instruments within the Catalan legislative framework that may be useful to realize this.

Keyref
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FOREST INSECT IMPACTS ON VISUAL PREFERENCES OF URBAN FOREST VISITORS

Keywords: emerald ash borer; discrete choice; urbanized viewscapes

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Arne Arnberger is Associate Professor at the University of Natural Resources and Life Sciences, Vienna. His research focuses on eco- and rural-tourism, outdoor recreation, visitor monitoring, landscape and human health, protected area management, landscape aesthetics, and biosphere reserves.

Objectives

Urban forest managers today face an increasingly diverse array of land use goals and problems with both ecological and social dimensions. One such problem concerns invasive forest insect outbreaks, which have increased globally due to climate change, trade, and other factors. Extensive outbreaks of the emerald ash borer (Agrilus planipennis; EAB), an invasive forest insect, are having serious impacts on the cultural ecosystem services of urban forests in the United States (Herms & McCullough, 2014; Kovacs et al., 2011). Limited experience with how such outbreaks might affect recreational opportunities prompted this investigation of visitors to an urban state park in St. Paul/Minneapolis, Minnesota, USA, where EAB damage is occurring (Schlueter & Schneider, 2016). In addition, the question arises as to how visitors weigh the viewscape surrounding a recreation site and social factors such as visitor numbers relative to EAB-caused forest impacts.

Framework

A photo-questionnaire solicited state park visitors' visual preferences for trail environments in a discrete choice experiment (Arnberger & Eder, 2015). Systematically manipulated digital images simulated different levels of EAB impact in combination with other physical and social attributes including trail-proximate EAB-related forest management responses, land use context of the viewscape beyond the trail environment, visitor types, and visitor densities.

Results

Results indicated that EAB impacts were significant but of lesser importance than surrounding viewscape development and visitor numbers. Specifically, respondents preferred healthy, natural-appearing forest environments, dense trailside shrub vegetation and low trail user numbers and disliked viewscapes showing city buildings and removal of most ash trees.

Conclusions

While previous studies have identified a number of social and physical trail factors that relate to positive visitor experiences, the visual impacts of invasive species on visitor trail choice and recreation experience has yet to receive adequate attention by researchers. Both physical and social attributes of EAB-impacted forests influenced urban visitors' trail preferences, with views of city structures and visitor numbers being the most influential. Results suggest that trail planning should not only consider near-view landscape impacts but also the visual quality of more distant viewscapes, and that urban forest managers need to be aware of how forest insect impacts and subsequent management responses affect recreation setting preferences. Overall, effective integration of urban forestry with urban planning will enhance the visual quality of recreational settings.

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CHANGES IN PERCEPTION OF URBAN FORESTS IN TURKEY

Keywords: Citizen participation, Forestry organization, Green infrastructure

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Dr. Atmış's research interests are participation in forestry, forest-society relations, urban forestry and sustainable forestry. He conducted several national research projects in the areas of forest policy. He has published many research articles, which appeared in international journals, and also several major review articles.

Objectives

According to the official records of the General Directorate of Forestry, the number of urban forests, which have started to be established in Turkey in 2003, has reached 133 as of 2016. 103 of the urban forests in the country are located in the provinces and 33 are in the districts. The total area of urban forests is 10.314 hectares and their average size is 77.5 hectares. Urban forests have started to be established without adequate legal, administrative and technical infrastructure, and the legislative regulations over time did not take account of the expectations of the society and the urban forest users. In this process, different perceptions about urban forests have developed in the public administration and in the different sections of the society. Today, it is known that the forests offer a variety of products and services besides wood as raw material. However, despite the rapid increase in the number of urban forests established by the General Directorate of Forestry, the management structure and practices of this institution is still predominantly directed towards wood production. The General Directorate of Forestry looking to rent out the established urban forests to the municipalities or private individuals , or even shutting down the urban forests that are not able to be rented out, can be interpreted as the most apparent indicator that this institution does not consider the urban forests within its area of activity. On the other hand, local administrations perceive the urban forests only as recreation areas, whose operation can be transferred to private sector. Different interest groups that strive to utilize urban forests in their own ways leads to the differentiation of the perception of urban forests. The aim of this study is to investigate the urban forest perceptions of the forestry organization, local administrations, the news media and the urban forest users, and to investigate the changes in those perceptions in general, in Turkey.

Framework

Today, urban forests are one of the most important elements of green infrastructure. The widespread establishment of urban forests -whose history in Turkey goes back 14 years- without depending on robust infrastructure and strategy during their establishment process, has also adversely affected the perception of urban forests on different segments of the society. The demonstration of how urban forests are perceived by different segments from the beginning to the present day will serve as a guide for the management of urban forests in accordance with their establishment goals. Firstly in the study, the word "urban forest" was searched in news sites on the Internet to determine how urban forests are perceived by the public, and the news items appearing from 2014 to 2016 were classified by year. The data obtained was interpreted in comparison with the results of the study by Atmiş and Günşen (2015), which contains similar data from previous years. The perceptions of the forestry organization and local administrations about urban forests were attempted to be revealed based on scientific studies that the authors have previously carried out on urban forests (Atmiş et al., 2007; Atmiş et al., 2011; Atmiş et al., 2012; Atmiş ve Günşen, 2015; Atmiş et al., 2015a; Atmiş et al., 2015b; Atmiş, 2016) and on new observations. In order to find out about the urban forest perceptions of urban forest users, face-to-face interviews were conducted with 180 urban forest users, in

the sample area selected. A questionnaire consisting of 12 questions was given to the users. The answers to the questionnaire were digitized to create 37 variables that could compare some of the characteristics of the users with their perceptions of the urban forest. The normality distribution of the variables was checked with the Kolmogorov - Smirnov Test in SPSS 22 software. The test showed that the resultant variables are not normally distributed at 95% confidence level. Mann Whitney U test was used to determine whether there was a difference in urban forest perceptions of the users according to sex, and Kruskal Wallis test was used to determine differences in perceptions according to age groups. The results of the statistical tests were then interpreted in comparison with the literature and the news items on urban forests in the county's press in recent years.

Results

Atmiş and Günşen (2015), investigating the way the urban forests are reflected in the country until 2014, have found out that only 40 (67%) out of 60 urban forest reports in the media were related to urban forest services, and that -of the remaining reports- 10 were related to murder or suicide, 2 were stabbing, 2 were drowning, and one was rape -all of which are criminal activities. It is very clear that the crime related stories, which make up 25% of all news items, also negatively affect the image of urban forests. 17 of 40 news items that were related to urban forest services were negative news that report that the urban forests have turned into ruins, have been opened for building development, or have caused friction between the municipalities. Only 24 (40%) of the 60 news stories reported the services of the urban forests, such as the announcements for the opening of the urban forests, their utilization as training and exercise areas, and leaving feed for the birds on their grounds. In other words, the urban forests have appeared rather negatively on the country's agenda up until 2014. Out of 565 different news analyzed between 2014 and 2016, 156 articles on the activities held in the urban forest, 73 news items on the introduction of urban forests, 57 news articles that introduce urban forests, and 46 stories on the promises regarding urban forests indicate that the news on urban forests have become more positive. Nevertheless, among that 565 news, stories about criminal events (60) in the urban forest and building of inapplicable structures that damage the forest (50) also appear. As it started to establish urban forests in 2003, General Directorate of Forestry considered the urban forestry activities to be carried out in such areas as a new approach to the country's forestry. In Recreational Areas Regulation, urban forests are defined as an area in which the forestry organization could undertake activities on both nature and the forests, as well as activities for on their own public relations, in addition to providing facilities to the society for recreational activities. Today, however, it became apparent that the forestry organization does not attach much importance to the urban forests, as proven by the carelessness observed with regards to the establishment of new urban forests, the observed enthusiasm to rapidly rent out the newly established urban forests, the absence of administrative or technical staff in almost all of the established urban forests, and the superstructure facilities falling into ruins due to lack of protection or maintenance activities. According to the study, individual characteristics such as the user's gender, age, and education status are included among the factors that influence the perceptions of urban forest users on urban forests. According to the results of Kruskal Wallis test, the users' thoughts on some topics vary with their age. The views of the users on which institution that they think manages the urban forest, their reasons for not being able to visit the urban forest more frequently, the adoption of the view that the urban forests should be introducing the nature to and provide a playground for the children, that it should allow for cycling, and the impact of the urban forests on reducing stress, vary across age groups. With regards to the perceptions of the urban forest users, statistically significant differences were observed by gender, with regards to the effect of the urban forest on the psychological and physical development of children, and the necessity of the wood production in the urban forest.

Conclusions

The perception of urban forests is observed to vary according to the age of users. In order to ensure effective participation in the governance of the urban forests and the preparation of their development plans, the individuals from different age groups should be included in the research carried out prior to the establishment of urban forests. In the recent years, in contrast to the previous years, urban forests have begun to be mentioned in the news about the activities of the municipalities, rather than negative

news. There is no doubt that the reason for that is the operation of urban forests being handed over to the municipalities for the most part, and the municipalities using these areas effectively as part of their public relations efforts. The reduction in the number of news about criminal activities that take place in the urban forests, and the urban forests starting to be mentioned by the services they provide, is an indication of an increased rate of positive views on urban forests in the society. However, it is necessary for both the forestry organization and the local administrations or private organizations, which rent out the urban forests, to work towards ensuring the proper use of the urban forests, in line with their establishment principles. On the other hand, the General Directorate of Forestry, which holds the ownership and the administrative rights of urban forests, should make the urban forests and urban forestry a priority. The forestry organization should attach importance to the urban forests and urban forestry efforts, and improve the legal and administrative infrastructure on urban forests in light of scientific researches. In establishing new urban forests, not only local administrations' wishes but also society's expectations should be considered.

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May 31st and June 1st , 11h-11.30h Poster exhibition

SOCIOECONOMIC FUNCTIONS OF URBAN FORESTS AND THEIR LANDSCAPE BOUNDARIES AS AREAS OF VITAL IMPORTANCE FOR CONSERVATION: CASE STUDY IN LUGO CITY, SPAIN

Key words: leisure activities, social ecosystem services, cultural landscapes, rural cities

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Urban forests and their landscape boundaries have diverse social and economic functions, from the offer to the population with leisure and playtime opportunities, the possibility of practicing different sports and of course, the well-being that produces enjoy nature near an urban environment (Capotorti et al., 2017), to the contribution to energy saving through its microclimatic effect (Chiesura and de Groot, 2003). Also, the urban forests play a vital role in improving green infrastructures for the development sustainable of the cities (Chiesura, 2004). To do this, these areas have to face a multiple challenge: i) an altering ecological environment, ii) a lack of technical instruments to assess ecological-environmental problems due to their nearness to urban areas, and iii) a mostly favorable public perception (Chiesura and de Groot, 2003; Maes et al., 2016).

Knowledge to properly planning the possibilities of these areas should be the basis of our research, within a context where urban pressure exerted on them is increasing. Our goal is to create a reasoned discussion analyzing the socioeconomic functions of urban forests as areas of particular significance for conservation in the particular case of the Lugo city, Spain. Scientific understanding of how urban forests and green spaces benefit people has expanded substantially in recent years to include social, environmental and economic domains. Despite growing scientific evidence, there is a delay in policy response in a lot of municipalities (Wolf, 2004). Urban forests and its landscape can be thought of as green infrastructure. Research has demonstrated that forest benefits are optimized by citywide, long-term management so that urban forests attain their highest efficiency (European Commission, 2013). Awareness about forest resources and land use enables planning for multi-functional use of urban lands to multiply economic returns. For instance, lands that are dedicated to other infrastructures, such as power line corridors, can be managed to grow products for nearby neighborhoods, from fuel wood to food. For example, in Japan urban green spaces are planned for both recreational use and as staging areas for disaster relief services, if ever needed (Wolf, 2004).

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PARTICIPATION OF SOCIAL THIRD-SECTOR ORGANISATIONS IN THE IMPROVEMENT OF FOREST HABITATS IN METROPOLITAN ENVIRONMENTS (PARC DE LA SERRALADA DE MARINA)

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1998 - Degree in Technical Forest Engineering from the University of Lleida (ETSEA); 2009 - Master's degree in Territorial Planning and Environmental Management from the University of Barcelona. Since 2005, he has worked at the Technical Territorial Planning and Analysis Office (Natural Spaces, Barcelona Provincial Council) as part of the agreement with Obra Social "la Caixa". Previously he worked as a freelance and at Vigué-Subirà SCP on issues mainly related to forestry planning.

Objectives

The Barcelona Provincial Council, together with the municipalities, manages 12 natural spaces inside the province of Barcelona, adding up to a total of more than 247,000 acres. In 2005, it signed an agreement with Obra Social "la Caixa" to preserve the natural spaces of the Parks Network with the participation of collectives at risk of social exclusion. Presented here is the repercussion of this agreement, still in force, in Parc de la Serralada de Marina, located in the municipalities of Santa Coloma de Gramenet, Badalona, Tiana and Montcada i Reixac. The objectives that this agreement pursues are the execution of restoration projects in deteriorated areas, control of invasive species, fire prevention, improvement of forest habitats (in order for them to have increased maturity, diversity and resilience) and the improvement of the infrastructure network, mainly to regulate public use. For its execution, third-sector companies are hired, mainly special work centres and social-inclusion companies, in order to foster social and labour integration and jobs for people at risk of social exclusion.

Framework

The development of the agreement at Parc de la Serralada de Marina is carried out with the analysis of the needs of the park as a whole. It takes into account the Special plan and its main objectives in a set of strategic planning, such as: Plan of Forest Improvement, Plan of Wildfire Prevention, Preservation Plan (in progress) and the Plan of Public Use. Priority action areas are identified in accordance with the territory and the management needs and a set of specific projects are created every year which comprise the list of jobs to carry out on the site. At the same time, the appropriate collective must be identified for the project's execution taking into account technical difficulty, physical requirements and the skills and experience of each entity collaborating as part of the agreement or, if needed, the collaboration of specialised companies.

Results

Since 2005 until today, 29 improvement and preservation projects for the park have been executed and work has been carried out on 1,957 acres of land, an equivalent of 38% of its total size, with a total investment of 1,540,182.69 euros. The main actions have been directed towards the improvement of the burnt areas. In areas with good natural forest regeneration, 939 acres have been designated for the selection of regrowth and clearing of young pine trees. In forest areas without regeneration, a total of 205 acres were reforested with pine trees and oak trees. Action was also taken in the maintenance of 281 acres of open space and more than 10 km. of fire-prevention corridors were created. Other more specific preservation actions were the treatment of invasive species (bamboo, ailanthus, paper mulberry, cactus pear) and the improvement of the habitat of orchids, geophytes, chasteberries, thatching grass fields, etc. The execution of the actions

has been carried out along with 25 organisations, 19 of which are special work centres and integration companies, and with the participation of a total of 175 people at risk of social exclusion.

Conclusions
The agreement allowed the involvement of a public administration, a bank foundation and third-sector organisations from the Barcelona area in the sphere of a natural metropolitan space such as Parc de la Serralada de Marina. It has had a particular impact on young Mediterranean forests that come from post-wildfire natural regeneration, accelerating maturity processes and stability in the habitats. The park's intrinsic characteristics, which include proximity to Barcelona and the natural state of its ecosystems, dominated by young forests or open spaces, have proven to be highly suitable to carry out tasks that require a lot of labour and particularly suitable for the participation of people at risk of social exclusion, thanks to their ability to execute, adapting the different types of tasks to the skills of each collective. Lastly, it is important to point out that the agreement between the Barcelona Provincial Council and Obra Social "la Caixa" has been a boost to the park's management during these past few years and it has had a clear repercussion on the landscape, as well as media impact and a new perception of visitors and society in general.

Keyref
http://parcs.diba.cat/web/marina http://lacaixaparcs.diba.cat/

PERCEPTION VS EVIDENCE. HUMAN INDUCED IMPACTS ON THE URBAN-FOREST FRINGE PERCEIVED HUMAN IMPACT

Keywords: social-media listening, recreation ecology

Josep Lascurain

Objectives
The increasing social acceptance of sport practice, and the construction along the last 20 years of several new neighbourhoods encircling most of the park boundaries, has led to high densities of visitors to the Collserola Natural Park; thus raising concerns about its carrying capacity. But the perceived impacts by visitors are nearly exclusively related to conflicts between different types of human activities, while the real impacts are mostly ignored.

Framework
Most of the early literature about recreation ecology relates mainly to erosion and disturbance to fauna, with no references to the effects of the perception of saturation. We found that erosion was not relevant because it stops when finding bedrock after dissecting shallow soils. The absence of emblematic shy vulnerable species could be attributed to the novel ecosystem condition. An example is goshawk population growth, which is a consequence of the combined factors of disappearance of illegal killing, forest maturation and prey abundance. On the other hand there is a long-shared history of nearby urban growth and landscape change at Collserola. The Park Administration, the Metropolitan Administration of Barcelona, and Barcelona Regional, have funded studies of the spatial and seasonal distribution of visitors ant the frequency of visits along the park. The impact on fauna was assessed by camera trapping. A social-media listening analysis was conducted to identify the most relevant concerns expressed by visitors.

Results
Social-media listening and fieldwork showed that most of those concerns were related to conflicts between walkers and bikers, and none linked to environmental impact. The activities raising more concern were the most visible and fast ones: collective running and marching events with more than 500 participants, and mountain biking. Diverse camera-trapping studies, amounting over 7.000 hours, show how the most relevant impact was linked to unleashed dogs and feral cat colonies. Mostly linked to new neighbourhoods that were close to agricultural-forest boundaries that could be visited effortlessly on a daily basis. This situation transformed most of the last remaining agricultural patches into urban public spaces devoted to unleash dog walking. Also the perception of saturation triggered the spontaneous opening of new trails. Some of them with a braided pattern intermingling with the initial (saturated) one; but also a set of completely new trails for mountain biking. Those new trails involve relevant reductions of the size of the “natural islands” defined by the trail network.

Conclusions
To keep the environmental impacts related to human frequentation of peri-urban natural areas under viable thresholds, there is a need to control the levels of perceived saturation (linked to conflicts between walkers and bikers). Conversely there is an urgent need to preserve the “non urban agricultural” character of the agricultural patches close to newly constructed urban areas. Feral cat colonies on park perimeter, and unleashed dog walking should be strictly prohibited.

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THE CONTRIBUTION OF BIOPHYSICAL WILDFIRE MODELING AND RISK ASSESSMENT TO LANDSCAPE AND URBAN PLANNING IN THE WILDLAND URBAN INTERFACE

Keywords: Wildland urban interface, fire risk ssessment, community fireshed

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Objectives

During the last decades, suburban sprawl into unmanaged lands is substantially increasing on Mediterranean landscapes. The friction area between forested land and periurban development is widely known as wildland-urban interface (WUI), and here a complex mosaic of multiple landowner dwellings tightly intermingles with hazardous fuels. Due to the major threat that unplanned fires pose to property and human lives in these areas, landscape managers are seeking to mitigate losses integrating multiple prevention measures.

Framework

Wildfire risk is the expectation of loss and includes the assessment of wildfire exposure and effects associated with fire intensity. Fire modeling can account for fire occurrence to locate fire ignitions and then predict fire spread and behavior at a wide range of scales, to assess wildfire exposure of individual dwellings. Expert judgment, in turn, can be used to approximate fire effects at different fire intensity levels, and including cadaster-derived values facilitates the economic loss assessment. Nonetheless, large fires spread for long distances and fuel treatments on the fireshed contributes in reducing large fire arrival probability to residential houses. Other measures focused on increasing structure fire resistance, effective fire suppression and homeowners real risk perception can also mitigate losses and prevent fatalities.

Results

We provide a set of wildfire risk mitigation measures for the urban-forest boundaries in the metropolitan landscapes. We identify spatial priorities for fuel treatment allocation on residential house vicinities and strategically located areas across the landscape, according to expected economic losses from wildfires and large-fire transmission metrics. Planning opportunities and project implementation technical and legal constraints are also discussed. We demonstrate that landscape and urban planning aimed at mitigating losses has to go beyond the maintenance of green area surrounding individual structures. Our results highlight the collaborative planning needs among all landowner and landscape agents and highlight the key role that periurban area management can play on wildfire risk mitigation to promote fire-adapted human communities.

Conclusions

Latest advances in fire modeling can be applied to simulate wildfire exposure and risk to optimize fuel treatment allocation in the WUI. The scale of risk to communities is set by large fires spreading long

distances far beyond jurisdictional boundaries. Forest management in peri-urban green areas provides a great opportunity to mitigate wildfire risk meeting community's recreational and environmental demands. The proposed conceptual framework can be implemented to protect live and property from wildfires on any fire-prone urban-forest interface.

Keyref

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May 31st, 11.30h PechaKucha Presentation

ESTIMATING TREE STRUCTURE AND PARAMETERS USING TERRAIN LASER SCANNER

Keywords: Terrain Laser Scanner, Biomass estimation, Tree risk assessment

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Objectives

There is a growing interest in the role that trees can play in improving the quality of urban life and in providing ecosystem services (ES), a number of goods and functions that nature provides in relation to the social, economic and environmental dimensions of the urban context. In the last decade, ES have become a priority in the planning and management activities undertaken at all levels to preserve urban trees as a fundamental resource for the sustainability of urban life. However, the dynamics of the positive and mostly negative effects that the urban environment exerts on tree health are not fully known. This last aspect makes it necessary to develop accurate, less expensive and streamlined methods for measuring the biometric parameters of trees and estimating the risks related to their presence.

