Design for biodiverse urban landscapes: Connecting place-making to place-keeping[1]

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Abstract

Conservation and enhancement of biodiversity inside cities are increasingly acknowledged as important as well as urgent issues. To date, several landscape planning and design paradigms have been set up for the creation of biodiverse urban landscapes. However, only few of such paradigms adequately stress the necessity to focus both on the 'place-making' dimension, namely the planning and design phase, and on the 'place-keeping' dimension, namely the management phase. The latter is often conceived as the final and separate phase of the creative process. On the contrary, to pursue an effective urban biodiversity conservation and enhancement, 'place-keeping' should act as a framework both for planning and design actions and for all those actions related to long-term open space management, such as maintenance, evaluation, and governance. The integration of these 'material' and 'immaterial' actions is crucial for the effectiveness of every landscape projects, but even more for projects explicitly addressed at improving urban biodiversity through the design of new urban habitats. In this article, we present a successful case of design of a new urban wetland habitat situated along the Spanish coast, the Charca de Suárez. Both landscape design choices and management actions are presented. We argue that an important driver of the Charca success is the actual embedding of 'place-making' dimension into the 'place-keeping' dimension – which has been conceived as long-term management of the site – and the consequent effective integration between scales, tools, actors and disciplines.

Keywords

Urban biodiversity, landscape design, place-keeping, long-term management, urban wetlands

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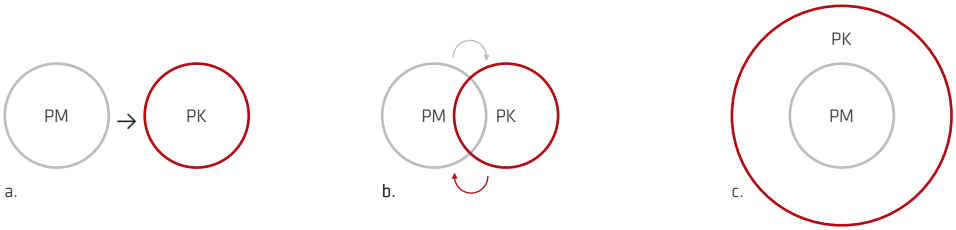
A long-term management approach for the design of new urban habitats

On the wave of the now established awareness of the multiple values of biodiversity – as officially stated at international level, since the Nineties, by the Convention of Biological Diversity, CBD (1992) – in the recent years the conservation of urban biodiversity has gained increasing attention, both from the policy side, inside the CBD itself (Müller and Werner, 2010) and as a focus of relevant scientific and academic studies (Farinha-Marques et al., 2011). Addressing biodiversity conservation inside cities is seen not only as a matter of urgency, to preserve the intrinsic value of biodiversity from urbanization impacts, but also as a matter of opportunity, to preserve the instrumental value of biodiversity. Indeed, urban biodiversity – namely ''the variety and richness of living organisms (including genetic variation) and habitat diversity found in and on the edge of human settlements'' (Müller, 2010) – underpins the delivery of a wide range of provisioning, regulating and cultural ecosystem services and deeply influences human health and well-being (Miller, 2008; Zari 2018).

Operational paradigms such as urban ecological networks (Hamid and Tan, 2017), green infrastructures (Ignatieva and Ahrné, 2013) and, more generally, nature-based solutions[2], are becoming, not without operational challenges, important references for landscape planning in urban contexts, to promote the conservation and enhancement of biodiversity values inside cities. The link between urban biodiversity and the landscape architecture scale has been investigated as well (e.g. Musacchio, 2008; Felson, 2013) and several operational paradigms aimed at integrating biodiversity values into landscape design of urban open spaces have been set up (see, among the others, 'Reconciliation Ecology', in Rosenzweig, 2003, 'Ecosystem Service approach', in Windhager et al., 2010, 'Unintentional Landscapes', in Gandy, 2016, 'Biodiversity Sensitive Urban Design', in Garrard et al., 2018, 'Biodiversinesque style', in Ignatieva, 2018).

In order to pursue an effective urban biodiversity conservation and enhancement (e.g. through the creation of new urban habitats), some of the latter paradigms conceived for landscape design action – especially the 'Reconciliation Ecology' and the 'Biodiversity Sensitive Urban Design' ones – stress the need of focusing both on the 'place-making' dimension, namely the planning and design phase, and on the 'place-keeping' dimension, namely the management phase. Actually, in the field of urban landscape planning and design practices, the im-



portance of place-keeping, though widely acknowledged, is not always put into practice:

> large amounts of capital continue to be spent on creating public spaces without adequate thought or resources for their long-term maintenance and management of public spaces, or place-keeping (Dempsey and Burton, 2012, p. 11)[3].

This phenomenon is also related to a still wide understanding of 'place-making' and 'place-keeping' as separated phases, or at most interlinked through a hierarchical and linear structure in which management is just the 'end-phase', after the planning and design phases (Fig 1a). On the contrary, 'place-making' and 'place-keeping' should be seen as deeply intertwined phases, involved in a continuous feedback process (Randrup and Persson, 2009), since spatial choices are often implemented considering management possibilities and restraints and, in turn, management actions can deeply affect the quality of spatial choices (Fig. 1b).

