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Mediterranean plants in a culturally mediterranized American City

Abstract

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It's analysed, the ornamental flora inserted in Montevideo city (Uruguay). The green areas inside the city are prevalently distributed in a fragmented way and just a few cases result in valuable extension.

Either urban parks or private gardens, and mostly the avenues and Boulevards trees are characterized by *Enterolobium contortisiliquum*, *Schinus molle*, *Erythrina crista-gallii*, *Acacia caven*, *Peltophorum dubium*, *Jacaranda ovalifolia* var. *mimosaefolia*, *Platanus acerifolia*, *Gingko biloba*, *Chorisia speciosa*, *Ulmus procera*. Inside the palms group, other than the indigenous *Butia capitata* and *Arecastrum romanzoffianum* is frequent *Phoenix canariensis*. In some points is notable *Phytolacca dioica* presence. Mediterranean and Mediterranean Atlantic component has a complementary role. The most common ligneous species are *Cupressus sempervirens*, *Cedrus atlantica*, *C. libani*, *Pinus pinea*, *P. pinaster* as well as *Fraxinus angustifolia*, *Olea europaea* var. *europaea*, *Quercus ilex*, *Laurus nobilis*, *Cercis siliquastrum*, *Chamaerops humilis*, *Ligustrum vulgare*, *Nerium oleander*, *Tamarix africana*, *Lavandula officinalis*, *Rosmarinus officinalis*, *Buxus sempervirens*, *Viburnum tinus*. As herbaceous forms, the most representative are *Vinca major* and the symbolic *Achanthus mollis*.

Even if those Mediterranean elements are secondary in the complex, they are a particular expression of a clearly visible cultural heritage from the community of Montevideo's people original countries.

Introduction

Montevideo, capital of Uruguay, was established in 1724–1726 in opinion of different authors, by Bruno Mauricio de Zabala under the Spanish kingdom, with Felipe V. Was born as the main port of South America because its deep natural bay formed with an elongated peninsula un the La Plata river. It's a city of straight and spacious streets dressed in green. Its first complete urbane plan was proposed by an Italian architect, Carlos Zucchi, in 1839 modifying the antique design.

Is situated on the north edge of La Plata River, 34° 54' 33" latitude and has an area of about 20 km^2. It has 1300000 inhabitants mostly of Mediterranean origin specially Italian and Spanish who were in 1900 the 67% of the immigrant population and the 40% of the total.

In the context of the colonization process in Montevideo, it's analyzed the significance of the Mediterranean flora elements as an expression of the cultural exchange between

Europe and South America and also the structure and organization of the most important green areas in the city.

Materials and methods

It was done a survey of the ornamental species in the Montevideo principal open green areas as Boulevards, Avenues, Squares, Parks, and some private gardens.

The climate is rainy moderated temperate, with wet atmospheric conditions. Has behaviour of estuary with a special microclimate which may be flown by the southern wind (Table 1.)

Table 1. Climate data of Montevideo City.

Annual media rain (L/m^2): 1189,9			Absolute T max (°C): 34,4	
Total days with rain/year: 112			Absolute T min (°C): - 1,4	
			Media T (°C): 17,2 °C	
Wind regime in m/sec.				
Autumn	Winter	Spring	Summer	Media
5,3	3,2	6,0	6,0	5,12

The green areas inside the city are prevalently distributed in a fragmented way and just a few cases result in valuable extension. All public green areas include 300000 trees and 20000 of them are in the pedestrian lines of the streets.

The total surface of public use green areas in Montevideo is 7562 hectares and the extension of the different typologies is reported in Table 2.

Table 2. Extension of the green public areas of Montevideo.