Framework

Considering the above drawbacks, an alternative economical and non-destructive source of information could be Terrestrial Laser Scanning (TLS), which offers faster and more accurate measurements compared to destructive sampling and traditional allometric equations. By using this approach, we were able to assess individual tree structure and biometric parameters such as tree diameter, height and stem and branch volume. TLS-derived data can also be used to detect and quantify volume reduction resulting from tree pruning and, consequently, to estimate this underexploited potential source of wood biomass. In this contribution we discuss the results of an integrated application of tools for assessing and measuring the parameters required for the characterization and structural description of a double tree line located in an urban setting.

Results

The study identified and tested a methodology that allows estimating biomass and describing the resistance of the wood profile based on different phases of laser scanning technology. Moreover, it characterizes the interactions between trees and site conditions providing a support for risk assessment and the mechanical stability of trees in the urban environment. Finally, from a practical point of view we experienced innovative data acquisition and processing techniques to improve current measurements of urban tree biophysical parameters in terms of accuracy and speed to reduce cost and labour needs.

Conclusions

We conclude that the proposed approach is an effective, non-destructive, accurate, streamlined and less costly methodology for assessing tree biomass and structure. This typology of data provides a support system to evaluate the health conditions of forest resources, which is essential for planning and managing urban and peri-urban trees and forests.

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ENVIRONMENTAL AND SOCIAL VALUES OF METROPOLITAN PARKS

Keywords: parks, connectivity, biodiversity

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Agricultural Technical Engineer specialising in Gardening and Landscapes. In the year 2000, she joined the AMB technical services as part of the Parks Quality Control team. In 2002, she collaborated in the projects and works of parks as a gardening and irrigation expert. In 2004, she returned to the field of management, elaborating technical documents and becoming the head of gardening for metropolitan parks. Since 2012, she is the Section Head for metropolitan parks. Having collaborated with different publications, seminars and congresses for 10 years, she has also been part of the APEVC (Green Spaces Professional Association of Catalonia), presiding it during the 2008-2009 term.

Objectives

The Metropolitan Parks Network is made up of 47 urban parks spread over 29 municipalities, covering more than 600 acres. AMB manages it in its entirety: the plants, the furniture, the facilities, the pavements and the constructed elements as well as its promotion through the stimulation of activities and educational proposals. These parks, variable in size and location, are an element of transition among small squares, which have a more social function, and larger spaces, with a more natural and ecosystem-like component, and they include elements such as river valleys to large open spaces as well as settings of different sizes integrated inside the urban framework. Metropolitan parks constitute a network of green spaces that, located in the middle of the city, play an important role in the functionality of ecosystems, which provide support to environmental services: they establish ecological relations with agroforestry and river spaces in their setting, enrich biodiversity, provide habitat to different animal species and participate in the connectivity of the territory's green infrastructure. Having more accurate knowledge of the environmental and social benefits that this group of parks provide and of its potential allows us to define more integrated planning and management strategies so that the values of a specific park can be multiplied and may be used by the territory as a whole, while building a balanced system of areas of different sizes and uses that complement each other and improve overall efficiency. In this sense, the Environmental Indicators System study of the metropolitan parks network, made in 2014 by the Barcelona Regional agency and Barcelona Metropolitan Area (AMB), analyses the uses and functions that parks have with technical rigour (the so-called environmental and social services). While a series of variables and indicators are proposed for their systemic and scientific evaluation, it is also the starting point to values the intervention guidelines for these spaces, from planning to the management phase.

Framework

The study presents a series of variables and a set of indicators to carry out a first approach on the knowledge of the socio-environmental services of metropolitan parks, to determine the strong and weak points of each service in more detail, to define the desirable limits of each depending on the park's type and characteristics and to boost to those which are considered a priority for each facility. For example, the variables that the study identifies which can be measured in each park with the purpose of evaluating their contribution to the functionality of ecosystems and biodiversity are: the park's size, plant coverage, tree coverage, layer structure, deciduous and evergreen trees, tree diversity, tree maturity, native trees, soil permeability and water area. On the other hand, the dissuasive variables are the density of the urban structure, proximity to the city centre, internal park facilities, sports courts, presence of bars and shops, lighting, levels of surrounding sounds and atmospheric contamination levels. Once the variables have been measured and the indicators defined, the study evaluates their potential within the metropolitan territory and opens the debate of which measures must be carried out in when they must be contemplated.

Results
The results obtained are gathered in each park's summary sheets, in comparative graphs of different parks for each indicator and in network plans, highlighting the level of potential of each environmental service for every metropolitan park (low, medium or high). The analysis of the applied method and the obtained results are accompanied by a monitoring proposal of the defined indicators and a collection of new indicators to be incorporated in future evaluations. Based on the study, two synthetic informative documents are elaborate: "Environmental and social values of parks", directed at the technical field; and "Guide of social and environmental values of metropolitan parks", directed at the environmental education field.

Conclusions
This knowledge provided by the evaluation of indicators, as it advances in data gathering, will contribute to the improvement and a more efficient management of metropolitan parks, as well as defining planning criteria and/or more advanced and accurate designs in the conception of future parks that will be added to the network. In this sense, and as a result of this project, two strategic lines of work have been established to improve the role of urban parks in the green metropolitan infrastructure: - The tutorial to "Environmental criteria for the design of urban parks" (2016), with the objective of projecting not just from an architectural, gardening or landscape point of view but also by making these projects more environmental. - "The Biodiversity Improvement Plan in Metropolitan Parks" (in progress), established management and design strategies of parks aimed at preserving urban biodiversity and the ecological relationship with its surrounding open spaces.

Keyref
- Sistema indicadors ambientals [Environmental Indicators System]: http://bit.ly/1XG0qYE - Els valors ambientals i socials dels parcs metropolitans [The environmental and social values of metropolitan parks]: http://bit.ly/29livO3 - Guia didàctica dels valors socials i ambientals dels parcs metropolitans [Tutorial of the social and environmental values of metropolitan parks]: http://bit.ly/2dM2NJH - Guia Pràctica pel disseny de parcs urbans i 'Abstract' [Practical guide of the design of urban parks and 'Abstract']: http://bit.ly/1sdDC9d

MANAGEMENT METHODOLOGY OF THE PARC DEL RIU: FROM PLANTATION TO MANAGED ECOSYSTEM

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Objectives
A methodology to assess biodiversity in the Parc del Riu, as study case, directing management criteria of the Park to enhance landscape value as well as to increase its biological diversity as an ecosystem services provider.

Framework
This study is based on the concept of adaptive management (Holling, Gunderson, 2002) and, more specifically, on the work carried out by public administrations such as the AMB to obtain parameters related to the ecosystem services of public spaces in the Metropolitan Areas of Barcelona. Other examples of creative management research (Gustavsson, 2008) and to the parameterization of the evolution of communities in public spaces has been done by universities such as Alnarp and Shefeld.

Results
The Parc del Riu is part of the system of spaces that integrate the project for the environmental and social recovery of the Llobregat river in the Metropolitan Area of Barcelona. With an area of approximately 7 ha, it was completed in 2011 with a total of 82,000 units of plants, with the aim of recovering the environmental and landscape potential of the area and becoming a managed ecosystem. At present, five years later, it is proposed to develop a management and promotion methodology that will enhance its landscape value and biological diversity. The proposed methodology is mainly empirical, based on the obtaining of management criteria from the research in situ, done in experimental plots where to study the dynamics of the vegetation and its ecological functioning. The methodology is proposed to be carried out together with the management technicians of the AMB and the community linked to the park.

Conclusions
The management of public spaces, and specifically of the Parc del Riu, has the capacity to influence in biodiversity. To generate management criteria that increases the biodiversity of the park it is necessary to recognize the interaction of environmental, social and management dynamics. This methodology, based on the empirical knowledge of environmental dynamics (phenological, successional changes and vital cycles of vegetation) and social dynamics (existing and potential uses and activities), generates, further than a management plan defined a priori, a process of adaptive management.

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PAYMENT OF ECOSYSTEM SERVICES: A TOOL FOR WATER RESOURCE PROTECTION IN THE REGION OF CURITIBA, BRAZIL

Keywords: Payment for Ecosystem Services (PSA); Water resources; Public policies; Wild Urban Interface

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Giovana Logullo is an MSc European Forestry student, program held by a Consortium of European universities, as the University of Lleida and the University of Eastern Finland. She is from Curitiba (Brazil) and she was graduated in Forest Engineering by the Federal University of Paraná. She has worked in The Wildlife and Environmental Education Research Society, a renowned Brazilian NGO. She was involved in a nature conservation project in Urban and periurban rainforest environments in southern Brazil.

Objectives

Curitiba is one of the biggest Brazilian cities, with almost two million inhabitants. The water provision for this population relies on water supply areas located at Curitiba's metropolitan region, being the government the responsible for its protection. The Brazilian environmental law is very restricted, but unfortunately not respected as it should, being a difficult task for the local government to supervise it. The non-compliance of the environmental law is depleted by different actors among the society, among actions of occupation and degradation in protected areas, besides illegal logging. Facing this problem, the Sociedade de Pesquisa em Vida Selvagem e Educação Ambiental (Wildlife and Environmental Education Research Society), trough the ConBio Program – Nature Conservation in urban and wild-urban interface area, does its actions in Piraquara, the main responsible county for the water provision to Curitiba. The project is financed by the HSBC Water programme, in a partnership with the Boticário Foundation – Oasis Initiative, and the County of Piraquara. The main objectives of this project are to promote conservation actions in the water production area and on private forest remnants trough the implementation of a Payment of Ecosystem Services (PES).

Framework

The action lines of the project are: (1) Conservationist Extensionism – visit and diagnosis of private properties in Piraquara, sharing information about good management practices, conservation of the natural area and environmental legislation; (2) Education for nature conservation – courses of nature conservation, water resources and biodiversity for teachers from the public schools in Piraquara; (3) Public policies – implementation of legal frameworks for the PES and mapping financial resources for the awards.

Results

Until now the achieved results with the Conservationist Extensionism are 112 visits and evaluation of private properties, corresponding to 2500 hectares. Around 50% of the visited areas have native forest vegetation in middle stage of ecological succession. For the actions in education, a total of 900 teachers have participated in the Education for Conservation course, and are aware of the importance of the natural resources conservation. Also, the toolkit was presented, aiming to provide tools to work the thematic with the students. Over 3000 students were indirectly achieved. Regarding public policies, together with the State Division of Environment and Water Resources of Paraná, it was elaborated and implemented the legal framework for the execution a PES program – Laws 1.405/2014 and 1.540/2015; Decrees 4.700/2015, 4.808/2016 and 4.809/2016. Moreover, as an initial investment for the awards, the licensed company that supplies water to Curitiba and the State of Paraná have announced the contribution of R$750.000,00.

Conclusions
It's expected that the Payment for Environmental Services in Piraquara will be an efficient mechanism for engaging citizens in the protection of springs, beyond contributing to the awareness of society regarding the conservation of the Natural patrimony. As well it's foreseen that this project turns into a mechanism to be applied in other priority regions of water resource conservation, as it's already a case of success in partnership between the public and third sector with civil society.

Keyref
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SECTION II OF THE CASTELLDEFELS SEAFRONT/CASTELLDEFELS DUNE REGENERATION

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Cristina: 2007 - Degree in Architecture from the Barcelona School of Architecture (ETSAB); Currently finalising Master's Degree in Landscaping at ETSAB; 2008 - present - Architect at Barcelona Metropolitan Area.

Objectives
The section that we are dealing with is located in the municipality of Castelldefels. It presents a length of 1,950 m. and it is characterised by its residual and irregular urban front located at the seafront. With this problem at hand, the proposal consisted in the creation of a new urban facade at the seafront with the construction of a new dune front, new access to the beach and a promenade that cleaned up all the elements. This promenade is made up by a walkway made of pieces of prefabricated concrete placed on a base of sand confined by geocells, a non-invasive and detachable system. The need to recover the dune front to protect the new walkway was essential.

Framework
The dune-regeneration process employed was based on prior experiences of interventions carried out in similar locations. The system is based on regeneration by fixating sand collectors lengthways and implementing an initial and controlled plantation with local species in order to recover the old plant communities. Four typologies of dunes of different length, width and height were defined. By combining them, a new dune front was configured. The execution of a walkway by using geocells to confine the beach's sand as a base for the pavement was a contribution towards the creation of new promenades with non-invasive techniques.

Results
With the dune typology already shaped (using existing sand accumulated in areas near the facades), the collectors were fixated and the initial plantation was carried out. This plantation consisted in planting psammophile species with a high percentage of seed combined with plants that guaranteed the fixation of the sand from the start.

Conclusions
Once the plantation and initial fixation process was finished, the dunes consolidated and from this moment on the dune-regeneration process developed on its own. The recovery of the dune front on this section has helped protect the new walkway a well as the interior space and the built seafront. The dune system will require maintenance during the first few years since it is highly fragile and it is not fully consolidated. Section I already experienced dune regeneration and it is now fully consolidated with barely any maintenance required. The execution of the walkway has also had an acceptable result and not suffered any important movements, although it does need certain maintenance in the control of sand contribution at the base.

Keyref

* Ministry of Environment. Lagoon recovery in Valencia. El Saler Meadow. Beaches of El Saler, Ferros-Garrofera, La Brava, La Malladeta and El Canyar.
* Dune recovery at the dune front of Sant Martí d'Empúries.

COLLSEROLA, 30 YEARS OF MANAGEMENT: SOCIAL USE AND PRESERVATION OF NATURAL SYSTEMS

Keywords: metropolitan nature, leisure, regulation

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Degree in Economics and Business Sciences from the University of Barcelona. Management of Public Services, Communications Departments, Environmental Education and Public Use, with the aim of reconciling social use and preservation of natural systems. She promotes the "Public use strategy 2016-2019", a technical committee with the nine municipalities of the Park and the AMB (Barcelona Metropolitan Area) to implement new criteria for visitor planning. In recent years, she has coordinated the production of several permanent exhibitions at the Park, audiovisuals and publications such as "Collserola Nature Guide"; "MTB Route Guide". Also coordinated communications campaigns to foster and promote "Best practices".

Objectives
Over the past 30 years, Collserola has established itself as the park of the metropolitan population. Once infrequent use has now become daily use. There are people who use it every day to go walking, relax, go cycling, and the park now receives nearly 3 million visitors per year. At this point the social reality of Collserola requires new measures to manage public use as well as studies on the impact and capacity to shoulder such a burden in order to reorient intensive use in some areas and avoid it in others. In this sense, in 2016 the Public Use Committee was set up, with the participation of nine municipalities with territory in the Park and AMB (the Barcelona Metropolitan Area).

Framework
The agreed new criteria were passed by governing bodies in 2016. All physical sports events require authorisation. In 2017, an awareness campaign will be held to explain why activities can be carried out in some zones while other areas have to be kept as calmer, tranquil areas. In March/April 2017, a study of visits to the Barcelona/Nature Park area will be carried out alongside an impact study for the same territory. A collaboration agreement has been signed with INEF (National Physical Education Institute).

Results
In 2016, mass activities have been moved, with the Park's authorisation, to a new network of tracks and some trails, 80%-20% respectively, and new limits on the number of participants allowed have been put in place according to type of activity, walking or cycling. The upward trend has been reversed and the total number of participants has dropped. Perception of the nature park has increased thanks to the work done by participating territorial bodies, explaining the need to organise mass use to prevent the park's deterioration, now highly visible in some parts of Collserola.

Conclusions
The increase in visitors and organised activities over recent years, has led to a series of impacts on natural systems in the park, to varying degrees. Moreover, the social value of Collserola Nature Park for the population of the Barcelona metropolitan area cannot be set aside. The question, therefore, is: what is the degree of impact of activities? What is the acceptable limit? If we wish to avoid losing an important part of the benefits the natural ecosystems contribute to the health of the metropolitan population, we must answer these questions.

Keyref
Pepco (Special Ordinance and Protection Plan for Collserola), 1987; Collserola Park Ordinances 2000

LANDSCAPE FROM INFRASTRUCTURE

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Rome 1970, graduated from IUAV "Urban Park in Rostock", Master's in Integral Management on the Coastline, Bologna University, Master's in Landscape Architecture from UPC-Barcelona. Various projects in sustainable coastline management, appreciation of its landscape potential, routes along the coast, leisure areas in fragile environments. Talks at the MAGRAMA conference (2011/2013/2015) "Processes and Projects on the coast", "Implementation of the Coastal Law in a sensitive, complex environment", "Coastal path in the Llobregat delta"

Objectives

At the mouth of Riera Llarga, in the municipality of Arenys de Mar, the continuity of the coastal footpath is interrupted. The potential for this space in contact with the peri-urban landscape has been ignored due to the gaps and other problems involved. Lack of safety: pedestrians and cyclists cross the railway lines. Lack of appreciation of a complex and rich coastal environment. Pressure from grey infrastructure prevents our understanding of the location and its dynamics. The proposal seeks to rebuild continuity here by utilising the forgotten BLUE infrastructure dynamic. It is based in both the dynamic of the rivers and the movement of the waves as the use and enjoyment of the landscape will mean understanding its processes.

Framework

The peri-urban coast is a threshold, a membrane subject to the pressure of large linear infrastructure, made worse by climate change. Coastal defenses need to be adapted to local coastal processes, leveraging their ecological potential. In this peri-urban environment, pathways close to infrastructure represent a medium through which to experience the location, a way to appreciate the landscape and improve our understanding of its ecological processes. Blue infrastructure reactivates the ecological potential of the peri-urban coastline. Reinforcing routes parallel to the coast diverts ecological pressure towards the city, and improves appreciation of the transitional space, by fostering an understanding relationship between the pedestrian and the coastal system and high-impact artificial works.

Results

Coastal defenses are designed with a sensitive topography, taking into account coastal dynamics, the mouth of the river and continuity for pedestrians and cyclists. This new topography resolves the complexity of the location and manages the dynamics of the river mouth and erosion. National rail and motorway pressures become an opportunity. The river passing under the train offers an attractive view of the sea. Junctions are transformed into an experience of the location in a metropolitan passageway.

Conclusions

Transport infrastructure is developed as an opportunity. The stand-off becomes a meeting point generating different dynamics. The project seeks a new coastal ecosystem, both ecologically and aesthetically. It reactivates the location through its function as a "residual beach", revealing its contemporary facet as a public space and peri-urban ecosystem. It shows its character as an intermediate phase, a membrane, and its value as a space for dialogue between the urban and the non-urban.

Keyref

Forman. Land Mosaics Jubert, Santacana, Galí. Parc de la riera major Meyer. Sustaining Beauty

NON-DESTRUCTIVE TREE RISK ASSESSMENT - RECENT DEVELOPMENTS AND NEW APPROACHES

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Steffen Rust is Professor of Arboriculture at the University of Applied Science and Art in Göttingen, Germany. His main field of research are non-destructive methods for tree risk assessment. Steffen is one of the developers of stress wave tomography. Recent studies concentrate on ground penetrating radar, electrical resistivity tomography for stems and root systems, as well as static pulling tests and analysis of tree dynamics in natural winds.

Objectives
In many parts of the world, there is a legal obligation to assess the probability of failure of urban and roadside trees. Frequently, failure is initiated by damages to the root system compromising the anchorage of trees. Consequently, there is a need for cost-effective ways to assess the anchorage strength of large numbers of trees. To date, only static pulling tests can provide that information. However, for a long time, their scientific basis has been weak, and moreover, they are more expensive than most other methods for advanced tree assessment. The objctive of our study was to strengthen the basis of this method and to develop new tools, that are less expensive and provide information on the dynamic properties of trees.

Framework
More than 200 trees were pulled to failure to derive parameters to estimate the load at failure. More than 200 trees were monitored in storms with highly sensitive sensors measuring root plate inclination.

Results
There is a close correlation between parameters measured in non-destructive pulling tests and the load causing failure in trees. The correlation between wind speed and root plate inclination is close and can be used to assess the safety of the tree based on empirical thresholds. It can also be used to estimate critical wind speed and thus, likelihood of failure.

Conclusions
Results from static pulling tests can be used to reliably assess breakage and uprooting of urban trees. Using these results and our measurements of the dynamic reaction of trees to wind, we propose a new and less expensive method to assess the risk of failure based on their dynamic reaction to natural winds.

Keyref
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DEFENDING THE SKYLINE

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Sofía graduated from ITESO (Western Institute of Technology and Higher Education) in Mexico with a degree in Architecture. She won a scholarship from the Mexican government to continue her postgraduate studies in Landscape Architecture at the Polytechnic University of Catalonia in Barcelona. When she finished her studies, she became involved in research projects at the University. She took part in the analysis of the river beds in the Guadalajara metropolitan area and the design of public spaces in these river areas. In 2012, she took part in the projects to promote the production of organic coffee and Fair Trade in south-east Mexico. During her master's in Barcelona, she took part in several projects with global companies such as Battle i Roig, SCOB and Thomas Oslund. She produced various projects at various scales, from territorial planning, controlling fires with the landscape and ecological water management to public spaces and gardens.

