Mediterranean urban plant diversity

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Although most Mediterranean cities suffer from a lack of green space, urban areas house substantial amounts of biodiversity – both plant and animal. Urban green spaces include:

- areas of natural or semi-natural vegetation;
- managed spaces with cultivated vegetation such as parks and gardens;
- urban agriculture and horticulture; and
- informal urban green spaces such as wastelands or brown field sites which are largely colonized by weeds, ruderal plants and invasive species.
Urban habitats

**Built**
- Walls
- Buildings
- Paved areas
- Manufacturing and industrial
- Roads
- Quarries and mines

**Waste**
- Brownfields
- Landfills

**Aquatic**
- Wetlands
- Streams and rivers
- Ponds and reservoirs
- Sewage works

**Green**
- Lawns and gardens
- Roadsides
- Street trees
- Woodlands
- Parks
- Corridors
- Golf courses
Urban green space coverage in the Mediterranean
Source: Modified from Fuller & Gaston (2009)

Points representing cities are coloured according to proportional coverage by urban green space within the city. Country polygons are coloured according to per capita green space provision for its urban inhabitants. Data unavailable for countries shaded grey.
Inventory of urban plant diversity

The inventory of urban plant diversity is very uneven: for some cities such as Ioannina, Jerusalem, Montpellier, Naples, Patras, Rome, Sousse, fairly comprehensive inventories have been compiled but for most our knowledge is incomplete.

Many cities have published guides to their urban street trees but there is no overall compilation.

While the diversity of species grown in urban botanic gardens is usually well documented, we have little detailed information on the overall range of species grown in public parks and gardens and, with some exceptions, even less of those grown in private gardens.

Overall, it is likely that altogether several tens of thousands of plant species are grown in Mediterranean urban areas, representing a very substantial source of biodiversity.

Given the large growing percentage of city dwellers in the Mediterranean, it is important that much more attention should be paid to understanding and maintaining urban plant diversity which contributes substantially to human health and wellbeing.
A wide array of **natural or semi-natural vegetation** is found in Mediterranean cities, such as ecosystem fragments, reserves, nature parks, urban and peri-urban forests, and river banks, which house varying amounts of native species;

‘In all urbanized areas in the Mediterranean region, land-use modification and the consequent regrowth of forest and scrublands has led (especially in southern Europe) to new spatial configurations called ‘**wildland–urban interfaces**’ – areas where houses meet or intermingle with undeveloped wildland vegetation,...’. Corinne et al. (2007)
Genova, Italy, wildland-urban interface

Photo vhh
Nature and Countryside within the Urban Fringe
European Periurban areas: characterization and management recommendations
Montpellier

954 Ha public green spaces and parks,

233 Ha protected areas

17 Ha natural reserve
‘Lisbon Biodiversity 2020’ aims to protect and enhance Lisbon’s biodiversity. 18% of the city’s area is semi-natural. Of its 2,800 plant species, fewer than 10 percent are native. Lisbon is also part of ‘Green Surge’ study on urban green infrastructure planning and governance in 20 European cities.
Calanques National Park, Marseilles, France

- Calanques National Park (IUCN Category II) was created in 2012 as France’s tenth national park. It is located on the outskirts of Marseilles.
- It may be the only national park in Europe that adjoins a city and is both terrestrial and marine.
Parque Periurbano Dehesa del Generalife.
Author: Regional Government of Andalusia (Spain)
Urban and peri-urban forests (UPF)

- Urban and peri-urban forestry (UPF) has evolved in recent years as an ‘integrative, multidisciplinary approach to the planning, design and management of forest and tree resources in and around urban areas’ although it is relatively novel discipline especially in Mediterranean countries.

- In addition, there is a high diversity of UPF management styles, organizations, institutions, status, skills and expertise, responsibilities and decision making.
Four Mediterranean UPF approaches

- **Focus on management-oriented woodlands in and around towns** (central-northern European approach)
  Slovenia, Croatia, Romania & Turkey; to some extent: Israel & Morocco

- **Focus on less management-oriented urban parks and gardens**
  Algeria, Bulgaria, Cyprus, France, Lebanon, Malta, Spain & Tunisia; to some extent: Egypt, Greece and Morocco

- **Focus on the development of an ecological network of protected areas**
  Croatia, France, Greece, Italy, Portugal, Slovenia & Spain

- **Focus on the integration of all UPF approaches and related disciplines**
  France, Italy & Portugal; to some extent: Croatia, Greece, Slovenia & Turkey

Mount Hymettus (Oros Ymittos), Athens, part of the NATURA 2000 network.
Parc Natural de la Serra de Collserola, Barcelona
Managed spaces with cultivated vegetation

The main managed elements are:

- Municipal/public parks and gardens
- Private and domestic gardens
- Botanic gardens and arboreta
- Zoological parks and gardens
- Glasshouses and shade houses
- Landscaping of office blocks, residential apartment blocks, public buildings, university and college campuses, business parks,
- Golf courses
- Cemeteries
- Nurseries, garden centres
- Street trees
- Green roofs and living walls.
Parco delle Cascine, Firenze, Italy
Aerial view of Nezahat Gökyiğit Botanic Garden, Istanbul, Turkey
Shade house in private garden, near Valencia, Spain

Photo vhheywood
La Gardette Orangerie, Jardin des Plantes, Montpellier
Biosphere, Genoa, Italy
Street trees

Street trees are an important component of urban diversity with more than 55% of streets in a city like Madrid populated with trees, totalling altogether 300,000 specimens.

According to a recent study (Forman 2014), the number of trees varies from 2–22 per 100 people. Athens has the most trees per capita while Nice and Marseilles have the fewest.
Jacaranda street trees, Athens, Greece

Photo vhheywood
Bosco Verticale (Vertical Forest) is a project for metropolitan reforestation that contributes to the regeneration of the environment and urban biodiversity without the implication of expanding the city upon the territory. Bosco Verticale is a model of vertical densification of nature within the city. It is a model that operates correlated to the policies for reforestation and
Jardín Vertical Caixaforum, Madrid
Spontaneous living wall, Istanbul, Turkey
Urban agriculture & horticulture
Community Garden - Madrid, Spain - Marian Simon-Rojo
The DAUME project analyzes the dynamics and methods of governing agriculture in the urban and peri-urban regions in the Mediterranean. The challenge is to integrate agriculture with urban development in the practices of regional organizations and in local public policy over the long term. Ten teams of the project will conduct a comparative analysis of five terrains: the urban area of Montpellier, the plain of Pisa, the Leziria do Tejo near Lisbon, the peri-urban spaces of Meknes and the metropolitan area of Constantine.
URBAN AGRICULTURE CASABLANCA

DESIGN AS AN INTEGRATIVE FACTOR OF RESEARCH

Edited by Undine Giseke
Martim Moniz Square, Lisbon

Photo: Câmara Municipal de Lisboa
Informal urban green spaces

- Examples are: window boxes, pot plants in streets, wastelands or brown field sites which are largely colonized by weeds, ruderal plants and invasive species.
Some great biological potentialities but unappreciated
An advisability for citizens to take a part in a project through inventories
The elements of this plan:
▶ To affirm the presence of the nature in the city
▶ To change the picture of these areas as abandoned
▶ To save the biodiversity of these areas
▶ To inform, educate and aware of

The wastelands become integrated into the green network

Chania, Crete, street scene.

Photo vhh.
Streetscape, Ortigia, Siracusa, Sicily
Photo V H Heywood
The sometimes unwelcome visitors

Ipomoea indica, Soller, Mallorca, Spain

Photo vhheywood