Area	Surface in hectares
Parks	1599
Squares and others small green places	600
Forests	5240
Sandy beach resorts	123

Results and conclusion

Either urban parks or private gardens, and mostly the avenues and Boulevards trees are characterized by *Enterolobium contortisiliquum* Morong (Artigas tree), *Schinus molle* Hort. Ex Engl., *Erythrina crista-gallii* L. (the national flower tree), *Acacia caven* Molina, *Peltophorum dubium* Taub. (Artigas tree), *Jacaranda ovalifolia* R. Br. var. *mimosaefolia*, *Platanus acerifolia* Wild., *Grevillea robusta* A. Cunn., *Gingko biloba* L., *Taxodium distichum* H. B. & K., *Chorisia speciosa* St. Hil., *Ulmus procera* Mill.

In the palms group, other than the indigenous components *Butia capitata* Becc. and

Fig. 1. Municipal Botanic Garden of Montevideo: evident (on the left side) *Cupressus sempervirens.*

Arecastrum romanzoffianum Becc., *Phoenix canariensis* Hort. Ex Chabaud is in high frequency. In some points is notable *Phytolacca dioica* L. presence (Commonly named "Ombú"). Mediterranean and Mediterranean Atlantic component has a complementary role. The most common ligneous species are *Cupressus sempervirens* L., *Pinus pinea* Gord., *P. pinaster* Bess. (spontaneous on the coast because it has been seeded in the past, with the purpose of fixing dunes, by aerial seeding), as well as *Cedrus atlantica* Manetti, *C. libani* Barrel, *Fraxinus angustifolia* Reut ex Nym, *Olea europaea* var. *europaea* L., *Quercus ilex* L., *Laurus nobilis* Cav., *Cercis siliquastrum* L., *Chamaerops humilis* L., *Nerium oleander* L., *Ligustrum vulgare* L., *Tamarix Africana Bory &* Chaub., *Buxus sempervirens* L., *Viburnum tinus* L., *Lavandula officinalis* Chaix, *Rosmarinus officinalis* L. As herbaceous forms, the more representative are *Vinca major* Brot., and the symbolic *Achanthus mollis* Graf & Noe, ex Nees. Complete list of visualized species in the survey are detailed in Table 3.

The example of the Municipal Botanic garden (Fig. 1), more than having an ornamental function, works as an important centre for studies in gardening. Founded in 1902, has an actual size of 13 hectares and more of 1000 species. One of the organization criteria in the garden is the natural distribution. As an example, the indigenous sector as privileged, the African sector, the European sector and the North American sector. There is a Botanic museum with dry fruits collection, woods collection (some petrified) and water colour design panels.

The management and plant care follows international agreements. Examples are let grow with natural expression (lightly pruned) and live without irrigation as their adaptation

capacity. Foreign species are grown from seeds with initial special care; Tropical plants grow in a greenhouse, Subtropical and Mediterranean ones grow in open field.

Other green areas are the Park of the Faculty of Agronomy, Fructuoso Rivera and Tompkingson Parks.

The more relevant examples of green areas are the Municipal Botanic Garden, José Batlle y Ordóñez Park and Rodó Park and particularly significant are the central gardens in General Artigas boulevard and also Italia avenue which is the longer avenue in the city.

In Montevideo green areas, the indigenous component makes the notorious statement.

This is opposite to what happens in Mediterranean cities where the indigenous component is limited, in relation to the exotic component. Even if the Mediterranean elements are secondary in the complex, they are a particular expression of a clearly visible cultural heritage from the original countries of the Montevideo's people community.

Table 3. Taxa list of the ornamental flora in Montevideo City.