Objectives
The overall objective of the research is to explore the skyline, showing its use as a limit to frame the landscape. Starting from the premise that "the landscape is the relationship between people and places"1, people's perceptions make a territory a landscape, meaning it must be protected using man's primary sense in interacting with surroundings: sight. In the context of extreme growth in the cities in the study —specifically cases in Mexico— the "collective skyline"2 is put at risk, privatising the best sights: what was once a value of the many is now becoming a privilege of the few. Through qualitative research and analysis and studies of visuals, this work seeks to highlight the relevance of landscape as heritage. After developing the concept of skyline as a defining part of a society's identity and historical memory of a population, I will then address the logic of the urban development of cities and planning of public spaces and preservation of the natural environment, as governed by the value of the skyline itself, with an experimental visual analysis to generate informed criteria for the protection of the landscape. The following questions for research are posed: Why do we need to defend the skyline as a basic part of a landscape's value? How does transformation of the skyline affect the landscape? 1 Swanwick and Land use Consultants. 2002:2 2 CORAJOUD, Michel. Le paysage c'est l'endroit où le ciel et la terre se touchent. Arles, France. Actes Sud. 2010. page 199

Framework
The work consists of four parts. The first of these parts is the theoretical framework: qualitative research using definitions by various theorists throughout history, a search of current literature, incorporation of my personal experience as an architect to explore the concept of the skyline, in order to find features that are important to the creation of the landscape project and to answer the first of the questions posed above (Why do we need to defend the skyline as a basic part of a landscape's value?). The second part will study several cases of modifications to the skyline in the case of three Mexican cities. This section seeks to verify that the skyline can enable us to take a reading of the relationships that exist between the individual/inhabitant of the city and the landscape. The third part will focus on the second research question: what does a landscape lose when its skyline is altered? Three cases shall be explored that are considered serious as the skyline was not taken into account in the project, with direct effects on the environment. The fourth and final part will explore successful cases where the skyline has been protected, with a brief graphical experiment with the theories representing various landscapers in the case of the City of Chihuahua, a landscape that presents valuable characteristics in its skyline. This will be followed by an argument as to why landscaping is vital in city planning, finally ending with a narrative as to how to modify the concept of protected skylines in the postmodern landscape.

Results

1. A skyline measures the pulse of the landscape, and contains important values that the Mexican landscape must care for, as assets that provide visual joy as well as combining with the environment that we are all a part of. The result is a ten-point treatise for the protection of the skyline. 2. Role of landscape in city planning. The landscape and urban planning are conventionally thought to be competing rivals, or landscape is considered a temporary break from urban life; planners sprinkle open spaces and green areas as patches across the concrete structure. “Landscape architects are the city planners of our time.” They see urban planning through the lens of the landscaper. Nowadays, we have realised that the perspective of landscape is a necessary one, specifically that we must protect the skyline to generate interventions linked to the ecosystem and create a contemporary urban project that is multifunctional and acts as an axis between the social science of urban planning and urban design. Currently, planning offices attempt to save the image of nature in the cities by placing green strips in the middle of saturated thoroughfares with poor air quality, and in the end their maintenance becomes too expensive (watering and pruning) and they are eventually abandoned. Actions such as this transform cities, making them greyer and more disconnected from nature. We have reduced nature exclusively to undeveloped areas.

Conclusions

Landscape architecture is paramount in projecting the skyline and linking it to the project, be it through a specific visual or through a journey. It seeks to claim the potential of the skyline as a value to generate landscape through new challenges that generate a closer relationship with the location. As such, the research reveals the need to question the process of projecting on the territory, as there are new, unexplored opportunities we should consider. Just as visuals are studied to provide the best views of the architectural project, so landscape should seek to protect the collective views. In this same vein, it has become necessary to rethink vertical planning of the skyline to avoid blocking the visual limits by considering the proportion of any given intervention in the territory. Good infrastructure design means proper function, functional beauty and pleasing visuals. In this sense, the research presents us with a number of points to be followed in the process of drafting architecture and/or the landscape in order to defend the skyline and offer a better reading of the territory. In turn this will mean linking the intervention with the format, generating the least possible impact.

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CONTRIBUTION OF PARC DE L'ALBA TO THE ECOLOGICAL RESTORATION AND STRENGTHENING OF GREEN INFRASTRUCTURE IN THE BARCELONA METROPOLITAN AREA.

Keywords: green infrastructure, biodiversity, ecological restoration

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Specialising in urban planning and winner of the National Urban Planning prize in 1987, he has served as an adviser to several city councils, such as Ripoll, El Prat de Llobregat and Ribes de Freser, the urban planning delegate Girona City Council and advisor to that City Council for urban integration of conventional and high-speed rail, and Director General of Urban Planning between 2007 and 2010. He currently runs Parc de l'Alba and advises Vic City Council in its review of its Municipal Urban Plan (POUM).

Consol Pérez Cruz

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She has developed her professional career in the field of environmental consultancy, specialising in environmental restoration, environmental impact assessment and environmental oversight of public works. At present, she leads the management of the environmental aspects of Parc de l'Alba, highlighting aspects such as restoration and management of habitats, diagnostic studies and projects to restore degraded soils, the water cycle, landscaped garden areas and planning procedures, among others.

Carme Rosell Pagès

PhD in Biological Sciences from the University of Barcelona (1998)
Director of MINUARTIA.

Her work focuses on conservation of biodiversity, in particular management of fauna and transport infrastructure. She has led or participated in R&D&I in this field. She has authored and co-authored numerous publications, several of which international. Her most recent projects have focused on mitigating the impacts on functioning transport infrastructure and the reduction of traffic accidents caused by wildlife. She also works in green infrastructure and connectivity and ecological restoration.

Roser Campeny Valls

PhD in Biological Sciences from the University of Barcelona (2001)
Senior consultant with the MINUARTIA technical team.

She has focused her work on ecological connectivity, planning and management of natural and rural spaces, protected spaces and the Natura 2000 Network, as well as green infrastructure and strategies for monitoring biodiversity. She has directed numerous works on ecological connectivity, at the local, provincial and regional level (Catalonia and Andalusia). She has published several publications on the topic and on biodiversity management and monitoring in protected areas.

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Objectives
Parc de l'Alba is an area of some 340 hectares of urban development that includes the Barcelona Synchroton Business Park, and is situated in a strategically important area for the restoration of ecological

connectivity between Collserola and Sant Llorenç del Munt i l'Obac Nature Parks, both integrated into the Natura 2000 network. In the urban planning, the decision was taken to make a strong commitment to green infrastructure, preserving some 180 hectares, 140 of which are intended to promote ecological connectivity, alongside another 40 hectares for urban parks. In addition, 15.5 hectares were allocated to the preservation of the main river channels, preserving their hydraulic and ecological function, while constituting the structural axes for the green spaces of the park.

Framework
The projects and works involved in the urbanisation of the space include activity for ecological restoration and defragmentation of the territory, land recycling, restoration of woodland habitats and riparian vegetation. All these measures enable us to foster biodiversity and restore connectivity between different green areas, as has been confirmed by the results of the various oversight studies carried out.

Results
In the management of green spaces, measures are fostered to reduce the use of pesticides and fertilisers, encouraging native beneficial fauna while preserving agricultural activity compatible with biodiversity and public use of the space. Routes have been created to publicise the actions that have been taken and the benefits they hold in the preservation of biodiversity and ecosystem services, which are represented by the corporation. All this is strengthened by participation in the public science project, Natusfera.

Conclusions
In November 2016, BSP-Parc de l'Alba was accepted as a full member of the EU's Business & Biodiversity Platform, which came as recognition of the work carried out, and an incentive to continue to contribute to economic and social development that is harmonious with the preservation of healthy spaces that coexist with spaces transformed by urbanisation and infrastructure development.

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‘BUILDING’ A FOREST IN URBAN MIRI, SARAWAK MALAYSIA - THE PIASAU CAMP STORY

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I managed a newly established urban forest reserve in the city of Miri, Sarawak, Malaysia. Worked for Sarawak Forestry Corporation since 2008 and became a Park Manager since 2015. Graduated with a Bachelor in Marine Biology, trained as a Management Executive with Sarawak Forestry Corporation, and underwent Fellowship Training with the World Forest Institute in 2016 focusing on management of urban forest.

Objectives

Urban forests are a critical part of the city’s green infrastructure, providing an array of ecological services and opportunities for recreation (NYC Parks, 2014). As cities are expected to grow at a rapid rate, it is important that the communities, city planners and decision – makers understood the value and services provided by the urban forest (Bolund et.al., 1999) In Sarawak, Borneo, an area of 220 acre consisting of a sandy beach and lowland coastal forest had been proclaimed and restored by the state government as a nature reserve. Considering its challenges as a forest in a developing city this patch of forest will be restored to fight back against the inevitable changing climate and land fragmentation. Located in Miri City, Sarawak Borneo, Piasau Nature Reserve (PNR) was a residential area that was set up to provide housing for expatriate staff and senior Malaysian employees of Shell Oil & Gas in the 1960’s. The two main objectives of having this area as a nature reserve was to preserve the semi – natural forest habitat in an urban landscape as well as to protect the nesting habitat for the Oriental Pied Hornbill, a totally protected bird in the state. However, landscaping of the area in the course of establishing and maintaining residences over many years resulted in the fragmentation of the natural landscapes and introduction of many ornamental and non – native plant species. Being an island of forest in the city with no connectivity, PNR remains resilient as a reservoir of a variety of urban wildlife species and most impressively it is also a habitat for the endangered Oriental Pied Hornbill. In 2013, this area was then proclaimed as a nature reserve and conversion of this area was made possible through successful partnership and strong alliance with the local communities as well as strong support from the political decision makers. The management authority of PNR is Sarawak Forestry Corporation (SFC), a government – linked agency entrusted to manage and conserves all biodiversity matters in the state. Together with SFC, direct public involvement has significant impact in championing the protection of PNR as an urban forest. It is also important to have strategies to align the forest’s characteristics and community’s expectations. As a new and highly visible urban forest it is challenging to communicate and consolidate particular social expectations and the forest’s ecological integrity in the management strategies. PNR is a forest that is manipulated by man however with limited knowledge on urban forest and its services, communicating our management strategies is incredibly challenging. In addition to that, due to its close proximity to urbanization and densification, land encroachment and disturbances are threats to PNR’s ecological integrity.

Framework

The vision for PNR’s future includes a healthy balance between nature and public expectation and to support this vision; three vital concepts are adapted into its management strategies and approaches. It is indeed a priority first to restore this island of forest with no connectivity at all in order for it to recover from extensive fragmentation during its years as a residential. The restoration process that is taking place includes active planting of native tree species and soil improvement. This will not only enhance the area

as an important urban wildlife habitat but simultaneously providing a green space for the cities where its dwellers could escape to be in the nature that is within the city limits. Restoring itself would not be successful without active participation and strong support from the communities especially in the local context. To demonstrate that active participation and engagement of communities could enhance the quality that PNR could provide, SFC had focused on engaging various groups of people in the society through platforms such as the Special Park Committee, Piasau Camp Miri Nature Park Society, a group of advisory board consisting of political decision makers and through programs with local schools and universities. The goal of this is to explore the many spectrum of participatory planning of PNR for better integration between the biodiversity and social expectations as well as for the protection of this area. We need also to reconnect with the communities to explore learning opportunities for all ages with goals to understand the function of PNR as an important urban green lung, besides coordinating research in order to continually build on what is learned and to identify new opportunities.

Results

Tucked conspicuously in a sandy beach and lowland coastal forest, this area which was formerly a residential is now a gazetted Totally Protected Area in the state of Sarawak. Its establishment as a nature reserve in the city is a result of active participation and strong alliance between the communities and the government. Three years into its management, the coverage of the area had slightly expanded to make up its current size. In addition to that, partial area of the reserve had turn into wilderness area and major forest growth had taken place. At areas which are located specifically for public use and appreciation too had been given a major facelift with the construction and installation recreational facilities such as nature trails, interpretation centre and walking paths. In support of a broader vision, PNR will be a strong urban oasis that increases the resilience and well – being of both people and nature.

Conclusions

The story of how Piasau Camp became Piasau Nature Reserves is a manifestation of how strong support from wide groups of communities in championing the protection of nature and wildlife habitat. Through PNR we can hope that the level of awareness on the importance of an urban forest and how it can contribute to the well – being of the city will increase. In addition to that, we also hope that we could build and maintain local and internationally support from a wider platform of urban forestry practitioners for exchange of best practices and goals besides sustaining resources to serve our priority goals and strategies.

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Towards a comprehensive approach

June 2nd, 9.00h Plenary session

MERGING PUBLIC SPACE AND NATURE. CONSTRUCTING AN EFFICIENT URBAN METABOLISM

Keywords: Biodiversity, Connectivity, Productivity

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Enric Batlle founded in 1981, along with Joan Roig, BATLLE I ROIG ARQUITECTURA where he develops Building, Planning and Landscape projects. Master of Landscape Architecture and Doctor Architect since 2002, is Professor in the Department of Urban and Regional Planning of the UPC since 1982. Currently, he is Director of the Master in Landscape Architecture from the UPC-ETSAB. His theoretical work developed under the title "The Garden of the Metropolis" (Ed. Gustavo Gili, 2011) received the FAD Award for Theory and Critique of Architecture 2012, among others.

Objectives
Is it possible to merge nature, public space and production throughout our Metrópolis, allowing Green to become the main structure for the city?

Framework
A detailed study of the boundaries of the metrópolis showcases wide opportunities to connect all open spaces into a network, allowing best possible connectivities, ecological potential, leisure possibilities and productive capacities.

Results
The Green System can result as the metrópolis Backbone by overlapping this three structures: The environmental matrices that are promotedthrough ecology, the system parks that are defined by landscape architecture, and the structure of civic spaces, built under traditional urban planning. By focusing in all possibilities of adding new ítems to this Green Network, we can build a long-term metropolitan project made, drop by drop, by smaller interventions. This main structure should follow two clear premises, above the specific need of each new intervention. These premises are the commitment with improving both Ecological and Social Connectivity, aiming to be main arguments for a new metropolitan plan.

Conclusions
All our city streets, squares and parks have the potential to be turned into renaturalized spaces, to join the Metropolitan Park System and connect to the natural and agricultural areas that still remain. This new Green System can have both social and environmental values, and must help us to find a right relationship between built-up áreas and open spaces. This Green Strategy must be developed in all scales: from the metropolitan scale to the individual scale, focusing in all scopes of the urban fabric.

Keyref
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SCIENCE, POLICY AND MANAGEMENT

Robert Northrop

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Robert Northrop is the extension forester for the University of Florida. Current work involves teaching urban and community forestry; conservation planning assistance to local, state and federal governments; and research into the changing character and ecological function of the Tampa Bay Watershed's urbanizing forest. Previous work includes technical watershed forestry in Chesapeake Bay Restoration Program, policy adviser on forest and wildlife conservation to the Maryland Office of the Governor, and teaching wildlife management at the University of Delaware.

Objectives
Can multi-jurisdictions in a rapidly expanding metropolitan area cooperatively conserve and restore urban and urbanizing forest diversity?

Framework
The Tampa Bay Metropolitan Area is one of the fastest growing urban centers in the United States. As late as 1820 the entire 16,600 km2 Tampa Bay Watershed was completely forested. In 2005 the University of Florida began a long-term investigation of the ecological character and function of this urban and urbanizing forest, and its management (Landry et al. 2014). In 2006, a system of 789 permanent plots were initially located in the watershed, both within the 4 major cities and the surrounding semi natural areas. Data are collected once every 5 years on 500 of the original 789 plots, evaluated for changes in tree and shrub composition and structure, and correlated with public policy and management activities. Extensive use of social surveys and focus groups are used to understand resident's perceptions of trees, woodlands and forests. Science based public policy and management assistance is provided to municipal, county and state governments operating in the watershed.

Results
Cross jurisdictional cooperation has been established and is being coordinated through the Tampa Bay Watershed Forest Working Group (TBWFWG), a non-binding collaborative of private citizens, local government representatives, and Florida's universities, the State of Florida Forest Service, the U.S. Forest Service and the U.S. Environmental Protection Agency. Strategic plans for urban and urbanizing forest conservation have been developed, and legally adopted, by two of the four major jurisdictions to date (Northrop 2013 and 2016). A third major jurisdiction is in the process of developing a strategic plan. All strategic plans explicitly identify the conservation and restoration of regional biological diversity as a primary goal. They identify key objectives and measureable performance indicators for conservation and restoration of the diversity of forest composition, structure and habitats and the need for continuing cooperation with neighboring jurisdictions to achieve these goals. TBWFWG research includes: a study to identify tree species to cope with climate change; the economic value of urban trees to residential property values; forest wetland impacts on water quality; community based social marketing; biogeochemical processes associated with mangroves; reorganization of forest plant communities due to stressors associated with regional urbanization; the role of riparian forest to attenuate nitrogen movement into surface water and aquifers; an enhanced decision support tool for assessing provision of ecosystem services under different land use scenarios, at various scales and along hydrological networks.

Conclusions
A trusted partnership has developed between municipal and county governments, and the Florida state university system. This partnership, known as the Tampa Bay Watershed Forest Working Group, has

instituted long-term bio-physical, social and economic place-based research projects that directly support the identification of watershed conservation and restoration targets, and supports the conservation efforts of local governments and citizens. Research, management and policy development are now working together with a mutual focus on the provisioning of ecosystem services. This work is now cited as a model for urban forest sustainability within the State of Florida and the southeastern region of the United States (personal correspondence-U.S. Forest Service). Members of the Tampa Bay Watershed Forest Working Group are currently leading 6 new urban and urbanizing forest conservation projects within Florida, based upon this work.

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URBAN NATURAL ENVIRONMENTS AS NATURE BASED SOLUTIONS FOR IMPROVED PUBLIC HEALTH – A SYSTEMATIC REVIEW OF REVIEWS.

Keywords: Green space, nature-based solutions, public health

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Matilda is a doctor in medicine as well as in landscape planning. She investigates how nature exposure can protect health in various populations across various socioeconomic circumstances. Results from her studies may be used for healthier urban planning with improved conditions for both people and environment. Matilda works as a consultant for international organizations such as WHO, UNEP, EPA, and Health Canada.

Objectives
With increasing urbanisation and climate change we need novel strategies for providing healthy and sustainable cities. Nature-based solutions (NBS) refer to actions that are inspired by, supported by, or copied from nature, and that are designed to address a range of environmental challenges in an efficient and adaptable manner, while also providing economic and social benefits. The research on public health benefits of natural environments may be framed within the NBS concept to improve implementation of evidence. The aim of this study is to establish evidence through a systematic review of reviews on associations between public health and natural environments in relation to pathways or defined health outcomes. The evidence between natural environments and pathways, as well as the evidence between pathways and health outcomes are evaluated.

Framework
We applied Smith's review methodology and followed the PICOS structure. We based our inclusion criteria on the AMSTAR tool and used a standardised data extraction sheet. We did not perform a meta-analysis as it is likely that many individual studies were included in more than one review, resulting in incorrect statistical power.

Results
A first scan of 351 titles and abstracts gave 57 potentially relevant papers. We finally included 13 high-quality reviews. Our analysis shows that there is strong evidence for a positive effect of green spaces on improved affect and on heat reduction. These pathways are both strongly related to Cardiovascular disease (CVD)-mortality and there is moderate evidence for a relation to mental disorders and all-cause mortality. There is strong evidence for a relation between CVD-related mortality and natural environments. There is lacking evidence for effects on lung cancer mortality and birth weight as well as a relative lack of evidence for mediators related to these outcomes – stress and physical activity. Stress, physical activity, decreased overweight, and noise reduction are also related to several of the suggested health outcomes, but the evidence for these pathways is insufficient. Poor specificity in existing studies is a general issue.

Conclusions
Natural environments' effect on CVD-related mortality may be mediated by affect regulation and reduced heat, most likely acting independently. The effects on mental disorders and all-cause mortality, for which the evidence is moderate, might be mediated by improved affect or heat reduction. This review is the first to include an evidence assessments between pathways and health outcomes and may provide a basis for urban planning, public health actions, and a guide for future research.

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THE EXPO LANDSCAPE IN EFUF PERSPECTIVE: FROM 2013 TO 2017

Keywords: connectivity, resilience, cultural landscape

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Benedetto Selleri, landscape designer belonging to the AIAPP (Italian Association of Landscape Architecture), is founding member and project's coordinator of PAN Associati. He is author of many landscape projects, including landscape design for Jinshan Marina (Shanghai, China) and Expo 2015, coordinator of European LIFE projects and winner of many design competitions. He's lecturer in seminars on landscape and environment in Europe and author of technical and scientific publications. Currently he is chief designer of the team for Parco della Pace in Vicenza (Italy).

Objectives

With an overall surface of 1.000.000 square meters and over 12.000 big trees, Expo Milano 2015 is one of the must important European constructed landscape project of this decade. Landscape is an essential element of 2015's universal exhibition and of its main theme, feeding the planet - energy for life. Moving gradually from the outer areas towards the interior of the exposition site, different environments follow upon one another, beginning with a strongly naturalistic domain then to one with more agricultural features, then to a more urban area with contemporary gardens. Different scenarios appear in sequence in an experimentation of landscapes, conceived for a city that now fully belongs to the third millennium, which can no longer be defined as natural, rural or urban, but is all of this at once.

Framework

In challenge to create the citadel of the universal exposition in the chaotic northwest outskirts of Milan, the landscape project aimed to aesthetically qualify the places, realize social and relational spaces, mitigate the infrastructures surrounding the area, contribute to the resilience and ecological sustainability of the area (phytoremediation of the rainwater runoff, reduction of pollutants). At the same time, Expo landscape aimed to tell as a story, based on the fil rouge of the relationship man-nature. They tell uses and transformations operated by man on nature and nature's response to human actions: the transition from spontaneous nature to human modeling for food (agriculture) and from this to garden design, with the transfer of production techniques in cultural actions. Obviously the short time for the construction of the landscape before the opening of the exhibition required specific methods and approaches: specific cultivation contracts, use of large trees, cultivation in air-pots etc.

Results

During 2013 Milano EFUF, participants visited one of the tree nurseries with the trees destined to plantation in the Expo area. Now it is possible to see how this "moving forest", this great community of trees, together with shrubs, herbaceous and aquatic plants, has transformed the area in just few months, showing, for the first time in such a big transformation area, that the prompt result in landscape construction is possible. In spite of the very short construction time, Expo landscape had a great importance during the exhibition, and remains, with its environmental, aesthetical and social function, a strategic element for the future of the area.

Conclusions

Expo landscape could represent an example in planning processes. Its landscape create a new urban development model in which nature contribute to a better social and environmental quality of metropolitan areas. The "moving forest" should be a model to extend, in order to requalify streets, squares, edge areas, brownfields, creating green "virus" that penetrate the urban fabric, connecting city centers with

outskirts and green belts. Now we are in a strategic phase for the future planning of the area, which should become an important tile of the green infrastructure of Milan's periurban area, with particular attention to ecological connectivity, climate comfort of the neighboring areas, water management.

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POLYCENTRIC CITY REGIONS - URBAN FORESTRY & LANDSCAPE STRUCTURE PLANNING.

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Dr Alan Simson is Professor of Landscape Architecture + Urban Forestry, and is involved in research, teaching and consultancy. he has had extensive professional experience in New Towns, private practice - including his own - and higher education. he is chair of the White Rose Forest, a Director/Trustee of the Community Forest trust and a Director of the Leeds Architecture Centre. He has been involved in a number of EU-funded research projects, some of which he has led on behalf of the UK.

Objectives
The aim of this paper is to discuss the merits of re-establishing the concept of Landscape Structure Planning as a creative means of planning, designing, implementing and managing a viable approach to the expansion of our towns and cities into polycentric city regions. The world is continuing to urbanise at an increasing rate, and by 2025, two-thirds of the world's population will be urban dwellers. It has also been predicted that 60% of the urban areas that will exist in 2030 have yet to be built. Much thought will will need to be given therefore to what sort of urban futures we should be pursuing. The widespread growth in many countries of car-dependent suburban neighbourhoods has brought unsustainable energy waste and pollution levels, as well as lengthy commuting between homes and workplaces. The success of such suburban housing reveals a growing public dissatisfaction with the air pollution and hard landscapes of the large city centres, and a desire to live in a greener and more peaceful environment with a better contact with nature and natural processes.

Framework
Our towns and cities will continue to be subject to constant change, and no urban area is likely to be immune from the forces that bring this about. Indeed, as the 21st century progresses, it is likely that this pace of change will accelerate considerably. Such urban areas will be different however - urbanism is not uniform in all countries. Although there is still pressure to continue aiming for and developing "sustainable compact cities", there is a growing cannon of research that suggests that there might be a finite size for such cities, and that if this is exceeded, they are not perhaps quite as sustainable as they might be, particularly in terms of human health and well-being. It might be more viable therefore to plan for and include a number of such cities into Polycentric City Regions.

Results
Change is inevitable, but shaping this change has to be founded upon positive and creative ideas, so as to secure better outcomes for our urban futures. Polycentric city regions are complex environments. They exhibit both common and unique features that can influence their success or failure - aspects such as the state of the local economy, city identity, social cohesion and safety, green blue and grey infrastructures and the subsequent health and well-being of their residents. There is no such thing as a static polycentric city region - they are either on the way up or on the way down. For polycentric cities to succeed and flourish in the 21st century, they will need to be able to attract and retain the best, brightest and most creative of the up-and-coming generations. Thus there is no creativity in "business as usual", and this presentation will consider what contributions urban forestry can make in promoting the public realm of the city region - the usable and special places that can be accessed by as many people as possible. Such spaces are the lifeblood of cities, and the contributions that the macro and micro urban forest make in articulating these

spaces is increasingly being recognised. We are now able to engage in “evidence-based design”, defined as an approach to design that emphasises that we have the credible evidence required to support the promotion of urban forestry as one of the critical key elements of the successful polycentric city regions of the future. Such evidence-based design will be reviewed in a case study - The Green and Blue Infrastructure Strategy 2017-2036 of the Leeds City Region. The author has been involved in developing this Strategy, some of which is based on previous research work carried out by the White r Rose Forest that was deemed by the UK Government’s Natural Choice White Paper to be of “Trailblazer” status.

Conclusions

The Leeds City Region sits at the centre of a current UK Government initiative called the “Northern Powerhouse”. It comprises 10 Local Government Authorities. covers an area of over 5000 km2, has a multi-ethic population of over 3 million people and a £63 billion economic output. It has recently developed a Green and Blue Infrastructure Strategy 2017-2036, which includes an Urban Forestry Plan, and which is wholly integrated with the City Region’s Strategic Economic Plan 2017-2036. Together, these will deliver their collective vision of “good growth”, which combines improvements in economic productivity and output with social inclusion and a quality environment. Such long-term planning will require a series of larger-than-local landscape structure plans to graphically articulate the vision, and establish the need, the scale, the role, the purpose and the broad locations of the components of the Green and Blue Strategy. The paper will conclude by articulating the provable benefits of such a Strategy. These will include supporting good mental and physical health by improving the experiential quality of commuting, and tackling obesity and diabetes by increasing quality footpaths and cycleways. It will reduce the frequency and severity of flooding along the City Region rivers, help to bring diverse and multi-ethnic communities together, regenerate areas of need, aid biodiversity, act upon climate change and enrich human lives. This will all help to deliver the vision of “good growth” for the City Region, which will combine improvements in economic activity and output with social inclusion and a quality environment for all.

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URBAN AND PERIURBAN FORESTS WITHIN THE FRAMEWORK OF GREEN INFRASTRUCTURE

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Carles Castell holds ten years researcher experience at the university on projects on the Dynamics of Mediterranean ecosystems, mainly in the field of forest ecology and regeneration of natural systems. Since 1994 he works at the Natural Areas Dept. of the Province of Barcelona, where he developed research and monitoring programs, land analysis and planning processes, and participated in the SITxell project which received in 2012 the first prize of UN initiatives in públic administration.

Objectives
In urban peripheries, forests represent an essential environment in the gradient towards rural and natural areas. Its is normally a zone with a high public utilization which largely determines a good life quality for citizens. Periurban forests are relevant habitats for flora and fauna, key spaces for connectivity and ecological processes (related to the water cycle and air quality, for instance) and they can also provide products such as wood and biomass for energy usage.

Framework
Forest systems in the urban and periburban environment represent essential parts of the green infrastructure, in terms of its large-scale and the ecosystems associated with it. Thus, in the interior of the cities, as components of urban parks, forest parts reduce the urban-heat-island effect, the noise and improve air quality. At the same time, they represent a valuable and complex habitat for human biodiversity, as well as a space for leisure, sport and health, offering attractiveness and unquestionable quality to urban landscape.

Conclusions
Proper planning of the city and its environment must firmly incorporate these forest areas in order to guarantee its conservation and improvement, and to optimize the services they offer to citizens. This implies and identification and appreciation of its values, a planning according to its interest, an integral managment and sufficient resources to carry it through its different scales.

Keyref
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May 31st and June 1st , 11h-11.30h Poster exhibition

CERDANYOLA, THE HEALTHY CITY NEAR COLLSEROLA PARK

Keywords: open spaces, Cerdanyola del Vallès, PGM-1976

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Urban-planning architect at Cerdanyola del Vallès City Council since 2005. He has worked as an architect in the field of urban planning in the city councils of Barberà del Vallès (1993), Sabadell (1995-1999), Santa Coloma de Gramenet (2000-2005) and has been an associate professor at the Department of Geography and Territorial Planning and Environmental Sciences of the Autonomous University of Barcelona (2000-2005). Since 1991, he has also been an active member of the ADENC environmental association, of which he was vice-president from 1994 to 1996.

Objectives

The city of Cerdanyola, made from the Urban Plan of the 1976 General Metropolitan Plan (PGM), has not valued the large contributions to the open-space system which the city has been consolidating for the last 40 years, with its urban land, delimited-developable land and developed land (Parc de l'Alba) as open spaces; as the second city inside the Barcelona Metropolitan Area in terms of environmental quality of open spaces, excluding all the land of Collserola Natural Park, which makes up almost 50% of Cerdanyola del Vallès' municipal district.

Framework

Municipal management of metropolitan open spaces: Cerdanyola del Vallès. One must assume that the main beneficiary of high environmental standards in open spaces and forest environments is the city of Cerdanyola del Vallès itself. It goes without saying that other metropolitan municipalities like Cerdanyola, without having many open spaces, must help the municipality of Cerdanyola with the compliance of the acquisition and management of the free metropolitan spaces which Cerdanyola provides to the group and could otherwise dedicate to urban development and building construction. It is important to remember that, at the moment, the Parc de l'Alba Directional Centre Master Plan has been cancelled due to an administrative court case with the Via Verda Association, who claim for a more sustainable model of the Directional Centre's development, driven by Incasol, the Catalan Government (Generalitat de Catalunya) and the city council of Cerdanyola del Vallès itself. However, the metropolitan debate of metropolitan urban spaces on developable urban land, in other words, relinquishing development potential and using the land for other purposes that contribute to property tax, is, coherently with metropolitan resources, deciding which public body must acquire them and which public body must maintain them. It seems logical to think that the PGM's urban open spaces, what we call urban-planning key (6a) and urban-planning key (6b), must always be under the municipality's authority. However, in the case of metropolitan parks, those which surpass 7-12 acres in size, which body should contribute to its public acquisition and maintenance and in which proportion, taking into account that they are open spaces where the urban plan has limited the property's urban-planning rights and the public right to generate cadastral urban taxes and contributions for the municipality's public activities? Living in a greener municipality means building more public housing to avoid the increase of real-estate value and to re-balance income in order to facilitate access to housing. Cerdanyola del Vallès has maintained a population of 57,500 inhabitants for the last ten years due to not resolving this challenge and it has not increased its population to 70,000, which would be reasonable in this situation.

Results

GENERAL DATA CERDANYOLA DEL VALLÈS, AMB AVERAGE (incl. Barcelona) - POPULATION AMB - 2011 STUDY - 58,247 inhabitants; 3,226,818 inhabitants -POPULATION AMB-2012 57,892 inhabitants (-355) 3,239,337 inhabitants (+12.519) -POPULATION AMB-STUDY 2011 (without BCN) 1,610,833 inhabitants -SIZE TM. 30.6 km2 (3,060,000 m2) 636 km2 (534.6 km2 without BCN) -TM DENSITY OF POPULATION 19,0 inhabitants/Ha (1,903.0 inhabitants/km^2) 50.73 inhabitants/Ha (3,482.8 inhabitants/km2) -DENSITY OF POPULATION (URBAN LAND) 55.2 inhabitants/Ha 136.9 inhabitants/Ha -DENSITY OF POPULATION (RESIDENTIAL LAND.) 119.0 inhabitants/Ha 253.0 inhabitants/Ha Cerdanyola del Vallès (19.0 inhabitants/Ha). In terms of density of population, it carries out a more relevant "metropolitan" contribution to the territory than in terms of population to the AMB scope. The gross population density ratio can be considered one of the lowest from a metropolitan point of view, in a group which is between 40-80 inhabitants/Ha and of 100-200 inhabitants/Ha in the largest cases, particularly in Barcelona, which has a ratio of 160 inhabitants/Ha. Cerdanyola del Vallès, in terms of Open Space Reserve, carries out a metropolitan contribution in the AMB scope (66.15m2/inhabitant) which can partly be considered as "Green Areas-Metropolitan Parks", but in no case must it contribute a larger amount of "urban green areas" given its current population and given its low urban density. Also, the municipality uses non-developable land (Collserola) as a park near the population.

Conclusions

THE SITUATION OF OPEN SPACES AND GREEN SPACES. Cerdanyola del Vallès occupies second place among AMB cities with more than 20,000 inhabitants, excluding Barcelona, in the acquisition of public land of open spaces, with a total of 3,081,673 m2 in regards to its total service of open-space systems of the PGM-1976 with 3,852.969,52Ha. Cerdanyola del Vallès has very high urban-planning standards, executed by 80% according to the PGM forecast, which correspond to urban land and anticipated advanced assignments of developable land, which forecasts a growth of the Parc de l'Alba Directional Centre of more than 3,550-4,000 housing units (10,000-12,000 inhabitants). However, it remains unclear which spaces belong to the General Systems and which ones to the local ones. TOWARDS A CITY WITH MORE OPEN AND GREEN SPACES. Cerdanyola del Vallès, in regards to the acquisition of PGM-open spaces, has a very high ratio of open spaces, standing at 52.9m2/inhabitant. However, it still has spaces which are pending acquisition by development action areas according to the PGM-1976. Acquiring them must be a priority, by development action areas, assignments or by AMB-supramunicipal budget. Given this position of excellence, the only priorities that must be carried out are occasional actions via expropriation and/or assignment or municipal budget, and working to guarantee a ratio of 10 m2/inhabitant for new urban sectors, as stated by the World Health Organisation (WHO). Cerdanyola del Vallès has to look at its surroundings and analyse, as a challenge, the growth that it can manage while, at the same time, care for and value this high reserve of public open spaces of 66.1 m2/inhabitant, and the planning priority should be to obtain more medium-sized public spaces through urban renovation. The city can slightly increase its reserve of open spaces to 4,000.000MI/m2 if it also wants to accept the increase in population, which guarantees its generational replacement and, despite this, place itself within standard numbers of 55-60m2/inhabitant of open spaces, accepting at the same time a population ceiling of 70,000-75,000 inhabitants (increase of 20-30%). Cerdanyola del Vallès, in front of Collserola Natural Park, can care for and maintain the excellent and healthy environmental quality of its open spaces on the top metropolitan level and vindicate itself as one of the top eight cities in the Barcelona Metropolitan Area (AMB) while defending its position among the top twenty cities in Catalonia in terms of population and territorial role.

Keyref

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THE APPLICATION OF THE PATCH-CORRIDOR-MATRIX MODEL IN THREE TERRITORIAL PLANS OF THREE EUROPEAN URBAN REGIONS

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With a degree in Architecture since 2005, she studied the Official Urban Planning Master's degree from the Polytechnic University of Catalonia (UPC) and her thesis on "Organisation and regulation of open spaces in territorial planning: three cases of European urban regions" is pending completion. The proposal put forward is related to one of the aspects which is the object of her thesis' investigation and its presentation could potentially be in English in a poster format, since she prefers it over an oral presentation. Since 2007, she has been a municipal architect of the Planning Service at Sant Cugat del Vallès City Council and collaborated with different urban-planning offices.

Objectives
Within the investigation framework of the thesis of a Master's degree in Urban Planning from ETSAB titled "Organisation and regulation of open spaces in territorial planning: three cases of European urban regions", the following question is presented: "How can the open-space system be organised? How is the patch-corridor-matrix model of landscape ecology conceptualised in three territorial plans of three European urban regions?" The practical objective is to establish guidelines based on the analysis of three territorial plans from three European urban regions while planning territorially, which will guarantee the formalisation and preservation of the ecological network of a European territorial region.

Framework
Landscape ecology has developed the territory's functional design based on the patch-corridor-matrix model of Richard T.T. Forman and Michel Godron, presented in their work *Landscape Ecology* (1986). It is a simple model, similar to the spatial-point model -line- flat, applicable to the whole territory, describing the landscape's organisation. The landscape is organised as a mosaic through a structure of added objects made up by three basic spatial elements: patches, corridors and the matrix. Taking this territorial-mosaic model as a reference, patches, corridor and matrix, the aim is to analyse how three territorial plans of three European urban regions regulate the structure, organisation and functioning of the open-space system and how they conceptualise the ecological network. The work methodology is founded on the approach of a series of questions of the three plans, based on the theoretical framework of the field of investigation. From the comparison of answers made for each plan, it aims to extract the criteria and conclusions that help us determine the best way to plan and regulate open spaces and verify the posed hypothesis. Three plans have been chosen, whose common objective is to respond to the current urban dynamics which led to the fragmentation and deterioration process of open spaces, despite each of them being based on a territory of different size and different morphologic and environmental-landscape characteristics. The plans are the following: The Territorial Coordination Plan of Bologna (PTCPB), of 2004, - the Metropolitan Territorial Plan of Barcelona (PTMB), of 2010, - and Nota Ruimte, the Dutch territorial planning strategy of 2006. The questions presented related to the conceptualisation of the ecological network, based on the "patch-corridor-matrix" model, are the following: Which landscape elements do the plans take into consideration in order to configure the open-space system? In which categories or typologies are they classified in order to establish their regulation? Which concepts do they use?

Results
The Territorial Coordination Plan of Bologna (PTCPB) establishes the regulations of the concept of ecological network, defining the functional elements that comprise it. Therefore, with a planning map, it adds this network to the territory, classifying the different elements that make it up to which they are

given a function within the network (simple and complex ecological nodes, etc.). Each element of the open-space system is identified with a specific function within the network's structure, which is then collected by the regulation. This way, the ecological network and its elements are defined and regulated in the plan's legislative article. Just as important is the study plan made from the interferences with other systems, identified on a map and classified according to their typology in order to propose solutions to the interruption. Lastly, it is important to highlight the plan's awareness towards the environmental quality of open spaces, since it analyses their situation and establishes management criteria according to the different landscape units in which the territory is divided in. The Metropolitan Territorial Plan of Barcelona (PTMB) structures the fragmented system of open spaces of the metropolitan region of Barcelona in a network by defining clear corridors connected with each other and increasing protected spaces to twice the current amount. It attributes a classification of the elements that compose it, in accordance with their function and degree of protection, based on the patch-corridor-matrix model. At the same time, it acknowledges the singularity of certain agricultural spaces with environmental value which have potential economic resources that allow for its management and protection, such as the vineyards of the Penedès region and, to a lower extent, the agroforestry mosaic of the Vallès region. On the other hand, it is a proposal that does not limit the network in a precise manner, with the aim to allow the derived planning to be the one which specifies the spaces that make up the network in detail. Lastly, Nota Ruimte is a planning tool which, in regards to open spaces, incorporates the ecological network proposal previously made by the Ministry of Agriculture and Environment in 1990 in order to give it spatial protection and particularly deal with its planning in accordance with other systems. It is a plan that is very strong in its implementation, since it proposes clear action policies based on incentivising sustainable development, as opposed to a control policy, with its compensation, mitigation and ecological restoration tools of urban-planning development. These objectives translate into different agreements, programmes and agendas with the intervention of different competent bodies (such as the MPJO Multiannual Programme, which analyses and proposes solutions to the interferences of the open-space system together with the affected ministries); and well-defined management for the incorporation of spaces to the network (public acquisition, private management, agro-environmental management spaces...). Also, water is an element that has particular importance in the planning, structuring the development with sustainable criteria in its management. Furthermore, the formal definition of the ecological network isn't as precise and, for this reason, its materialisation remains conditional upon the municipal zoning plans.

Conclusions

Open-space planning has to be based on the application of the patch-corridor-matrix model of landscape ecology. This model allows to regain the system's connectivity and therefore its functionality through the re-establishment or preservation of the processes and flows of the resources and bodies that take place. This model's materialisation involves the creation of an ecological network where each element of the landscape has a conceptual function assigned to it within the network (node, connector, etc.). The more this ecological network is legally regulated, which means more precision on a legislative and planning level and on the network's limits, the higher guarantee of recovery, preservation and functionality open spaces will have, since they have been deteriorated and fragmented by urban development in the past few years. The analysis allows us to define a good-practice manual in the regulation of the open-space system.

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RELEVANCE OF INTERSTITIAL AND EDGE SPACES IN THE GREEN INFRASTRUCTURE OF THE BARCELONA METROPOLITAN AREA

Keywords: fragmentation, edge effect, urban matrix

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I am professor of Ecology at the UAB and researcher and deputy director at CREAF since 1997. I have focused my research on landscape ecology, particularly on the relationship of landscape structure and dynamics with biodiversity in metropolitan landscapes, and on the application of these results in land planning. I also work on the ecology of biological invasions, particularly the study of species invasiveness and the invasibility of habitats in metropolitan regions.

Objectives

Large pieces of natural and semi-natural habitats are of primary importance for ensuring the provision of ecosystem functions and services by green infrastructure to the citizenship. However, metropolitan areas are characterized by a human-driven landscape transformation, which in turn determines a strong fragmentation of habitat patches. In extreme situations, habitats are largely distributed in small patches that are confined by built-up areas and transport networks, or they are adjacent to these areas thus being affected of important edge processes. The resulting interstitial and edge spaces (IES) might be, therefore, a substantial proportion of Green Infrastructure in metropolitan areas, yet their properties and functioning might be strongly altered. In any case, the importance and typology of these IES is largely unknown. The following study aims at contributing to the understanding of the potential role of these spaces in the Metropolitan Area of Barcelona (MAB), by: • Defining the concept and identifying the IES in the MAB using the most detailed and recent land cover cartography available. • To assess and characterize these IES, based on previous cartography of habitats and indicators of biodiversity conservation and ecosystem services.

Framework

Using an updated (2015) land cover cartography of MAB and SIG techniques, we have defined and identified IES as those patches of natural and semi-natural habitats of less than 100 ha surrounded in more than 80% of their perimeter by built-up areas and transport networks, or closer than 500 m to these areas. Three main types of IES have been considered: (i) a basic network of natural and semi-natural habitats (forests, scrublands, grasslands, croplands) and road and railway green areas; (ii) a complementary network of degraded habitats (bare soil, dump sites, etc.) that could be included after restoration measures; and (iii) urban green areas, with specific attributes and services to the citizenship. IES patches have been characterized and assessed by combining them with previous digital cartography available for the MAB. Patches have been characterized based on their main habitat type obtained from CORINE habitat maps. Their contribution to the provision of function and services has been evaluated based on their (i) area, (ii) accessibility to the population, measured through specific accessibility models; (iii) stability across time, obtained from combining historical and current land cover maps; and (iv) biodiversity conservation value, (v) connectivity and (vi) C stocks obtained from specific cartography developed in previous projects.