SPECIFIC AND INFRASPECIFIC TAXA	FAMILY	ORIGIN
Acanthus mollis L.	*Acanthaceae*	Mediterranean
Acer negundo L.	*Aceraceae*	N. America
Agave americana L.	*Agavaceae*	Mexico
Cordyline indivisa (Forst.) Steud.		New Zealand
Furcraea roezlii Ed. Andre		Mexico, C. America
Furcraea selloa C. koch		
Furcraea selloa C. koch 'Marginata'		
Phormium tenax Forst. & Forst.		New Zealand
Yucca elephantipes Reg.		C. America
Aloe arborescens Mill.	*Aloaceae*	S. Africa
Clivia miniata Reg.	*Amarillydaceae*	S. Africa
Crinum sp.		
Schinus molle L.	*Anacardiaceae*	Indigenous
Nerium oleander L.	*Apocynaceae*	Mediteranean
Vinca major L.		N. E. Asia, Caucasus
Illex aquifolium L.	*Acquifoliaceae*	W. Europe, W. Asia, N. Africa (Mediterranean?)
Philodendron undulatum Engl.	*Araceae*	Brazil (Mato Grosso), Paraguay
Philodendron bipinnatifidum Endl.		S. E. Brazil
Zantedeschia aethiopica (L.) Spreng.		S. Africa
Hedera canariensis Willd.	*Araliaceae*	Europe
Hedera canariensis 'Variegata'		Mediterranean
Hedera helix L.		Mediterranean
Araucaria angustifolia Bertol.	*Araucariaceae*	S. Brazil, N. Argentina
Araucaria bidwillii Hook.		Australia
Araucaria columnaris Hook.		Australia
Araucaria heterophylla (Salisb.) Franco.		Norfolk Islands (Pacific)
Asparagus setaceus (Kunth) Jessop.	*Asparagaceae*	Africa
Berberis thumbregii D. C. 'Artropurpurea' Chenault.	*Berberidaceae*	Japan
Berberis vulgaris L.		Europe, N. America
Jacaranda ovalifolia D. Don. 'Mimosaefolia'	*Bignoniaceae*	Brazil, Argentina
Chorisia insignis Kunth.	*Bombacaceae*	Peru, Argentina
Chorisia speciosa A. St. Hill.		Brazil, Argentina
Buxus sempervirens L.	*Buxaceae*	S. Europe, W. Asia, N. Africa
Bauhinia candicans Link	*Caesalpinaceae*	Indigenous
Cercis siliquastrum L.		Mediterranean
Gleditsia triacanthos L.		N. America
Peltophorum dubium Vogel		Indigenous
Viburnum tinus L.	*Caprifoliaceae*	Mediterranean, S. Europe, N. Africa
Casuarina cupninghamiana Miq.	*Casuarinaceae*	Australia
Casuarina verticillata Lam.		Australia
Euonymus japonicus Thunb.	*Celastraceae*	Japan

Table 3. (continued).