Results

In the MAB, IES occupy more than 10700 ha (4700 of the basic network, 4200 of the complementary network, and 1800 of green urban areas), which correspond to more than 16% of the MAB, and more than

28% of its forestry areas. Thus, any deployment of green infrastructure in the MAB will necessarily take into account these spaces. Results confirm a low contribution to the provision of ecosystem functions and services of IES, despite some of them can become strategic because they are multifunctional or they provide several key functions (e.g. connectivity) or services (e.g. leisure in the case of urban green areas). In any case, the contribution of IES to the provision of ecosystem functions and services is only preliminarily known as our assessment is based on previous cartography not specifically thought for this purpose.

Conclusions

As far as we know, this is the first work exploring the importance of IES in the set of forestry areas (in its late sense) in metropolitan areas. IES have proven to be especially relevant for urban planning initiatives, and especially for the deployment of green infrastructure in metropolitan areas. However, there is a need of improving its detection and characterization, using recent, high resolution land cover maps, and specific indicators of functions and services that these spaces might provide.

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GREEN COOLING CORRIDOR FOR THE CITY OF PALMA (MALLORCA, SPAIN).

Keywords: Urban forests, adaptation to climate change, climate change mitigation, urban landscape design, urban heat island.

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Objectives
The island of urban heat will be greater as climate change increases. The historic Mediterranean gardens provided passive and vegetable solutions that can be taken to an urban scale. The wastewater resources recovered for irrigation, the brackish water depletion of the osmosis plants and the conduction of the summer sea breeze are the main variables that can be used for this green corridor of Palma.

Framework
Thermal mitigation by plant evapotranspiration. For this purpose have been selected Mediterranean trees that can support dry and hot periods in the summer, but at the same time can transpire significantly if water conditions are satisfactory. The city of Palma have enough reclaimed wastewater for irrigation so the best plants species for this propose will be Mediterranean laurifoliate trees. Thermal mitigation by water sheets evaporation. For this purpose we have achieved rejected brackish water from central seawater osmosis treatment. The water temperature of rejection brackish water is between 17 and 22 degrees Celsius, while the summer air may be between 30 and 35 degrees. The best heat exchange will be achieved by increasing the contact surface between cold water and hot air and increasing the contact time between water and air. The design of rejected water route to the sea must increase de cooling effect. The thermal mitigation by evaporation and by reflection of the radiation. Wet floors and light or white colors can also help cooling the reforestation park. Thermal mitigations using sea wind. For this purpose must be designed plant screens that allow wind driving inside the park reforestation.

Results
We expect to obtain a significant decrease in the island heat effect within the urban green corridor. We expect a mitigation of the climatic change by carbon absorption by the plants and in the soil profile. At the same time we want to obtain a reforestation with autochthonous plants and a better conservation of the local biodiversity and enhancement of wild life.

Conclusions
The aim is to achieve new urban design guidelines that translate satisfactory environmental ethical values.

Keyref
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NATURAL URBANITY ON THE URBAN EDGE. DESIGN CONSIDERATIONS FOR TORRE-NEGRA, COLLSEROLA

Keywords: urban edge, design, Torre-Negra

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Architect from the Polytechnic University of Catalonia (2012) with a Master's in Urban Planning, also from the Polytechnic University of Catalonia (2014). Member of the Urban Planning Laboratory of Barcelona (LUB) and professor of Urban Planning at DUOT-ETSAB (2013-2015). He has collaborated with several architectural offices since 2006, and has received numerous awards and university scholarships (Caixa Manresa 2006, LUB Collaboration Scholarship 2011, FPI-UPC Scholarship 2012, FI-DGR Grant 2014) to carry out studies and research. He is currently developing his doctoral thesis on issues surrounding the integration of Infrastructure and Public Space. He has collaborated with professional architect Josep Parcerisa on the development of urban projects such as: the transformation of the so-called Civic Axis of Salou (2010-2015); the Collserola Gateway to the Meridian City (2012); the Studies prior to volumetric planning of Parc de La Pineda (Salou, 2014-2015); international urban planning competitions and editing of several monographs and articles on urban planning and Barcelona.

Co-coordinator of the "Barcelona Links" exhibition (LUB, COAC-2013 and CCCB 2015-Pilot Flat) and the LUB's contribution to the "Metropolis Barcelona" exhibition, for DHUB, commissioned by the Barcelona Metropolitan Area in 2015 as a result of analytical work prior to the drafting of the Barcelona Metropolitan Urban Master Plan. Author of various essays and articles on architecture and urban planning in reviews such as Palimpsesto, Quaderns PDU Metropolità, Circuito de Arquitectura, Proyecto, progreso y arquitectura and VLC arquitectura. First prize in the OPENGAP International Competition for Ideas: Design of a non-commercial indoor public space (2012). Currently collaborating with Space Syntax Limited (London).

Objectives

In the shade of the Collserola range, near the old road that links the Roman Barcino with the hinterland of the Vallès, the natural environment of Torre Negra has for almost thirty years now been one of the most endangered and fragile spaces. Here we can see the confluence of ravines and the Sant Crist and Riera de Sant Medir rivers, one of the last areas of farmland near Collserola Park, the historical, symbolic presence of the Torre Negra old country house (which originally served as a watchtower of the Monastery of Sant Cugat del Vallès), the ruins of a ceramic brickyard, modern-day equestrian centres, international schools and tennis clubs. All this under the shadow of the Pi d'en Xandri, a much-loved pine tree measuring some 23 metres tall. This unique local icon, increasingly present in the collective imagination, clearly reflects the contradiction between human pressure for property and the widely shared desire to promote ecological preservation. But while on the one hand the 1987 PEPco (Special Ordinance and Protection Plan for Collserola) defined the area as "agricultural area with landscape value", the last sentence by the Spanish Supreme Court in 2016 and the Catalan Supreme Court determined that it "does not meet" the conditions laid out in the Law on Natural Heritage and Biodiversity of Natural Spaces, and therefore the area remains subject to property speculation. In reality, though, this burning controversy has served only to leave the superb Collserola area on standby, while positions on either side harden. This article aims to shed some light onto this difficult issue through an exploratory project carried out by the author of this article with the aim of answering the following questions: What design criteria should be taken into account to solidify an area as uncertain as Torre Negra, where there is insufficient strength in terms of ecological or heritage value, but where there is an underlying interest? What design programmes, guidelines and arguments can be used to reactivate the peri-urban city edges? How can we integrate urban and natural spaces?

Framework

This article uses the so-called research by design technique as its founding methodology, based on the idea that the character of these border areas and Torre Negra in particular, is not just a question of what or, above all, how. The exploration carried out as part of the End of Degree Project at the Barcelona School of Architecture, submitted to Sant Cugat City Council*, gave rise to a number of arguments that might serve as more general considerations. In the background of this work, on the one hand there is Sébastien Marot's theoretical argument of suburbanism and, on the other, the practical experiences of Portes de Collserola (2012), G. Descombes with Parc de Lancy, Insel Hombroich, the Bagni di Bellinzona of A. Galfetti, B. Tschumi with the acclaimed Parc de la Villette, the thinking and works of Richard Serra and Robert Smithson, and finally the Poetic landscape project by Peter Zumthor in Bad Salzuflen.
*More information on the project at: http://hicarquitectura.com/2012/12/8529/

Results

Both the specific design of the proposal and the programme are the result of a proactive understanding of the site. From the rediscovery of suggestive anthropic traces and unique parts of this forest-edge ecosystem, a double-layered intervention is proposed. Firstly, a system of paths and ceramic brick pavements to help incorporate the space into the Sant Cugat park system and subtly frame certain parts of the terrain. On this backdrop we can place various combinations of a single prefabricated module to stage various programmes for this specific Collserola Gateway.
The proposal therefore serves as a way to crystallise this transitional space through programmes and routes. The character of the resulting architecture is not, however, chameleon-like, but rather we seek to generate value in a place with a strong level of expressiveness, through its material and chromatic strength. The programmes are scattered across the landscape, connected by new open paths in the clay soil: a cafeteria as agateway; a recreation centre near the river; small pavilions by the gardens; a stage/gazebo in the clearing opened up by the brickyard, and an Art and Nature Centre, open to various possible spatial configurations. Each follows a different timetable, and are therefore designed to merge into the landscape as sculptures when they are closed. The relationship between the scale of a public building, the smaller scale of users and the scale of the landscape is achieved by modulating the construction system. New facilities for Torre-Negra.

Conclusions

The project will help to clarify a series of criteria:
1. In terms of design and forward planning, the border areas between city and forest should not be considered in a 'dual' way but rather 'analogue', i.e., more like a transient gradient than a borderline between ecosystems. While ecology continues to demonstrate the natural wealth in ecotones, it is also necessary to ensure urbanism at these points of contact with the city. Activating a place like this is the best way to bring positive external influences to bear on the dynamics of deterioration in these areas. Preservation is not the best way to keep the space alive.
2. The scarce ecological value and heritage of the Torre Negra space shown by official reports make the need for a third way even more apparent, one of "social heritage" as an immaterial asset that nonetheless has a strong present. Design becomes an effective tool to bring out the suggestive but fragile realities of the space, both in terms of nature and the programmes and symbols there. This heritage can reinvent itself.
3. Project completion by phases —paths, pavements, buildings— illustrates a gradual, more sensible way of interacting with the natural environment and rediscovering it. The layout of routes is perhaps the most effective initial tool in incorporating this space into the collective imagination and use. Proper structure makes for proper integration.
4. The programmes that need to be imagined for these spaces must be able to connect the natural dimension with the urban dimension, the seasons and cycles of the former with the timetables of the latter, combining ecology and culture. The proposal raises two important considerations in this regard: a) Beyond the classic model of an "interpretation centre" or visitors' centre, when the goal is to rebuild a place, it is a good idea to disperse the programmes across the landscape: interpreting nature from within the place itself, placing it in context to make it more understandable. In this sense, the strategy of land art or follies,

continues to be the most appropriate mechanism. b) The peripheral position of these spaces represents an opportunity to install uses that are sporadic but essential for urban life: areas to hold concerts, summer camps, races and cultural events and dining areas at the gates of the park. Trials show that modular, unfolding architecture would meet the needs in periods of both heavy and light flows of people. Promoting this area means adapting to nature's timetables.
5. Finally, this research allows us to promote design as a potential solution to the complex controversy of reconciling management and interests that have accumulated in these border areas: design and discussions about how to activate a place in a positive way. Management as an instrument for improving our habitats, and not vice versa.

Keyref

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June 1st, 11:30h PechaKucha

THREE STRATEGIES ALONG THE BESOS RIVER

Isabel Tomé and Jordi Peralta

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Hold a Master Degre in Architecture from the School of Architecture of Barcelona. They share a wide experience in urban planning and urban design (teaching, public administration, private sector and international cooperation). Between 2003 and 2012 they collaborated with Manuel de Solà-Morales in many urban projects, urban plans and competitions both nationally and internationally. From 2009 they have been developing studies and urban plans at the Urban Planning Department of the Metropolitan Area of Barcelona and working on urban planning cooperation projects with other institutions (Sant Boi and Nicaragua).

Objectives
The main goal is to strengthen the metropolitan role of the Besòs Axis through three different approaches, all of them under the umbrella of the Urban Planning Department of the Metropolitan Area of Barcelona. These approaches comprise the Green Comb Model for Santa Coloma de Gramenet, the transformation of the la Roca Road on the left bank, and the new planning model for Moncada and Reixac. The proposals, far from trying to work on the realization of a deterministic project, attempt to provide flexible and mutable models based on clear and radical strategies. Thus, according to the different scales and needs of each place together with the premises of each commission, the metropolitan scale is built from interdependent parts in a coherent whole. In this sense, beyond being three partial solutions, the interest of this multiple approach lies in understanding the relationships between them and its possible contribution to the future plan for the Besòs Area and the Metropolitan Urban Master Plan.

Framework
Urbanism as a discipline has to fit in a globalized society characterized by a constant acceleration towards an unpredictable future. The acronym used to describe such situations is called V.U.C.A. (In Catalan VICA). It is the result of combining four aspects of this unpredictability: Volatility, Uncertainty, Complexity and Ambiguity. Faced with the challenge of responding to this changing, and sometimes indecipherable, reality, both urban planning and urban design are disarmed. If traditionally the anticipation of transformative processes were confronted with the discretional application of standardized regulations and plans, today it requires a more flexible response able to adapt to situations and needs in constant change. Also, we are in a process of civic empowerment where society demands a more active role in public affairs and requires a rational and efficient management of resources. In this context, new planning tools, new multidisciplinary processes and more resilient models are needed. These new urban models should be developed as a framework capable of guiding the future of a whole territory, setting strategies based on sound ideas, adaptable but robust.

Results
The three projects establishes a synthetic structure, which should be the base to define different transformative and enhancement interventions at a wide range of scales. The detailed study of these projects, in order to check its viability and strengthen its strategic role at different scales, should be seen as a test to ensure the likely definition of alternative scenarios as a result of unpredictable changes (change of local needs, aspirations, urban policy priorities, etc.). In short, there is a change of direction towards models based on strategic management.
In this process a set of tools arises to define new models for urban structures:

- Attributes to achieve by these structures (ecological connectivity, social cohesion, leisure routes, urban transitions, multiscalarity, etc.).
- Types of components that comprises these structures (axis, sequences, nodes, membranes ...).

Keyrefs

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RESEARCH ON URBAN FOREST AND GREEN SPACES IN THE MEDITERRANEAN REGION: A REVIEW

Keywords: Mediterranean, research papers, review

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Objectives
The Mediterranean region is one of the most densely urbanised areas on the planet. Certainly, it is the region with the longest urban history in the world. Currently, it is facing crucial challenges, related to: i) the sustainability of urban development versus a deep transformation of rural society, and ii) the effects of climate change, that is severely affecting the distinctive characteristics of Mediterranean climate, of the economic crisis and of the south-north migration which mainly affects urban contexts. These issues lead to pressures on cities, urban ecosystems, and natural resources altogether influencing the quality of life of traditional as well as new urban residents. The purpose of the contribution is to perform a systematic review of the research on urban forest(ry)-related topics in the Mediterranean area as there is clearly a gap. The initial assumptions were: a) some Mediterranean countries are performing better than others in terms of number of papers published and topics approached; b) based on results of some key review papers with a geographically broader view on UF research, we expected gaps in the mosaic of topics approached by the Mediterranean researchers and; c) some research topics are more specific to some countries than others.

Framework
The research was carried out by performing a SCOPUS search. The analysis only focused on research papers, including reviews and papers in press, in which the first author was affiliated with Mediterranean countries. Only papers written in English were considered. The final set of papers was determined by a process of key-words adjustment and several rounds of selection and refinement. The analysis covered period of 20 years (1996-2015).

Results
The very first Scopus search identified more than 1000 papers produced by Mediterranean authors in the last 20 years. After the process of selection and refinement, around 400 papers were considered. It was found that there is very uneven distribution of research papers across the Mediterranean, with very few papers written by authors from Southern Mediterranean countries. Papers from North Mediterranean countries prevail, with Italy, Turkey and Spain being the top three countries in term of number of contributions. Most papers deal with the assessment of the various ecosystem services provided by urban forests and green spaces. Some topics appear to be definitely more relevant for some countries. For example, the contribution of green spaces to removing or abating pollution is the most recurrent topic in Italy, while the role of green spaces for human health is most relevant in Spain. On the other hand, sociocultural aspects of urban forests and green space resulted a quite important topic in Turkey, and somewhat marginal in Italy and Spain.

Conclusions
This review provides insights on the concentration and the characteristics of research related to urban forest and green spaces across the Mediterranean. It outlines the current and recent research lines, thus allowing for a gap analysis on their strengths and weaknesses and provides suggestions on the future focus of UF research in the Region.

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ARBOCITYNET – A CROSS-SECTORAL AND TRANSDISCIPLINARY SWISS URBAN FORESTRY NETWORK

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2011 PhD in sustainability Rersearch at University Basel focus on social-ecological research since 2013 scientific collaborator at Bern Univerity of Applied Sciences, group forest&society focus on all societal issues within Urban Forestry, such as environmental governance, stakeholder management etc.

Objectives
Urban forestry is confronted with many social and ecological interactions in and around cities. Thus, overcoming typical disciplinary and sectoral thinking may help to meet these challenges and promote transdisciplinary and inter-sectoral decision-making concerning green urban infrastructure.

Framework
Subsequently and in accordance with the EFUF, a group of Swiss Research Institutes and associations with the support of the Swiss Federal Office for the Environment founded ArboCityNet in Berne in 2016. The aim of the network is to bridge a) different research fields such as landscape architecture, arborists, forest engineers and social scientists, and b) research fields with expertise in cities, including political decision-makers and public servants. The founders and members of ArboCityNet come from different sectors and from different regions in Switzerland. The Network therefore helps to overcome typical language boundaries in the country and different constituent-state practices. On-going knowledge exchange is maintained via annual conferences and events or projects.

Results
Within the last two years we have inspired the exchanges amongst different disciplines that contribute to ACN. Project results will be presented per each project group (such as ETH, HSR or hepia) seperately.

Conclusions
Most representative of ACN will be present at EFUF 2017 and we can enable an exchange with experts working in the same domain. Moreover, we could contribute by serving an example of how such inter-sectoral cooperation can help to shape and inspire the green urban infrastructure in cities.

Keyref
Institutes and associations that are constituting ACN: School of Agricultural, Forest and Food Sciences, Bern University of Applied Sciences HAFL, ETH Zurich, Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Zürcher Hochschule für Angewandte Wissenschaft HAW, Hochschule für Technik Rapperswil HSR, Haute école paysage, d'ingénierie et d'architecture de Genève hepia, Plante & Cité Suisse.

CAN GINESTAR PARC

Montserrat Periel and Luisa Solsona

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Montserrat Periel graduated from ETSAB in 1985. Architect in the Department of Urban Projects at Barcelona City Council from 1989 to 2005. Awarded with the 1995 FAD medal in recognition of the Department contribution to public space development. Architect in the AMB's Department of Public Space from 2005. She has taught in ETSAB Barcelona School of Architecture, ELISAVA Barcelona School of Design and Engineering and in the School of Architecture of Navarra University. She has given lectures about both her own work and the design of public spaces and street furniture.

Luisa Solsona graduated from ETSAB in 2004. She started her working experience in Josep Llinás Studio in 2005. She joined the AMB's Department of Public Space as junior architect in Montserrat Periel's team. She is currently a senior architect in Noemis Martinez's Section of Projects and Urban Design, where she leads architecture projects and works, coordinates both design and editorial projects and manages the diffusion of the work carried on by the Department.

Objectives
The last remaining wooded area in the urban tissue of Viladecans called for a simple and sensitive intervention. The driving force of the project, from the preliminary drawings down to the construction details, was the preservation of the natural character of this valuable area.

Framework
Different strategies are carried out to meet the requirements of an urban park while preserving the wilderness of this section of Serra de Miramar. The first thing to do was to analyse the site, recognize the existing areas and determine their suitability to contain the new the programme: the sunny terrace where crops were once grown became a playground, and the cool, shady wooded area integrate now the walking paths that connect the area to the surrounding neighbourhood. On the other hand, a stabilisation of the pre-existing slopes and cuttings was needed, specifically in the place where the park meets the streets. Vegetation-covered gabion walls have been used to provide the appearance of continuity between the town and the park. At the far end of the wood, a wall clad with dry-laid slate appears as a boundary wall overcoming the difference in height with the children's playground. Where the playground meets the country house Can Ginestar, a concrete wall has been built and serves as support for a fountain.

Results
Some paths are integrated into the wood adapting to the topography and respecting as far as possible the vegetation with its large number of tree and shrub species. Time-honoured routes are maintained, and only the strictly necessary new ones are created: particularly, the concrete stair linking the two parts of the park with the biggest differences in height. A single material, porphyry, is used in different ways to adapt to the uneven terrain working both as kerbs or steps. A manual construction technique is tested to minimize the impact of the renovation: every 1.2 m long porphyry slab is held in place by 2 stainless steel anchorages inserted in 2 of the 4 preformed holes and strengthened in the ground by small concrete cylinders. The goal is not to affect the roots and preserve every existing and revalued elm, oak and pine tree. A gap is left between the stones to facilitate drainage. The slate removed in cleaning up is used to stabilise the ground.

Conclusions
The result is clear and sober. It is a subtle intervention that re-interprets the place and gives it a new lease of life—a comprehensive process of retrieval that prompts agreement between the land, its history and present-day expectations.

Keyref
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BIODIVERSITY AND ECOSYSTEM SERVICES PATTERNS IN THE PROVINCE OF BARCELONA: IMPLICATIONS FOR GREEN INFRASTRUCTURE PLANNING AT THE LANDSCAPE SCALE

Keywords: Towards a comprehensive approach

Corina Basnou, Baró, F., Langemeyer, J., Castell, C., Dalmases, C., Pino, J.

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Objectives
The effective integration of biodiversity and ecosystem services (ES) into green infrastructure (GI) planning and conservation constitutes an important challenge for landscape and urban planners. In this study, we developed a methodological framework for GI planning at the landscape scale in the Mediterranean province of Barcelona using the ES cascade model. The framework integrates the assessment of biodiversity, ecosystem functions (i.e. ecological connectivity), and both ES supply and demand, to assure a solid knowledge basis for their operationalization in GI planning. We aimed at: (1) identifying the spatial patterns and potential mismatches between ecosystem services supply and demand; and (2) prioritizing key areas for GI planning.

Framework
GIS-based and multivariate methods allowed quantifying, mapping and analyzing a complex set of spatial indicators (fifteen indicators for ES supply and seven for demand).

Results
Our study underscores the crucial importance of urban hinterland for the provision of ES to compact and dense cities (such as Barcelona). The results also reveal an important potential mismatch between the supply and demand of ES at the landscape scale. In general, forested landscapes (i.e. peri-urban forests) provide the broadest diversity of ecosystem services, while the areas with the highest demand are mainly situated in the Metropolitan Area of Barcelona and the main medium-size cities located along the coast or in the hinterland.

Conclusions
Areas with high supply and demand of ES are especially found in the transition zones between urban and rural areas; our study thus determines these transition zones to be critically focused when integrating ES and biodiversity into green infrastructure planning at the landscape scale.

Keyref
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FOREST AND LAND PLANNING IN METROPOLITAN AREAS.

Keywords: Land analysis, natural values, green infrastructure

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Carles Castell holds ten years researcher experience at the university on projects on the dynamics of Mediterranean ecosystems, mainly in the field of forest ecology and regeneration of natural systems. Since 1994 he works at the Natural Areas Dept. of the Province of Barcelona, where he developed research and monitoring programs, land analysis and planning processes, and participated in the SITxell project which received in 2012 the first prize of UN initiatives in public administration.

Objectives

In Spain, the municipal councils are responsible for town planning, while the regional governments have powers over territorial planning. There are also different departments (infrastructures, agriculture, environment, etc.) at different levels of the administration whose planning spheres are superimposed on the territory. Since that, some challenges appear: deficient inter-administrative coordination, the need for a new conceptual framework in territorial planning, and the need for new, reliable territorial information at an affordable cost. Thus, the objetive was to develop a GIS scheme to support decision-making in land plannig at different scales: the SITxell project (www.sitxell.eu). I incorporates research teams, businesses and social institutions with expert knowledge of natural systems into the project in order to obtain rigorous, multidisciplinary territorial information with high added value.

Framework

SITxell project is based on new concepts appeared in the territorial planning sphere: considering the whole territory as one ecological system, which is particularly important in the Mediterranean context. The ultimate aim is to preserve the environmental values and ecosystem services provided by natural systems for the welfare of society. The project incorporates land description maps (geology, habitats, species distribution, land uses, etc.) and land assessment maps, useful in land analysis and planning processes bots at local and regional scales.

Results

As a central plank, the SITxell project has managed to increase knowledge transfer between the academic sector, teams of public administration officers at their different territorial levels and specialised businesses and organisations. The creation of the group of experts linked to SITxell made it possible to establish the framework of the relationship between all participants for exchanging knowledge. A material achievement of SITxell has been the development of numerous layers of multidisciplinary territorial information concerning the environment and socioeconomic matters, drawn up by the main research groups, specialised private businesses and sectorial institutions. The distinctive feature of this territorial information is that it not only incorporates the basic information but also the most important values and risks having to be taken in account in territorial planning. Technical services at Barcelona Provincial Council re-elaborates, combines and summarises the information in order to obtain the analyses needed for each specific territorial planning project, depending on its scale and nature. Another important aspect was the periodic updating of all the information, a process that continues today. Beyond the teams that have been able to participate in drawing up the information, the beneficiaries have been, firstly, the different public administrations. Over the last few years since SITxell became operational, 61 municipal councils, 2 county councils and 3 departments of the regional government have used the information. As well as use by

municipal councils in town planning, the project has been crucial in drawing up special protection plans for four protected areas and particularly the drafting of the two territorial plans for the province of Barcelona. Since the SITxell information has been universally available free online (2009) via the Barcelona Provincial Council map server (following the recommendations of INSPIRE and using OGC technology), it has received around 60,000 visits a year. In addition, about half the municipal councils in the province regularly use the territorial information. Nowadays one of the most relevant results is the use of the information to identify and map ecosystem services and to define local green infraestructures through local land planning.

Conclusions

The SITxell project has contributed to identify, evaluate and apply natural and socioeconomical values of open areas in decision-making processes at local and regional level. The information is now broadly used by public administration, researchers, private consultants and other institutions in their respective dayly work. Nowadays, the project is taken as an European example about how to apply ecosystem services and green infraestructure approach into real land analysis and planning. Finally, the main key elements have been as follows: 1. Involvement of the technical team from Barcelona Provincial Council. 2. Rigour of the project and quality of the associated information. 3. Incorporation of a new concept in territorial planning and management based on a transversal view of natural values and resources. 4. Inter-administrative cooperation and coordination. 5. Political support. 6. Social support.

Keyref

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TRES TURONS

Carles Casamor, Jordi Santamaria, Marga Parés, Gabino Carballo

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Objectives
1. Consolidation of the park as a green lung of the city
2. To advance current planning in Tres Turons
3. To begin phase 0 of the current plan
4. To promote the peak of Turó de la Rovira as a space that is open to historical memory: the remnants of the Iberian settlement, self-built anti-aircraft battery
5. To regulate antennae, access and circulation

Framework
1. Extending the scope to extend continuity of the park
2. Improving public space prioritising residential areas
3. Improving the routes connecting neighbourhoods
4. Preserving the domestic nature of the park at the service of the surrounding neighbourhoods
5. Fostering the site's identity and historical memory

Results
Planned interventions relating to goal 1. Consolidation of the park as a green lung of the city 1. Natural open areas and woodland officially considered Habitats of Community interest (HIC in Catalan): paths have been created to organise internal circulation, removing invasive plant species, regular maintenance of vegetation using livestock and clearing rubbish. 2. Interventions on deteriorated areas of the park: undergrowth of the Aleppo pine forest restored, invasive plant species eliminated 3. Agricultural landscapes in open spaces restored 4. Cliffs preserved as a wildlife refuge 5. Park extended and connected to developed areas, nearby spaces and green belt near Ciutadella-Collserola.

Conclusions
Measures are currently being studied to implement this management of green space in the Tres Turons forest park. We recommend presenting a poster on the Project.

Keyref
- Pla del verd i de la biodiversitat de Barcelona 2020 [Barcelona green space and biodiversity 2020] - MPGM (Modification of the General Metropolitan Plan). Modification of the General Metropolitan Plan in the Tres Turons area - PAM (Municipal Action Plan). Municipal Action Plan

THE METROPOLITAN EDGES: SPACES FOR RELATIONSHIP AND EXCHANGES. STRATEGIC PDU PROJECT.

Keywords: city, landscape, ecology

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Objectives

Often concerns about open space from a systemic approach, like pieces of gear to be protected, has failed to take notice of cases related to its edges. In this respect, the Barcelona Metropolitan Urban Master Plan (PDU) represents an opportunity to understand the spaces at its limits, with their own identity, and make it a strategic project, a meeting point between different realities and at different scales. Currently, the urban limits have undecided, fragile and circumstantial uses, and fractures and disturbances often accumulate. This is the result of a lack of projects specific to them. Whereas there has always been a clear purpose to urban areas and protected areas, in between these two realities there has been an obvious lack of reflection. In favour of these areas, though, this promiscuity and variety of uses and the discontinuity between urban agriculture and woodland, the potential of the system of ecological and social relationships, are precisely the features that should be enhanced in order to configure a greater form of Mediterranean metropolis, in the words of M. de Solà-Morales.

Framework

The aim of this study is to understand the reality and potential of this complex space using a synthetic and integrating approach. To identify the elements that constitute the space and give it value, the starting point taken has been the knowledge generated in recent times on expectant spaces, fragments, gaps, ecotones, membranes, concatenations of public spaces and infiltrations.

Results

The purpose of this study, currently in progress, is to build a metropolitan framework of reference for specific local actions in these border areas.

Conclusions

This valuation of metropolitan areas on the edge is focused on the opportunity to carry out projects there which are integrating, multi-functional and complex, and which go beyond the traditional city-countryside dichotomy and the rigidity of zoning. This is another step towards building green metropolitan infrastructure, heading towards a model that provides environmental services while supporting the relationships between the different parts of the metropolitan city.

Keyref

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GIRONA: THE CITY EDGES. PRACTICES AND OPEN METHODOLOGY FOR IMPLEMENTING GREEN URBAN INFRASTRUCTURE IN GIRONA.

Keywords: nature-based solutions, flexible management, communication strategies.

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Franch is Doctor Honoris Causa in Design and landscape architect from the University of Greenwich. He is also an Agricultural Technical Engineer from the ESAB (Barcelona School of Agricultural Engineering). Franch founded EMF Arquitectura in 1999, a cross-disciplinary study with independent experts in the field of environmental and urban design. EMF explores hybrid ecological strategies between ecological systems and cultural to inform projects in specific spaces and times. His projects have received numerous international awards, including from the American Association of Landscape Architects, the VII European Landscape Biennal and the EUROPARC award for 'Best conservational practices in protected natural spaces'.

Objectives
Girona has about a hundred thousand inhabitants and is one of a thousand small European cities surrounded by nature up to its very edges, and the city has turned its back on it. The River Ter along with three smaller courses and the dry Mediterranean hills form a diverse mosaic landscape that is fragmented and marginalised as it comes into contact with the urban periphery. Until recently, on the edge of the town, the functional and emotional ties between the urban and the rural were being destroyed. What in the past was a frank, functional continuity between two productive spaces is now often an abandoned strip of land that attracts little laudable use and generates social stigmatisation. Meanwhile, the distance in space and emotional attachment between the urban and the rural is growing, meaning the lack of productivity of the urban-rural ecotone proves insulating. This context gave rise to the hypothesis of creating a territorial laboratory for management of the peri-urban ecotone to recycle experiences in other cases from differentiated management pilots. The final goal is to implement a green infrastructure for the urban agglomeration of Girona. The challenge is how to create a fact-based, open method to generate sufficient synergies to transform the city from the bottom up, using new tactics and design and management strategies.

Framework
The edges of GIRONA is an open project that sees the city from the infrastructure potential for the landscape. Through pilot projects, a territorial laboratory for practices and design methods using differentiated management has been created, allowing us to test and disseminate the benefits of managing urban ecotones in a different way. In the end, the hypothesis is that these border spaces, meshed at the edges of the city as a multifunctional green infrastructure, can be the largest public facilities in a small contemporary conurbation, and differentiated management is the most appropriate instrument to trigger the process of renewing the expanding city's aesthetics and take back its rivers and mountains. The initiative is based on the doctoral work by M Franch and enthusiastically echoes Marc Rosdevall, municipal environmental technician. From the outset it has been a politically marginal project without a budget of its own. The challenge has been to devise a planning methodology to have tangible results in a short period of time with the human and material resources available at the municipal environmental brigade. This exercise requires us to adapt to difficult conditions. The first two years of research focused on testing an open, experimental methodology to promote feasibility, implementation and adaptability of the hypothesis through two pilot projects in the mountain and river. This seminal operating method, coordinated with municipal technicians and brigades, was aimed at diversifying the management model of the peri-urban city edges using what we have called 'the Design of Differentiated Management'. The palpable results and know-how generated by these pilots, which are already being applied to other parts of the city, have set off

a chain effect, convincing the city council and the opposition of the need to continue with the project. In turn, playing the role of a 'double agent', EMF, a private design studio, has collaborated with the Federation of Neighbourhood Associations to define the Network of Neighbourhood Pathways to supplement the pre-configuration of the Green Infrastructure, thus promoting respectful ownership by the public. Various artistic performances have been held by the River Ter, which also help renew the public's focus on these peri-urban spaces. Currently, while the area falling under differentiated management continues to grow, the 'Framework Project' is being drawn up that will pre-configure how to bring Green Urban Infrastructure to all the neighbourhoods in the city. The experimental method used is based on 'Walkshops' seminars, in which technicians (environmental staff, landscape architects, urban planners, social technicians, those working on economic revitalisation, etc.), Citizens (Neighbourhood associations and the Federation of neighbourhood associations) and sectoral experts (ecologists, geologists, runners, MTB bodies) scour the city identifying its values, structure, shortcomings and main opportunities in order to put together a concrete and mutually agreed plan of action. This fieldwork was subsequently studied and subject to subsequent visits.

Results

• Improved biodiversity and public empathy for nature in the peri-urban edges of Girona. Since 2014 we have been working on two pilot projects as management laboratories and have produced tangible results from the 'Design of differentiated management' of 60 and 20 hectares respectively in contrasted river and low Mediterranean mountain landscapes. • Expansion of 'differentiated management' to other areas of the urban edges, both by the municipal brigade itself and supervising other subcontracted businesses. • Training and enhancement of humane and creative potential in municipal environmental brigades, which have gone from being 'cutting machines' to 'editors' of a diverse landscape mosaic with technical supervision both in terms of the environment and spatial design. • Encouraged public sense of ownership and appreciation of nature in the urban ecotone. Through collaboration with the EMF design studio alongside the Federation of Neighbourhood Associations of Girona, a Network of Neighbourhood Pathways has been defined that brings cohesion to the suburbs of the city, passing mostly through the peri-urban edges. Large-scale map (Gulliver's map) 7x4m was used to present the proposal to the public during the Temps de Flors flower festival. This work is one of the foundations of the current 'Framework Project' • Encouraged civil and expert participation. 'Walkshops' are currently used for in situ work sessions, gathering municipal technicians (environment, town planning, economic promotion), the design team, representatives from public associations and external experts from various disciplines (natural sciences, social sciences, sports, historians, etc.), to develop the 'Framework Project' which aims to prefigure expansion and an action plan to bring Green Urban Infrastructure to all neighbourhoods in the city. Action plans and the corresponding mappings, will be available on the date of the conference. • Encouraged 'new sensitive way of looking' at peri-urban nature. The Milestone Urban Art Festival has chosen the River Ter as the triennial headquarters for artistic interventions that are sensitive to the landscape. Also during the course of the ''Temps de Flors' flower festival, there are ephemeral interventions in the pilot project areas. • Promoted scientific research. In February 2017, the Department of Environmental Sciences at the University of Girona, Dr Núria Roura Pascual and her Animal Biology research group, is starting to oversee the arthropods and vertebrates at Pedreres, Mediterranean hills, to identify populations in high and low meadow areas. • Disseminated the results. A large effort has been made to illustrate and disseminate this open method. To date we have achieved: A documentary on TV2 Cataluña on the Inspira programme. (http://www.rtve.es/alacarta/videos/inspira/inspira-23sep/3734365/ (minutes 01:10 to 07:12). New ways to illustrate differentiated management and open project method that have been published in the LAM Landscape Architecture Review, USA, the largest landscape review in the world readership with https://landscapearchitecturemagazine.org/2017/01/23/its-about-time/ An indexed research publication has also been published in ZARCH Journal of Interdisciplinary Studies in Architecture and Urbanism. https://papiro.unizar.es/ojs/index.php/zarch/article/view/1515/1332#englishAn undergoing PhD. The Girona's shore projects, is Franch main Case Study within his Research through Design PhD Presentations of the project in Melbourne, Wellington, Cape Town, Los Angeles, London, Edinburgh, Tel-Aviv, Lujbljana, Girona, Barcelona, et al. Daily regular presence in local TV and newspapers. Direct Links: https://landscapearchitecturemagazine.org/2017/01/23/its-about-time/ http://www.rtve.es/

alacarta/videos/inspira/inspira-23sep/3734365/ https://papiro.unizar.es/ojs/index.php/zarch/article/view/1515/1332#englishAn undergoing PhD. The Girona's shore projects, is Franch main Case Study within his Research through Design PhD

Conclusions

Infinite. Girona's city edges are a territorial applied research laboratory. It is a living process, with increasing scale and complexity. It is non-linear and in constant re-definition. It contains the seed of what we might dub the 'genius temporum', or genius of time, as the design and implementation in short recurring cycles, can be adapted and decisions deferred based on the social, political or economic times. In the words of A. Chemetoff, it enables each action to be placed in a favourable spatial and temporal context. However, even though the experimental method within the city limits of Girona, supported mostly by the design of differentiated management, is an effective trigger for prefiguring and immediately enhancing the urban-rural ecotone at a very low cost, it is not enough. Other actions and investments in the form of the soft road network, micro-projects, communication, promotion and public participation are necessary to implement effective multifunctional and ultimately poignant green infrastructure as it will only be functional if it is appropriate, extensive and connected. Even when working on a framework project to expand the system and establish a framework to contextualise projects within a narrative at the scale of the conurbation*, we still need to achieve political support that translates into investments. (*The Framework Project will have been completed by the date of the symposium). However, this method is a first stage in the re-colonisation of the edges of our cities that will leave an imprint there, one that is light, revealing, economic and open.

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METHODOLOGY FOR URBAN-FOREST LANDSCAPE PLANNING TO REDUCE THE RISK OF MAJOR FOREST FIRES

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Objectives

The metropolitan areas of Europe have entered the category of main areas at risk of forest fires, due to increased vulnerability in a context of climate change. The international emergency community on fire extinction and prevention recognises the failure to tackle and solve the problem through the emergency services. They also point out the urgent need to set up channels for collaboration and research with professionals from other disciplines and generate urban and territorial planning instruments to reduce the risk of forest fires, and as a result, increase the resilience and resistance of the landscape as one of the main goals in planning urban-forest border areas. The main objective of this work is to give an example of multidisciplinary methodology for planning the urban-forest landscape in the Barcelona Metropolitan Area in order to reduce the risk of forest fires and increase socio-ecological resilience.

Framework

The work is based on multidisciplinary collaboration carried out over the last five years between the team of professors and collaborators of the Master's in Landscape Architecture at UPC (Polytechnic University of Catalonia), the GRAF (Forest Activity Support Group) team from the Firefighters of the Government of Catalonia and the Pau Costa Foundation. This mainly academic collaboration combines the landscaping methodology developed in the line of landscape research at DUOT, based on a mapping of spatio-temporal landscape factors from a socio-ecological perspective, alongside the methodology developed by the GRAF team and the Pau Costa Foundation on characterisation of and planning for the extinction of Large-scale Forest Fires.

Results

This joint methodology has been developed and implemented at the academic level through specific case studies, such as the urban-forest border areas in the Barcelona Metropolitan Area and in collaboration with Public Administrations such as the Barcelona Metropolitan Area and the Collserola Park Consortium.

Conclusions

The work explores the following methodology based on the definitions of vulnerability and risk of forest fire, the recognition of the value and services of the ecosystem that must be protected against the risk of forest fire, as well as the main strategic lines to generate more resilient and more resistant planning for the urban-forest landscape in the Barcelona Metropolitan Area: 1. ANALYSIS: Simulation and reconstruction of the spreading of the fire. Study of the way fires spread and meteorological conditions; Location and

characteristics of the ZHR zones (Homogeneous Regime Zones describing areas at risk of fires); Cartography with landscape values. 2. DIAGNOSIS: Assessment mapping the vulnerability of the landscape as regards risk of forest fire; Assessment and identification of the strategic areas for fostering management; Spatial-temporal assessment of resistance and resilience in terms of forest fire scenarios 3. PROPOSAL: Multi-functional planning for protection against large-scale forest fires

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TERRITORIAL BOUNDARIES AND URBAN CHALLENGES. NEW APPROACHES IN THE PERIPHERAL AREAS OF LISBON.

Keywords: Urban Fringes; Public Spaces; Peripheral areas

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The GESTU - Office of Studies and Systems in Architecture and Urbanism Technologies is a group of researchers and university professors who develop projects and consulting in architecture and urbanism. Among the multiple dimensions that involve the territory, the works that focus on metropolitan areas, on an identity of the neighborhoods, an urban rehabilitation and tourism, supported by protocols of cooperation with various entities. A research carried out in the CIAUD explores some of the problems of the 21st century, incorporated in master's and doctoral studies. The dissemination of research results on conferences, seminars and publications in scientific books and articles.

Objectives

Territorial challenges are confronted with the necessity of finding new ways to think about the city. We are facing a change in paradigm, where models and urban conception processes demand a bigger operationality of sustainability concepts. The succession of urbanistic operations was reflected in a bigger diversity of urban shapes and contents, as well as several levels of territorial connection and fragmentation, resulting of various infrastructural systems. This process, that reflects the dynamics of property transformation and possible investment opportunities, has generated urban development models based on an excessively specialized vision, with little integration. Amongst some of the main discussion topics, we have identified territorial fractures, on both the levels of large accessibility infrastructures and of the administration systems and territorial management. Consequently, we highlight the lack of articulation between the transport systems on a regional level, the lack of cooperation in the planning systems of the inter-municipal borders and the lack of a more integrated vision on environmental topics, such as green areas and humid systems. Territorial challenges are confronted with the necessity of finding new ways to think about the city. We are facing a change in paradigm, where models and urban conception processes demand a bigger operationality of sustainability concepts. The succession of urbanistic operations was reflected in a bigger diversity of urban shapes and contents, as well as several levels of territorial connection and fragmentation, resulting of various infrastructural systems. This process, that reflects the dynamics of property transformation and possible investment opportunities, has generated urban development models based on an excessively specialized vision, with little integration. Amongst some of the main discussion topics, we have identified territorial fractures, on both the levels of large accessibility infrastructures and of the administration systems and territorial management. Consequently, we highlight the lack of articulation between the transport systems on a regional level, the lack of cooperation in the planning systems of the inter-municipal borders and the lack of a more integrated vision on environmental topics, such as green areas and humid systems.

Framework

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Results
This area, characterized by a significant diversity in urban fabrics, possesses an elevated fragmentation level that is a result of the traversing of big regional-scale infrastructures and of the lack of articulation of the inter-municipal planning systems. The diversity of the urbanization mosaics puts in evidence, in this area, the lack of structure of public spaces, beyond the traditional models of the canonic city. This detail is particularly evident and relevant in the peripheral and inter-municipal border areas.