Cistus albidus L.	*Cistaceae*	Mediterranean (S.W. Europe)?
Cistus incanus L.		Mediterranean (S. Europe)?
Aspidistra elatior Blume.	*Convalariaceae*	China
Cupressus lusitanica Mill.	*Cupressaceae*	Mexico
Cupresus macrocarpa Hartw. ex Gordon		California
Cupressus sempervirens (Mill.) Voss. 'Horizontalis'		Mediterranean
Cupressus serpervirens 'Pyramidalis'		Mediterranean
Juniperus barbadensis L.		Bermuda Islands (Barbados to Cuba and Bahamas)
Juniperus communis L.		Europe, Asia
Juniperus sabina L. 'Tamariscifolia'		S. Europe, Caucasus, Asia Minor, C. Asia,
Juniperus sabina L. 'Cupressifolia'		W. China
Juniperus virginiana L. 'Albospica'		E. N. America
Platycladus orientalis (L. f.) Franco.		W. China, N. Korea, N.E. Iran
Cycas revoluta Thunb.	*Cycadaceae*	Asia
Arbutus unedo L.	*Ericaceae*	Mediterranean (S. Europe, S. W. Ireland, Asia Minor)
Artiplex halimus L.		S. Europe, Africa
Rhododendron indicum (L) Sweet.		Japan
Lonchocarpus nitidus Benth.	*Fabaceae*	Indigenous
Quercus ilex L.	*Fagaceae*	Mediterranean
Quercus robur L.		Europe, USSR
Quercus suber L.		Mediterranean
Ginkgo biloba L.	*Ginkgoaceae*	Asia
Arundo donax L.	*Gramineae*	Mediterranean
Phyllostachis aurea (Carr.) A. & C. Riv.		Asia
Hypericum grandiflorum Choisy	*Hipericaceae*	Canary Islands, Madeira
Aesculus hippocastanum L.	*Hippocastanaceae*	Mediterranean
Hydrangea macrophylla (Thumb.) Ser.	*Hydrangeaceae*	China, Japan, Himalaya, Philippines, Indonesia, N. S. America
Cinnamomum camphora L.	*Lauraceae*	Asia
Laurus nobilis L.		Mediterranean
Lavandula angustifolia Mill.	*Labiatae*	Mediterranean
Phlomis ferruginea Ten.		Italy, Greece
Phlomis fruticosa L.		Mediterranean
Rosmarinus officinalis L.		Mediterranean
Hemerocallis fulva.	*Liliaceae*	E. Asia, China, Japan
Ruscus aculeatus L.		W. Asia, N. Africa, Europe (Mediterranean)?
Ruscus hypoglossum L.		S. Europe
Magnolia grandiflora L.	*Magnoliaceae*	N. America
Magnolia stellata (Siebold & Zucc.) Maxim.	*Magnoliaceae*	Japan
Hibiscus rosa-sinensis L.	*Malvaceae*	China
Tibuchina semidecandra Cogn.	*Melastomataceae*	S. America
Melia azedarach L.	*Meliaceae*	India, China
Acacia caven (Mol.) Molina.	*Mimosaceae*	Indigenous
Acacia dealbata Link		Australia
Acacia farnesiana L.		Tropical America
Acacia melanoxylon (R.) Br.		Australia
Calliandra tweedii Benth.		Indigenous
Enterolobium contortisiliquum (Vell.) Morong.		Indigenous
Ficus elastica Roxb. ex Hornem.	*Moraceae*	E. Asia
Ficus benghalensis L.		S. Asia
Ficus luschnathiana (Miq.) Miq.		Indigenous
Morus alba L.		China
Myoporum tetrandrum Labill.	*Myoporaceae*	Australia, New Zealand, Europe, Asia
Callistemon citrinus (Curtis) Skeels.	*Myrtaceae*	Australia
Eucalyptus camandulensis Dehnh.		Australia
Eucalyptus globulus Labill.		Australia
Eucalyptus occidentalis Endl.		W. Australia
Eugenia uniflora L.		Indigenous
Feijoa sellowiana O. Berg.		Indigenous
Myrcianthes cisplatensis (Camb.) Berg.		Indigenous
Myrcianthes pungens (Berg.) Legr.		Indigenous
Myrrhinium lorantoides (Hook. & Arn.) Burret.		Indigenous
Myrtus communis L.		Mediterranean

Table 3. (continued).