Conclusions
Our research contributed to an integrated vision of multiple urban systems, focusing on the transformation of property registry and on an inclusive and environmentally sustainable vision, for guiding urban projects. We identify ruptures that demand a new take on territorial relationships. For that reason, we have developed a proposal for the Carnide area, where historical structuring elements are neglected in urban transformation. In this proposal, we uplift the value of the continuity relationships, through urban axis that concentrates functional diversity and a strong identity. Our strategy contemplates a set of guidelines that reflect the reconciliation of values, both symbolic and functional, in a perspective of social and urban recycling. Amongst the main components of this intervention, we consider the structural role of humid systems and green areas, as well as of new systems of agricultural production. In the context of territorial transformations, the importance of the neighborhood as a mental and physical reserve of the city is highlighted. These points constitute competitive factors in the management of risks, and a valuable addition to urban resilience.

Keyref
Urban Fringes; Public Spaces; Peripheral areas

IMPORTANCE OF URBAN FORESTS FOR URBAN HEAT ISLAND MANAGEMENT

Keywords: urban forests, urban heat island, spatial analysis

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Objectives

Urban heat island (UHI) is a result of land use changes and a replacement of natural surfaces by artificial urbanized land. As a consequence, there is a modification of energy fluxes between the atmosphere and the Earth surface reducing evapotranspiration and increasing temperature. Since thermal energy fluxes in a city depend on physical characteristics of the surface, and the spatial arrangement of its landscape, urban forests can reduce UHI intensity. The objective of this research was to study the effect of urban forests in the UHI of big cities. We present a study based on multitemporal and annual Zagreb's UHI spatial analysis. Results highlight the importance of urban forests in city management and planning.

Framework

UHI as a phenomenon is usually measured and described by land surface temperature, an indicator that depends directly on land use type. Urban forests, by having different energy absorption, reflection and transmission characteristics from artificial surfaces, change temperature patterns within the city and create better life conditions among the areas they are located. Remote sensing techniques have a best possibility to investigate an UHI phenomenon thanks to its ability to obtain continuous data sets and identify all produced changes on the surface. A set of 21 thermal satellite images have been used in this research. 30-years multitemporal and annual characteristics of UHI have been investigated based on emissivity and thermal maps analyzed using 8 different thermal profile axes redistributed along the study area providing information about all present urban morphology patterns. Moreover, principal component analysis has been conducted with the aim to establish the link between urban morphology and urban forests types.

Results

During the summer the importance of urban forests is greater than in cold months. Due to lower rates of radiated and emitted energy, the thermal profile of UHI during the winter is homogenized having lesser differences in surface temperature between areas. Urban forests have different influence on the UHI phenomenon depending on urban morphology. In the mountains districts, where vegetation is a predominant land cover, urban forests create specific microclimate reducing temperatures in the entire area. In the city center green areas are strongly limited, but, its importance is big. They notably reduce temperature and create big amplitudes between built and green areas. Thermal profile is directly related to the location and size of parks in that part of the city. Within the low building neighborhoods there is noticed the absence of urban forests, nevertheless, the temperatures are lover comparing to the city center due to big amount of private gardens. On the other hand, thermal profile of high building neighborhoods depends directly on extent of urban forest areas located between the buildings, significantly reducing temperatures and, very often, eliminating the thermal effect of the buildings. Finally, urban life standard quality has been questioned based on relation between UHI intensity and population density. Urban forests have an important role within densely urbanized areas significantly improving wellbeing standard despite high population density.

Conclusions

UHI behavior is strongly dependent on urban forest areas that significantly change its thermal characteristics directly marked by urban morphology. Thus, their spatial distribution should be a priority in the city planning with the aim to provide better human well-being standard and change spatial characteristics of UHI trying to establish a sustainable urban environment. By using this methodology quantitative and qualitative information is provided and can be combined with decision support methods to help decision makers to efficiently dimensioning green areas considering human wellbeing as criteria.

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Communication challenges

2nd June, 10:30h Plenary Session

DIFFERENT APPROACHES TO GOVERNANCE OF URBAN GREENSPACE IN EUROPE THROUGH A TRANS-SECTIONAL STUDY

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Objectives

Studies such as that undertaken through the EU GREENSURGE project (Green Infrastructure and Urban Biodiversity for Sustainable Urban Development and the Green Economy, FP7-ENV.2013.6.2-5-603567; Grant Agreement No. 603567) have shown differences in approaches to strategic-level urban green space planning, implementation and governance across the European continent. In this oral presentation we investigate different approaches to the governance of urban greenspace through a trans-sectional study across three European biogeographical regions. The Mediterranean region (Puglia, Southern Italy and Lombardia, Northern Italy); the Continental region (Bern, Switzerland); and the Atlantic region (Flanders, Belgium and Northern England). The key objective is to raise awareness and understanding, deficits of knowledge and sharing good practice. For this reason, the contributors involved include both researchers and practitioners and draw on 'real world' examples in the form of case-studies.

Framework

- Case-studies,
- Trans-sectional,
- Bio-geographic regions,
- Research meets practice,
- Grid of indicators.

Results

The presentation tracks different approaches. The focus is on the contrasting role of four groups;
(i) landowners,
(ii) local municipalities,
(iii) environmental NGOs and
(iv) citizen/community groups.
The presentation covers three fields of interest – firstly planning of greenspace, secondly stakeholder involvement and thirdly management of greenspace. The emphasis is on natural greenspace including urban forests and areas that are considered, wild, untamed or 'for nature'.

Conclusions

- The key findings of the case studies are presented,
- Strategic implications and considerations discussed,
- Themes for further research outlined,

Keyref

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SOCIAL INNOVATION AND URBAN FORESTS - THE ROLE OF SCIENCE AND SOCIAL MOVEMENTS TO INFLUENCE DECISION MAKING ABOUT URBAN FOREST DESIGN.

Christoph Schröder

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Based on my MSc in Geography (University of Bonn) I have developed expertise in Geographic Information Systems and land use/cover change analysis from local to global scale with particular interest in the Mediterranean. Over the last few years, I have developed a strong involvement in science-policy interfaces on the European level, trying to find smart ways to solve important environmental issues relevant to policy-makers.

The main focus of my activities at ETC-UMA is on data integration and thematic assessment on European scale for a wide range of topics from sustainable tourism to nutrient inputs on agro-ecosystems. This data-driven work is supporting the European Environment Agency in their policy monitoring and formulation. I have also applied my GIS expertise on a variety of projects dealing with terrestrial and marine ecosystems (Med-IAMER) and territorial development (ESPON ESaTDOR). In recent year, I have gained a profound expertise in the assessment of user requirements for Earth Observation products, particularly addressing habitat and wetland monitoring.

Abstract
Planning and management of urban green areas and particularly urban forests are part of a decision-making process that takes place at the local level of administration. Different urban planning priorities have an effect on the final design of these spaces. Often, the decision making process is a top-down process without taking into account neither the citizens' needs and opinions nor scientifc evidence of the benefits of urban forests nor best practices available at national or international level. The University of Málaga, together with the bottom-up initiative Bosque Urbano Málaga, gathered scientists, practitioners and citizens to evaluate the role of scientific evidence and the potential of social movements to influence the decision making about urban forest desing. Both diverse communication and the creation of an active citizenship were considered as key to influence the public opinion and build a solid ground for a bottom-up approach for the desing of urban green spaces.

GOVERNANCE AND EDUCATIONAL VALUE OF TRANSITION SPACES

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Objectives
Environmental awareness activities in Catalonia began 40 years ago. In 1976, the company responsible for the Santiga industrial estate approached the Autonomous University of Barcelona (UAB) to design and launch the first nature itinerary. The first nature itinerary created in Spain was done so with guides for students and professors. Which is the current role of nature itineraries and how are they integrated into transition spaces?

Framework
Despite environmental education having been born closely linked to the forest environment (American park protection plan) in Catalonia 40 years ago, focusing on the necessary relationship and involvement that people must have with nature, in its development and preservation, taking into account the current existing links and dependencies, the environmental protection activities are not focused on transition spaces, which have great socio-environmental value in densely humanised spaces such as the metropolitan area of Barcelona. The future challenge is integrating these spaces into the collective imagery and in co-responsibility for their maintenance.

Results
It would be premature to establish the results of an idea that is just starting to present itself in the environmental education sector (from formal to informal spheres) but in the next few years it will become crucial as evidenced by the recovery experiences of urban nature paths in municipalities such as Cornellà (river), Barcelona (Torre Baró, Rec Comtal) and Sant Adrià (Besós estuary), among others.

Conclusions
Rather than conclusions, a few points to be considered will be presented regarding the preservation of transition spaces beyond the field of research and institutions... Which role do other agents have within the territory? How should educational values of transition spaces assert themselves to facilitate governance?

Keyref
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FUTURE FOREST SCENARIOS

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Sara Barron is a PhD candidate in the Faculty of Forestry, University of British Columbia. In 2013, Sara was awarded the prestigious Future Forests Fellowship--the world's largest scholarship for forestry research. Sara's thesis title is Future Suburban Forests in a Changing Climate: Balancing Sustainability and Social Acceptance; her research focuses on how urban planners can design or retrofit suburbs to balance natural forest environments with the higher density housing that is required to reduce carbon footprints. Sara also holds a Master of Landscape Architecture degree from UBC.

Objectives
The research asks how to design and plan future suburban forests for resilience. The research case study is based in a sustainable suburban neighbourhood in Surrey, Metro Vancouver, Canada.

Framework
The project uses a transdisciplinary scenarios approach to design and test four future forest scenarios. The scenarios were created by developing indicators using a Delphi method with international and local experts. They were also guided by focus group interviews with local residents. The resulting scenarios envision a North American suburban landscape optimized for four scenarios: no policy change, climate proof, re-wilding, and human well-being. Each scenario explores a unique future for the neighbourhood's forest optimized for the scenario's goal. Once designed, the scenarios were modeled, tested, and visualized. Scenarios can then be compared for performance, aesthetics, and plausibility. Performance was tested using both the indicators created for the project and iTree analysis. The scenarios were also visualized using Photoshop, section drawings, and 3-d models. The resulting scenario packages will be presented in this paper, with a public presentation planned for Fall 2017 with local residents.

Results
The resulting scenarios depict four unique futures for the neighbourhood's forest. With both expert and local input guiding scenario creation, the scenarios explore current themes in urban forestry research and public perceptions. Each scenario is developed to create a visual and quantitative analysis of how a suburban forest could develop over the next 35 years. Resilience is tested by optimizing forest design for three scenarios: climate adaptation and mitigation, local ecosystem function, and human well-being. These three are then compared to each other, and to a "no change" scenario to demonstrate their strengths and weaknesses. Each scenario is sketched, mapped, and visualized to create a visual package that helps communicate the differences between scenarios to non-experts. The scenarios are also compared using iTree software and indicator analysis to demonstrate quantitative differences between scenarios. The results clearly show areas of synergy and areas of conflict between scenarios, giving some guidance to possible future forest planning.

Conclusions
The paper outlines a unique approach for planning future forests. By incorporating both expert and local opinion, the approach addresses current global issues in urban forestry while being grounded in the reality of a particular place. Using a scenario approach, urban foresters and planners across the globe can communicate choices to their local citizens. The scenario approach shows residents how and where they could develop their future forest, and allows them to compare different futures. Perhaps the most powerful

message is the “no change” scenario, which demonstrates to both practitioners and citizens what will happen to the urban forest if development continues as usual. The paper shows how using these highly visual communication methods can support local citizens in making informed choices about how they want their local urban forest to develop. The ultimate intention is to create a single optimal scenario that combines areas of synergy for all scenarios and is based on informed citizen feedback that will give the urban foresters and planners guidance for future tree planting, park management, and neighbourhood design changes.

Keyref

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DOMESTIC GARDENS AS A KEY TO BIODIVERSITY AND PUBLIC ENGAGEMENT IN THE URBAN FOREST.

Keywords: Gardens, Citizen Science, Urban Wildlife

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A leading practitioner in the field of Urban Green Infrastructure and an award winning writer and broadcaster. Campaigner for nature in the city and for public participation. Acknowledged authority in the fields of habitat creation and wildlife gardening. Personal professorship and Honorary Doctorate.

Objectives

Domestic gardens occupy millions of hectares of the urban and suburban landscape across Europe. They provide a vital network of wildlife habitats in the urban forest, and they offer the most immediate daily contact with nature for hundreds of millions of people. They have tended to be undervalued by green infrastructure professionals and practitioners.

Framework

For more than 40 years a growing programme of citizen science and public engagement initiatives have been a feature of environmental action in the UK. Gardens have become increasingly recognised as vital to the quality of life and the human health and wellbeing of families in towns and cities. Many of these initiatives have been led by non-government organisations, and supported by the media. Nature conservation and enjoyment of wildlife were features of the early initiatives, and public participation grows each year. For example in 2016, half a million individuals submitted their observatios as a part of the Big Garden Bird Watch. The accumulated knowledge gathered through these initiatives continues to improve our understanding of biodiversity accross the urban forest. Now the role of domestic gardens is beginning to be recognised in a wider range of environmental issues including surface water management, air quality, public health and wellbeing.

Results

A 40 year study of the trends in bird populations has been recorded by the British Trust for Ornithology. The threat of invasive species is being monitored by garden owners, with non -native plants, damaging invertebrates and plant diseases all being tracked nationally through garden observations. The value of gardens is increasingly acknowledged by health professionals, particularly with regard to physical health for an aging population, and its benefits in the field of mental health and stress-related illness.

Conclusions

Domestic gardens are key contributors to the urban forest ecosystem, but their significance has been largely overlooked by green infrastructure professionals. Where citizen science has been employed, unique data has resulted, and this has increased understanding and helped to influence land use policy. Public participation has greatly increased awareness and understanding of the urban forest, its ecological complexity and the role it can play in addressing environmental pressures and enhancing quality of life.

Keyref

British Trust for Ornithology: Big Garden Bird Watch Sheffield University: Biodiversity in Urban Gardens in Sheffield. Royal Society of Wildlife Trusts: Garden surveys for hedgehogs, bees, ladybirds and a range of other garden species. Royal Horticultural Society: Plants for Pollinators research Environment Agency: Monitoring of invasive species

May 31st and June 1st , 11h-11.30h Poster Exhibition

GREEN LEARNING ENVIRONMENTS FOR CHILDREN WITH LEARNING DISABILITIES

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Rik De Vreese is projectcoordinator at BOS+ Vlaanderen. At BOS+, a Belgian environmental NGO on forests and trees, Rik is responsible for the theme "forests, trees & human health". Rik is constantly developing new projects, including LIFE and Interreg proposals. He is about to get a PhD on integrating social representations of nature and ecosystem services in land use planning and landscape management.

Objectives
Non-formal (and formal) learning in natural environments results in better learning outcomes, especially for children with learning disabilities. Outdoor learning enables physical activity and improved learning opportunities for those who learn through movement. Finally, contact with nature promotes physical health and improves mood.

Framework
We will present the project "Green Learning Environments" (funded by the Erasmus+ scheme) that is developing innovative educational materials and methods by collecting best practices throughout Europe and compiling them in a Toolbox. To collect knowhow from education as well as nature, the project consortium includes schools and green partners from the participating countries (UK, Belgium and Slovenia).

Results
Results so far suggest that many of the current activities rely on the enthusiasm and dedication of the personnel who develop activities in the green environments, since materials and resources dedicated to green learning environments are scarce for the specific target audience. Simultaneously, programs exist for regular students, and these programs are adapted in cooperation to fit the needs of special needs children. Professionals developing materials for their audience are the keepers of important knowledge, which the project aims to compile.

Conclusions:
We have witnessed differences through different European countries in the readiness and availability in funding for this cause. Therefore, we call for a more concentrated approach and structural support for creating and facilitating programs, and supporting children with learning disabilities in creating optimal learning possibilities in green learning environments.

Keyref
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"URBAN FORESTS?" AN EDUCATIONAL PROPOSAL

Keywords: education, participation, parks

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Aida Girona. Degree in Environmental Sciences. Head of educational and participative projects of the AMB Public Space Promotion and Preservation Service.

Objectives

Currently, the Metropolitan Parks Network is made up of 47 urban parks spread over 29 municipalities, covering more than 617 acres. Metropolitan parks are a network of green spaces that, located in the middle of the city, play an important role in the functionality of ecosystems that support environmental services: establishing ecological relations with agroforestry and river spaces in their surroundings, enriching biodiversity, providing habitat to different animal species and participating in the connectivity of the territory's green infrastructure. The Metropolitan Parks Network comprises 11 parks that present a high density of forest trees, are more naturalised, have a lower intervention from garden services and promote a development similar to forest spaces. These parks are La Muntanyeta (Sant Boi de Llobregat), Pi Gros (Sant Vicenç dels Horts), Castell (Castelldefels), Ermita del Pla de Sant Joan (Palma de Cervelló), Can Ginestar i Torre- Roja (Viladecans), Calamot (Gavà), Pinetons (Ripollet), Llacuna (Montcada), Mil·lenari (Sant Just Desvern) and Turonet (Cerdanyola). The AMB is considering the possibility of offering educational activities to schools and the general public to showcase the environmental benefits that these urban forests provide us with, with the objective that they become educational spaces and to favour their understanding and preservation.

Framework

Education for sustainability is an ongoing process which raises awareness in people of what surrounds them and their relationship with the environment. Knowledge, values, experience and also determination is acquired which allows them to act, individually and collectively, in the resolution of present and future environmental problems. Learning outside the classroom is, in itself, a highly interesting learning strategy. Carrying out activities in parks allows them to work on concepts through experimentation, interaction with natural resources and direct observation of living creatures, and observing relations among them and the different natural processes. This experience-based learning helps to develop critical thought, increases motivation, creativity and the curiosity of students and contributes and generates social and ethical behaviours.

Results

During the 2016/2017 school year, a new educational activity was added to the Metropolitan Educational Programme for Sustainability, ˝We Share a Future", called "City forests? The park's ecology". The activity brings participants closer to the concept of the environmental services that forest parks carry out. With the experimental discovery with the help of an exploration kit, the students gather data and characterise the park. They face 5 challenges: 1. Where is there more life? (quality of the substrate); 2. Who provides the air we breathe? (air quality); 3. Who stores water better? (field capacity); 4. Where is food produced? (provision service); 5. Do trees change the climate? (climate regulation). In comparison with actual urban space, students approach these concepts and the importance that the presence of these forest spaces have within cities. The activity, addressed to schools, families, youth clubs and other entities, is carried out in each of the 11 metropolitan forest parks.

Conclusions

This educational activity being offered this school year has received more than 600 applications, from schools to adults. New applications are expected until the end of the school year. As of today, reviews from teachers who have taken part in it with their students are positive and mention that the obtained results are those that were expected and that students perceive the importance of preserving these forest spaces.

Keyref

Activitat “Boscos de ciutat? L’ecologia del parc” https://goo.gl/If8S1B Guia dels valors socials i ambientals dels parcs [Activity “City forests? The park’s ecology” Guide to the social and environmental values of parks] (AMB, 2016) http://www.amb.cat/ca/web/medi-ambient/actualitat/publicacions/detall/-/publicacio/guia-dels-valors-socials-i-ambientals-dels-parcs/5891839/11818 Els valors ambientals i socials dels parcs. Com identificar i avaluar els serveis que aporten els parcs metropolitans [The environmental and social values of parks. How to identify and evaluate the services provided by metropolitan parks] (AMB, 2016) http://www.amb.cat/ca/web/territori/actualitat/publicacions/detall/-/publicacio/els-valors-ambientals-i-socials-dels-parcs/5703575/11656

THE SOCIO-ENVIRONMENTAL VALUES OF PARKS (TUTORIAL)

Lídia Barceló and Aida Girona

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Objectives
The progressive expansion of the Metropolitan Parks Network and its integral management model evidence the great importance that green spaces have within the metropolitan territory. In the urban scope, the presence of these natural spaces has a fundamental environmental value.

Framework
Metropolitan parks constitute large areas with plants that provide refuge and food to different bird species, small mammals and amphibians which, otherwise, would be very hard to find in a city. Also, the different plant species generate oxygen, turning these parks into the so-called “green lungs” of the city, where thermal comfort is much greater than inside the city between the buildings. However, as well as being quiet and pleasant spaces where you can go for a walk or spaces where nature enters the city, metropolitan parks have a key role as providers of the so-called environmental services. These services represent all the benefits that society obtains from ecosystems which contribute, directly or indirectly, to their well-being. (Estudi dels serveis ecosistèmics de la infraestructura verda metropolitana, AMB 2015) [Ecosystem services study of the green metropolitan infrastructure].

Results
An important part of the AMB’s job is education on sustainability. In other words, ensuring that its citizens (from students to adults as well as experts and politicians) are aware of the existing environmental problems and that they acquire the necessary knowledge, behaviours and skills to make their activities more sustainable as well as fostering participation and governance in regards to the environment.

Conclusions
The tutorial is a novel teaching resource that can be used by those who take part in educational activities. It does not provide uniform patterns or ideas, quite the opposite in fact, as it proposes elements for thought and co-responsibility.

Keyref
http://www3.amb.cat/repositori/PUBLICACIONS/SOSTENIBILITAT/Guia_de_parcs.pdf

OPTIMIZING WATER RETENTION POTENTIAL IN URBAN FORESTS

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Objectives
Urban trees and forested areas have a great water retention potential since they are enhancing evapotranspiration and water infiltration into the soil as well as regulating the amount of throughfall reaching the ground.

Framework
This study provides a holistic methodological framework for optimazing natural water retention potential of urban forests by hydrologically oriented forest management measures. We propose and test a combination of indicators, related to stand structure and soil properties for optimized canopy interception, topsoil water infiltration and soil water holding capacity in urban forests. We standardized the obtained values on a relative scale: from 0 – no relevant potential; to 100 – maximum possible potential of urban forests under study for water retention. The study occurred over a six-year period in an urban transect from the mixed forest in the city center towards a riparian pine forest and a floodplain hardwood forest. Canopy interception was calculated as a difference between measured open field precipitation and net precipitation (sum of throughfall and stemflow). Stemflow was estimated from a review of relevant literature. The selected indicator for soil water infiltration was the non-saturated hydraulic conductivity, which was measured using the Mini Disk Infiltrometer (Decagon Dervices Inc.). The selected indicator for soil water holding capacity was field capacity of the mineral soil, which was calculated from pressure plate measurements of soil moisture content at 0.33 bars, using representative soil samples.