Bouganvillea glabra Choisy.	*Nyctaginaceae*	Brazil
Fraxinus angustifolia Vahl.	*Oleaceae*	Mediterranean
Fraxinus excelsior L.		Europa
Fraxinus ornus L.		Mediterranean
Fraxinus pennsylvanica Marsh.		N. America
Ligustrum lucidum W. T. Aiton		China, Japan
Ligustrum vulgare L.		Mediterranean
Jasminum humile L.		China
Jasuminum fruticans L.		S. Europe, N. Africa
Jasuminum mesnyi Hance.		W. China
Jasuminum wallichianum Lindl.		Nepal
Jasminum officinale f. *grandiflorum* (L.) Köb.		Asia
Olea europaea L. 'Europaea'		Mediterranean
Archontophoenix cunninghamiana H. A. Wendl. & Drude	*Palmaceae*	Australia
Arecastrum romanzoffianum (Cham.) Glassaman.		Indigenous
Butia capitata (Mart.) Becc.		Indigenous
Butia yatay (Mart.) Becc.		Indigenous
Chamaerops humilis L.		Mediterranean
Howea forsteriana (C. Moore & F. Muell.) Becc.		Lord Howe Island (S. Pacific)
Phoenix canariensis Chabaud.		Canary Islands (Atlantic)
Phoenix reclinata Jacq.		Senegal
Trachycarpus fortunei H. Wendl.		China, Japan
Washingtonia filifera (Linden) H. Wendl.		S. W. N. America, Mexico
Washingtonia robusta Wendl.		California
Genista monspesulana (L.) Johnson	*Papilionaceae*	Mediterranean, Canary Islands
Retama monosperma (L.) Boiss.		Mediterranean
Spartium junceum L.		Mediterranean
Erythrina crista-galli L.		Indigenous
Wisteria sinensis (Sims). Sweet.		China
Tipuana tipu (Benth.) Kuntzel.		Brazil, Argentina, Bolivia
Robinia pseudacacia L.		N. America
Phytolacca dioica L.	*Phytolaccaceae*	Indigenous
Cedrus atlantica (Endl). Carr.	*Pinaceae*	Mediterranean
Cedrus deodara (D. Don.) G. Don.		Himalaya
Cedrus libani A. Rich.		Mediterranean
Pinus canariensis C. Sm.		Canary Islands (Atantic)
Pinus mugo 'Compacta'		–
Pinus mugo Turra. 'Pumilo'		C. Europe, Balkan peninsula
Pinus pinaster Aiton		Mediterranean
Pinus taeda L.		S. E. U.S.A.
Pinus pinea L.		Mediterranean
Pinus radiata D. Don.		California
Pinus strobus L.		N. America
Pittosporum tobira Aiton	*Pittosporaceae*	China, Japan
Pittosporum tobira Aiton 'Variegata'		China, Japan
Platanus acerifolia (Aiton) Willd.	*Platanaceae*	Unknown
Platanus occidentalis L.		N. America
Plumpago auriculata Lam.	*Plumbaginaceae*	S. Africa
Grevillea robusta A. M. Cunn. ex R. Br.	*Proteaceae*	Australia
Punica granatum L.	*Punicaceae*	E. Mediterraneum to Himalaya
Punica granatum 'Nana' (L) Pers.		–
Paliurus spina – Christi Mill.	*Rhamnaceae*	S. Europe to C. Asia, N. China
Crataegus monogina Jacq.	*Rosaceae*	Europe, N. Africa, Himalaya
Crataegus oxyacantha L.		Europe, N. Africa
Eriobotrya japonica (Thunb.) Lindl.		Asia
Pyracantha coccinea Roem.		Asia
Prunus amygdalus 'Albo-plena' Stokes		–
Prunus blireana André.		–
Prunus persica L. (Batsch.) 'Magnifica'		–
Prunus serrulata Lindl.		China
Quillaja brasilensis (St. Hil.) Mart.		Indigenous
Rosa banksiae Aiton		China
Rosa sp.		China
Spiraea cantoniensis Lour.		China, Japan

Table 3. (continued).

Gardenia augusta (L.) Merrill.	*Rubiaceae*	China, Taiwan, Japan
Ruta angustifolia Pers.	*Ruthaceae*	Mediterranean
Populus nigra L. 'Italica' *Populus tremula* L. *Populus alba* L. *Salix babylonica* L.	*Salicaceae*	W. Europe., N. Africa, USSR N. W. Europe, N. Africa, USSR S. C. E. Europe, N. Africa, C. Asia Asia, China, Manchuria
Brunfelsia australis Benth.	*Solanaceae*	S. Brazil, Paraguay, Argentina
Brachychiton populneum R. Brown.	*Sterculiaceae*	Australia
Strelitzia reginae Banks. ex Dryand. *Strelitzia alba* (L.) Skeels.	*Strelitziaceae*	S. Africa Cape province
Tamarix africana Poir.	*Tamaricaceae*	Mediterranean, N. Africa, Canary Islands (Atlantic)
Taxus cuspidata Sieb. & Zucc.	*Taxaceae*	Japan, Siberia, Manchuria
Taxodium distichum (L.) Rich.	*Taxodiaceae*	N. America
Tilia "Moltkei"	*Tiliaceae*	_
Ulmus procera Salisb.	*Ulmaceae*	England
Citharexylum montevidense (Spreng.) Mold. *Lantana camara* L.	*Verbenaceae*	Indigenous Indigenous

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