Results
The greatest water retention potential was shown for mixed forest in the city center (80 scores), followed by floodplain hardwood forest (63 scores) and riparian pine forest (39 scores). The lowest water retention potential was indicated for urban grassland (22 scores). Using natural vegetation to improve water retention in urbanized watershed represents a nature based solution.

Conclusions
Results of this study could help to link hydrologically oriented forest management measures with improved urban water retention planning.

Keyref
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Vilhar U (2017) Water Regulation and Purification. In: D Pearlmutter, C Calfapietra, R Samson, L O'brien, S Krajter Ostoić, G Sanesi, R Alonso Del Amo (eds), The Urban Forest. Cultivating Green Infrastructure for People and the Environment, Springer: pp. 41-47

June 1st, 11.30h PechaKucha presentation

#DOKTERBOS #DOCTORWOODS - A SOCIALMEDIA CAMPAIGN TO RAISE AWARENESS ON THE IMPACT OF NATURE, FOREST AND GREEN ON PUBLIC HEALTH AND WELL-BEING

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Rik De Vreese is projectcoordinator at BOS+ Vlaanderen. At BOS+, a Belgian environmental NGO on forests and trees, Rik is responsible for the theme "forests, trees & human health". Rik is constantly developing new projects, including LIFE and Interreg proposals. He is about to get a PhD on integrating social representations of nature and ecosystem services in land use planning and landscape management.

Objectives
This work is based on the knowledge to properly planning the particular values of these areas, in an environment where urban pressure on them should be strictly regulated. Our aim is to generate a debate analyzing the main functions of urban and peri-urban forests in sustainable development of the urban world, studying a particular case: Green Belt of the Lugo city (Spain). This question is complex because it involves different aspects –social, economic, and environmental–, being necessary that there is adequate coordination between all stakeholder groups (Sunderlin et al., 2005). On the other hand, urban forests and green open spaces have increasingly strategic importance for improving the quality of life in an entirely society urban (Chiesura, 2004). In fact, increasing evidence indicates that the presence of natural assets (e.g., urban and peri-urban forests, greenbelts) within an urban context, contributes to improve the quality of life in many different ways (Capotorti et al., 2017). In addition to essential environmental services such as purification of air and water, noise abatement, or stabilization of the microclimate, natural areas provide social services crucial to the livability of our cities and the welfare of its inhabitants (Chiesura and de Groot, 2003; European Commission, 2013).

Framework
#DokterBos (#DoctorWoods) is a social media campaign by the Flemish (Belgian) environmental ngo BOS+. Through posts on Twitter, Facebook and our website www.bosplus.be we raise public awareness on the positive impact of (urban) green, forest and nature in people's health and well-being. We bring news stories, facts and summaries of research output in a temptative way for the general public.

Results
Through the campaign we also bring the theme (higher) on the political agenda, and on the agenda of other sectors and actors (including the medical sector).

Conclusions
In the presentation we will bring the story of the campaign, and we will show the #DoctorWoods infograph.

Keyref
Chiesura, A., de Groot, R.S. (2003): Critical natural capital: A socio-cultural perspective. Ecological Economics 44: 219–231.

THE PUBLIC PARTICIPATORY PROCESS FOR THE NEW COLLSEROLA PLAN [PEPNAT]

Keywords: participatory process, communication strategies, PEPNat

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Founder Partner & Senior Director at MOMENTUM&co consulting team. Master in Industrial Engineering (Polytechnic School of Barcelona, 1976) and Master in Economic and Management Sciences (University of Barcelona, 1982). Post-graduate in ESADE "Business Strategic Communication". He has held various positions of responsibility in different public administrations (Generalitat de Catalunya, Metropolitan Area of Barcelona, and Barcelona City Council), and has been Vice-Manager of Services and Organization in the University of Barcelona. He is the founder (1997) of the management consulting team MOMENTUM&co, company specialized in Strategic analysis, Project Management and Agile methodology, in public administrations and Not for Profit Organizations and Networks.

Objectives
In addressing, the planning of a natural area located at the heart of a metropolitan urban area is essential to establish, from the early stages of the process, a dialogue with the citizenship. Likewise, it is also vital that this dialogue with the citizens extends to all stages of the process and to the subsequent management of the park.

Framework
The singularity of Collserola as a natural park, beyond its environmental values, lies on the wide range of interest that characterizes the space as well as the great knowledge that the citizens have of it. Designing an efficient participatory process to gather the views of this wide spectrum of interests and systematize the knowledge and opinions of the public is absolutely essential.

Results
The public participation process for the preliminary phase of the future enviromental plan PEPNat was conducted by MOMENTUM, a specialized company. The discussions focused around 11 topics and were organized in 14 sessions open to the public and 5 sessions for specialists in different fields. The process was attended by 285 participants. There were as well an option to participate through a virtual space embedded in the web of the Metropolitan Area of Barcelona. The suggestions amounted to 839.

Conclusions
This presentation focuses on the methodology of the process and it contains an analysis of the results of the participation together with the conclusions that derived from it.

Keyref
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SUSTAINABILITY & COMMUNICATION TOOLS IN URBAN FORESTRY

Keywords: certification, communication, governance

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MBA in Project Manangement and Forestry Engineer by Polytechnic Universiy Madrid, is since 2006 the Secretary General of PEFC Spain, She has a vast experience and knowledge in forest policy, having worked as International Forest Policy Adviser for the Ministry of Environment of Spain from 1999 until joining PEFC Spain. During the years 2011 and 2012 has been the Head of the Liaison Unit Madrid, the Secretariat of the Paneuropean Process "FOREST EUROPE", led by the European Ministers. International forest policy and its relationship with Forests ecosystems and Forestry occupies almost all of his professional activity in national and multilateral institutions (European Council, UN Bodies, FAO, ILO, European Commission, UN Conventions...). She began her professional career leading her own environmental consulting on the State of Spanish Forests and Forest conditions and the establishment and monitoring of health control and conservation networks in Protected Areas and National Parks Network Ana Belén Noriega has several technical publications on health and conservation of forests, Public Participation in Forestry, Non wood Forest Products, etc. very much appreciated in the sector.

Objectives

More than ever, the urban planners and decision-makers must face the challenge of ensuring that their cities are economically, socially and environmentally sustainable, resilient and capable of providing the ecosystem services needed by their citizens for a good quality of life. Urban Forestry is a crucial niche of nature to test the relevance of implementing Sustainable Forest Management (SFM) Criteria and Indicators (C&I) technically adapted to urban conditions. By these means it is facilitated and strengthened the link between urbanite dwellers and forests, raising awareness on good practices on urban areas and bridging these good practices with SFM on forests, leading to the promotion of connectivity paths between urban and rural areas Urban Forestry Certification is a major tool to communicate accomplishment of objectives through C&I. Moreover, Certification drive to a better governance and long-term commitments on sustainability based on planning.

Framework

PEFC International is working on how to respond to the certification of sustainable management of "trees outside of the forest", which include urban forests. The adaptation of forest certification and the criteria and indicators of sustainable forest management to urban forest spaces is the tool that allows to communicate and sensitize politicians and citizens of the environmental, social and economic importance of our forests and green spaces. A proposal for a Standard for Sustainable Urban Forest Management, analyzing the applicability of the indicators of each criteria of UNE 162.002 and their adaptability: Criterion 1: Global carbon cycle Criterion 2: Forest ecosystem health and vitality Criterion 3: Productive functions of forests (wood and non-wood) Criterion 4: Conservation and appropriate enhancement of biological diversity Criterion 5: Protective functions (notably soil and water) Criterion 6: Socio-economic functions and conditions

Results

This research will help to determine which indicators are applicable and/or relevant to this particular Urban Forest certification and which ones are not applicable or not relevant for Urban Forest certification or, in its case, the need of further indicators. PEFC Spain is working on a pilot experience to include the urban forest "Soto de Medinilla" (Valladolid) within the regional certificate of Castilla y León. This pilot experience is supported by CESEFOR, the LIFE + project "Quick Urban Forestation", PEFC International

and Junta de Castilla y León, as well as the City Council of Valladolid. Castilla y León, is the selected region to test on off-site and on-site applicability of the adapted set of SFM C&I given that is the biggest Spanish Regional certificate in hectares, around 700.000. This project envisages to pass a pilot audit with a partner certification body, AENOR and get their feedback on the results in an urban area. Previous public consultation processes will be undertaken, involving a qualified group of stakeholders, for a wider understanding and compliance.

Conclusions
This is a service provider-lead project, demonstrating how certification can be implemented in a green urban infrastructure. Ensuring the sustainability of urban forests requires a long-term monitoring so that the effects of management interventions can be evaluated and the achievements of management objectives can be assessed. Certification processes raise awareness on Municipality policies and provides information that can be easily communicated to citizens.

Keyref
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SOCIAL URBAN FORESTRY

Joachim Englert

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Joachim Englert studied forestry in Germany, during his studies in 2000 he worked in Brasil with homeless children making an environmental forest education trail. Between 2004-2012 he was responsable of projects with diferent collectives at risc of social exclusion in Barcelona. In 2013 he got self-employed and in 2014 Joachim founded SocialForest after getting the award from the Foundation "La Caixa" for Social Entrepreneurs. Actually he is the coordinator of SocialForest, a company that works with young people realizing professional training programms, sostenible forest management and forest coaching.

Objectives
In Barcelona the youth unemployment rate is about 52,6% (16-19 year old). A lot of this young people try to find a job in the service sector but there is a hight comptetion. On the other hand Barcelona has about 12% of green area and with the Natural Parc of Collserola about 8000ha of urban forest. This asreas also need a sotenible management. The company SocialForest combines with the social urban forestry the youth unemployment rate with the management of the green areas. The therapeutical factor of the forest and green areas helps to increase the social and professional integration.

Framework
The social urban forestry project pretends to reach a lot of young people and to create sostenible jobs for them and to increase the managed areas. The methods will be special training programms for the young people in urban forestry, the realization of management of the green areas and activities of public relations to rais awareness (importance of green areas in the cities for the people)

Results
The results are and will be the creation of job oppotunities for young people in realitonship with the management of the urban forest and the green areas (last year SocialForest created more than 12 job opportunities and trained about 50 young people) The study will use the acutual results of the social company Socialforest and also of other social companies working in this area in Barcelona Alos

Conclusions
The social urban forestry project has a big capability to create social inclusion and also to increase the local economy. An other contribution to the field of social and economic values is also the health improvement of the young people using the therapeutical value of the urban forest. The goal is to connect this two areas and to create a doble positive efect increasing the managed areas and decreasing the unemployment rate.

Keyref
Results of the company SocialForest Presentation of the urban forestry projects realized with young people at risc of social exclusion Results of the training programms with fundations and the Education Councill of Barcelona Colaborations with private and public institutions

URBAN COMMITMENT TO SPACES ON THE EDGE.

Keywords: Commitment; planning; transitions

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- 1991-to the present, attached to the Territorial Planning Department of Badalona City Council as an architect. Since 2001, she has been head of the Planning Department and the Urban Planning Office. - 1996-2000 Together with architect Francesc Peremiquel and the COAC (Catalan College of Architects): Organisation of the travelling exhibition "Urban Transformations" at COAC and writing-publication of the book "Urban Transformations". - Publication "Papers Sert" Housing, innovation and projects"

Objectives
The urban area of Badalona extends from the sea, with a 5 km coastline, to the mountains, with a woodland area spanning 3.5 km. While the city has historically expanded outwards towards the sea, thanks to topography and orientation, the woodland area has been forgotten. The area we present, inherited from the PGM (General Municipal Plan), is land that is approved for building around the Can Colomer site, covering some 20 hectares, above the B-23 highway, on land that transitions into natural spaces. The first attempt at a private sector initiative to develop the area by the majority owner of the land took place in 1998. After beginning the urban planning phase, the proposal to urbanise the entire area with detached single-family homes did not prosper due to opposition from other owners in the area.

Framework
Leading on from these events, the City Council stated the need to rethink the future of the areas yet to be developed as part of the PGM programme, evaluating its position on natural spaces in the search for a balance between preservation of the landscape and implementation of appropriate uses, all bearing in mind the will to leverage the potential number of houses that corresponded to these areas. In 2003, the opportunity to work on the land arose, this time with the will to reformulate urbanisation expectations, reducing residential deployment. In 2005, modification of the PGM began, in which the key was moving most of the residential housing generated by the sector approved for building to urban areas pending restructuring.

Results
The area retained a strip for housing, creating a coherent continuity with the contiguous district of Mas Ram, and the rest of the area was turned into a series of open spaces and public and private facilities that constitute the transition to Parc de la Serralada de Marina, organising recreational uses, making them compatible with the maintenance and enhancement of the landscape of open spaces.

Conclusions
Protection of an area of transition into natural space from urban pressures, without sacrificing urban development. Urban planning, a tool for compromise that balances the needs of the city to enjoy open spaces and private land rights.

Keyref
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HOW TO ENJOY ENVIRONMENT WITHOUT DISTURBING IT (MODULARITY, PROJECT, EDUCATION)

Antoni Casamor

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Toni Casamor (1961, Barcelona, Spain) is Architect graduated from the ETSAV-UPC Barcelona School of Architecture. In 1995 Toni Casamor sets up BCQ arquitectura barcelona with David Baena to develop projects and studies of architecture, landscape design and urbanism at all scales and dimensions. He has been Professor of architecture projects in main Schools of Architecture in Catalonia and abroad such as the ETH Zürich, the Università di Sassari in Alghero (Sardinia) the Anahuac del Sur University in Mexico and the McGill University in Montreal, Canada. Winner of the Premi Ciutat de Barcelona in 2015 for the Library Joan Maragall in Barcelona and the MIPIM 2013 Award for the Wastewater Treatment Plant in Maresme, his projects have been widely published in numerous European and international architecture publications and presented at lectures both nationally and internationally.

Objectives
Most of our natural parts and natural environments are near the cities. Even when they are not near urban territories there is usually a great interest from the general public to visit these sites. It is natural and good: People like natural environments and like to enjoy them. Our social values are also orientated for understanding natural environments as fantastic places for us. How can architects, planners and public institutions bring the facilities that people need without disturbing the places themselves? Would it be possible to take the environmental education out from the schools and bring it also to the forests, natural parts, beaches...?

Framework
The main point would be to show some simple and successful examples for soft interventions in natural spaces that allow public to enjoy or use nature but doesn't disturb the nature itself. They are basically two examples: -. The first ones are a collection of 'urban' furniture for walking, sitting, eating and being informed in forests, beaches, natural parts... -. The second one is a modular classroom called 'Aula K' o Aula de Natura for grouping the children once in a natural park for learning experimenting and enjoying nature. Both are modular and ecological, sustainable and are not built on site but built in workshop and transported and dropped on site without foundations.

Results
Experience in execution projects such as: - Riera de la Rovira watercourse arrangement and access path to the Llobregat River, Pallejà, Barcelona - Design of a modular element prototype intended for a classroom of environmental education, Santa Coloma de Gramenet, Barcelona - Urban development surroundings of Castle of Calafell multifunctional building, Calafell, Tarragona.

Conclusions
The conclusion is clear: It is possible to find an interesting way of intervening in natural environments using spacial designs that have to have a different vision that of urban designs. Modularity: Building 'objects' that can be transportable, reusable, flexible and removable. Sustainability: Using recycled materials or ready to be recycled, using water in a responsible way, having no emissions. Integration: Using vegetation and animals as a part of the project.

Keyref
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URBAN TREE INVENTORIES – WHAT TO DO WITH DATA

Johan Östberg

Objectives
We all know that urban trees contribute with a vast amount of ecosystem services, but to fully understand and be able to argue for these benefits we also need to focus on the ecosystem disservices and the problem that urban trees can cause. This presentation will therefor focus on the ecosystem services, and peoples concern with trees. The research question examined in the study was whether records of complaints/comments held at municipal park departments can be used as a source of knowledge on urban tree disservices

Framework
The presentation is based on a research project where all complaints concerning urban trees was recorded from tree municipalizes for one full year. This large data amount of data gives valuable information when trying to not only understand the ecosystem disservices, but also the perceived disservices that urban dwellers complain about.

Results
The most frequent disservices did not concern actual episodes, but rather the risk and fear of perceived likely episodes, such as the risk of personal injuries from falling trees or fear of crime. Although the trees concerned might never actually topple and crimes might never happen, fears affect people negatively. The notion of perceived disservices is a key result from this research and it should therefor effect how municipalities collect and work with complaints from citizens.

Conclusions
The conclusion of the research project was that the way that municipal databases are structured makes it problematic to, in a structured way, analyses and work with the complaints. The research also showed that ecosystem disservices, for the urban dwellers, mostly consist of perceived disservices, rather than actual disservices. By focusing on information many of these disservices could be completely avoided or at least substantially reduces, thereby creating a better understanding of the urban forest as a resource rather than a disservice.

Keyref
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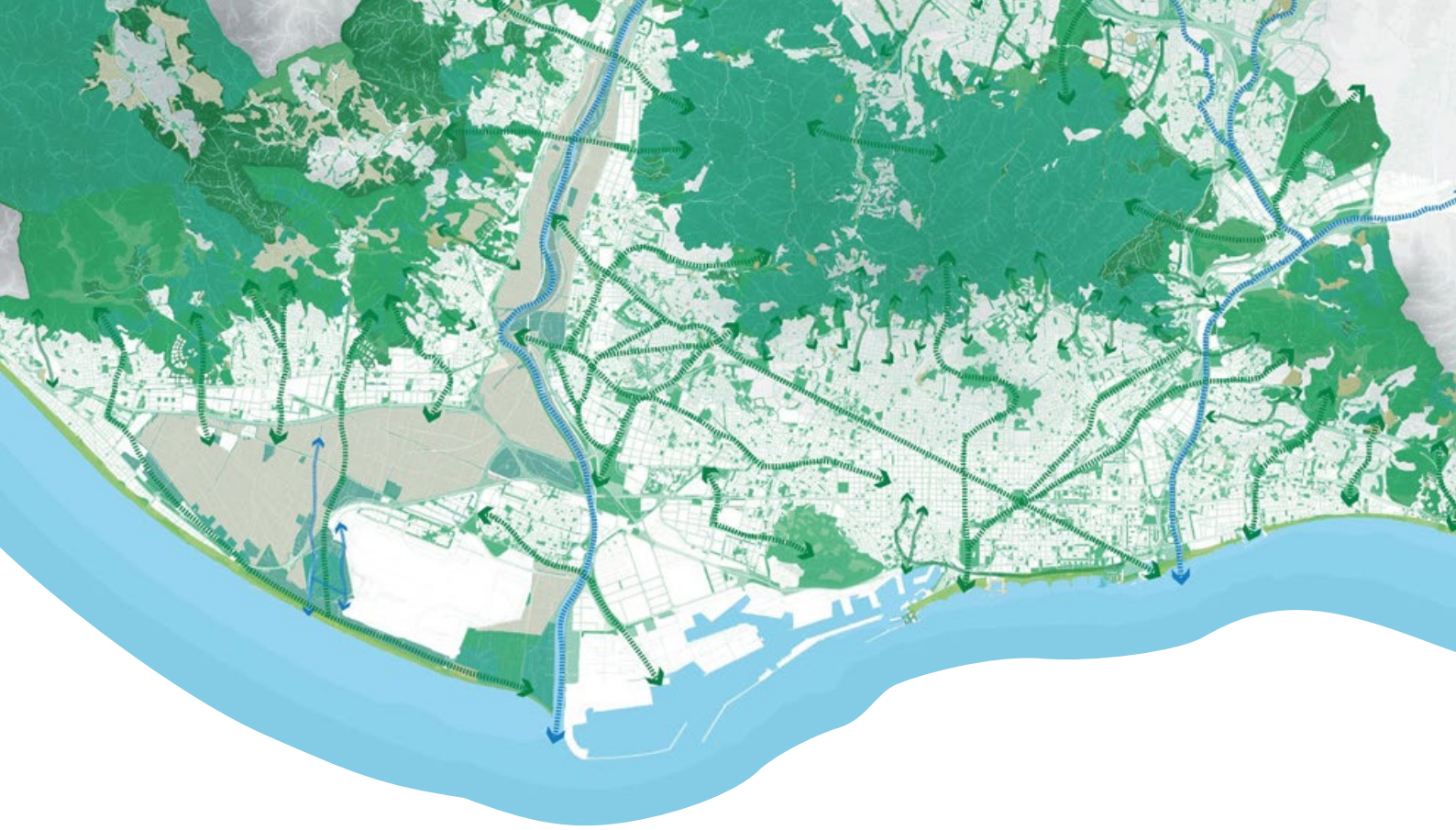

EFUF Atlas

URBAN FOREST BOUNDARIES

We invite you to collaborate in the EFUF Atlas, a tool collecting participatory projects, plans and initiatives on urban forest boundaries, in the context of the European Forum on Urban Forestry (EFUF).

The **EFUF Atlas** is a collective knowledge library in terms of open spaces, where proposals, social initiatives, management, ecological connectivity or landscape restoration projects are collected with a common purpose: highlighting the biophysical matrix of the territory, respecting the green infrastructure beyond the city limits and creating healthy and quality zones, boundaries and transition spaces.

The most significant publications will be displayed during the forum. Contributions provided may be good practices, projects, researchs, professional, academic or administrative plans or initiatives.

Please contact us for further information:

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