In this article we try to make an additional step in the direction which we believe was clearly traced by Dempsey and Burton's theory (2012), when it defined 'place-keeping' as "the long-term management which ensures that the social, environmental and economic quality and benefits the place brings can be enjoyed by future generations" (p. 13). According to this temporal perspective of long-term management, 'place-making' is not only strictly related to 'place-keeping', but it is conceived as a subset of 'place-keeping', namely as the "creation or re-creation, renewal or regeneration of place that occurs *within* the longer-term process of place-keeping" (pp. 14-15). This interpretation does not mean 'place-making' as less significant, but it 'relocates' its function within a long-term approach to the design of open spaces (Fig. 1c). Thus, according to this perspective, 'place-keeping' acts since the beginning of the creative process as an overall framework both for planning and design actions and for all those actions related to long-term open space management (Dempsey et al., 2014). These actions entail not only the physical maintenance of places but also monitoring and evaluation actions, as well as, more generally, the setting up of governance frameworks (Jansson et al., 2018).

All these aspects of the creative process – planning, design, maintenance, evaluation and governance – and their integration according to a long-term management approach are crucial for the effectiveness of every landscape projects, but even more for those projects explicitly addressed at improving urban biodiversity through the design of new urban habitats. The design of new habitats in urban and peri-urban contexts entails specific spatial choices, mostly connected, besides aesthetic instances, to func-

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Fig. 1 – Figure 1. Place-making (PM) and place-keeping (PK) in their different, possible relationships: a) PK as a consequent and separate phase from PM; b) PK as an consequent phase but strictly intertwined with PM in a feedback process; c) PK as the overall framework that acts since the beginning of the creative process and embeds PM as a part of the process. Source: authors, adapted from Dempsey and Burton, 2012.

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Fig. 2 – The Charca de Suárez. Source: Local Council of Motril.

Fig. 3 – The Vega del Guadalfeo in the XVIII century (1722): the agricultural areas and the acequias network. Source: Simancas General Archive (in Fábregas et al. 1996).

tional criteria such as the typology of the habitats to be recreated, the context's constraints (e.g. granting spatial connectivity is one of the main challenges in designing habitats in high human density areas), and the kind of nature-people interaction to be fostered (e.g. a more open interaction that allows a free use of the area, or a more regulated interaction that entails the design of specific pathways). However, the design of new habitats in urban areas requires also a careful management process, at least with relation to the following main aspects. Firstly, in case of habitat re-creation, there is not only a need of constant spatial maintenance, in order to upkeep the area's environmental quality and to assure the habitat functioning, but also a need of evaluating, through monitoring, the actual area's biodiversity conditions. Secondly, when new habitats are built and inserted in existing urban contexts, new ecological functions and pre-existing ones (e.g. residential, touristic, or agriculture functions) have to closely cohabit and this can cause social conflicts. This is even more true if the pre-existing functions are limited in order to foster the new ecological ones. Thus, conflict management should be addressed, and, more generally, an appropriate governance model[4] should be implemented to sustain the project's effectiveness.

In this article, we are going to present an example of a long-term management approach to the design of an urban wetland habitat situated along the Spanish coast (the Charca de Suárez), where 'place-making' has been effectively embedded inside a 'place-keeping' perspective.

Coastal wetlands are becoming increasingly rare in the Mediterranean Region, where 50% of total wetlands have already disappeared in the past century (MWO, 2014). This is largely due to the unrestrained process of urbanization that has affected the coastal Euro-Mediterranean region since the second post-world war period (Benoit and Comeau, 2005; EEA, 2006). With specific reference to Spain, the Sustainability Observatory (OS, 2016) highlights that the current percentage of the artificialized coast is between 50-80% in the first 500 m in most of the Mediterranean coastal regions. The seriousness of the situation is evident if we consider the multiple benefits provided by wetlands, in terms of ecosystem services (Boyer and Polasky, 2003; MEA, 2005; De Groot et al., 2006).

To this regard, there is a growing interest in the role of wetlands located in urban contexts because of their potential role in fostering adaptation to climate change (e.g. through carbon storage) and disaster risk reduction (e.g. through storm and flood protection), as well as in improving the well-being

and quality of life of urban dwellers (Manuel, 2003; EEA, 2012; Murti and Buyck, 2014; Haase, 2017; Pedersen et al., 2019). However, even if there is a growing number of projects aimed at the regeneration or creation of urban wetlands, the design of wetlands in urban context still constitutes a challenge (Ehrenfeld, 2000), mainly due to the pressure of real-estate, social acceptance issues (connected to the overstated connection between wetlands and infectious diseases), and the evident constraints deriving from intensively built-up contexts (see urbanization impacts such as water pollution, alteration of hydrology sources and flows, fragmentation of habitats).

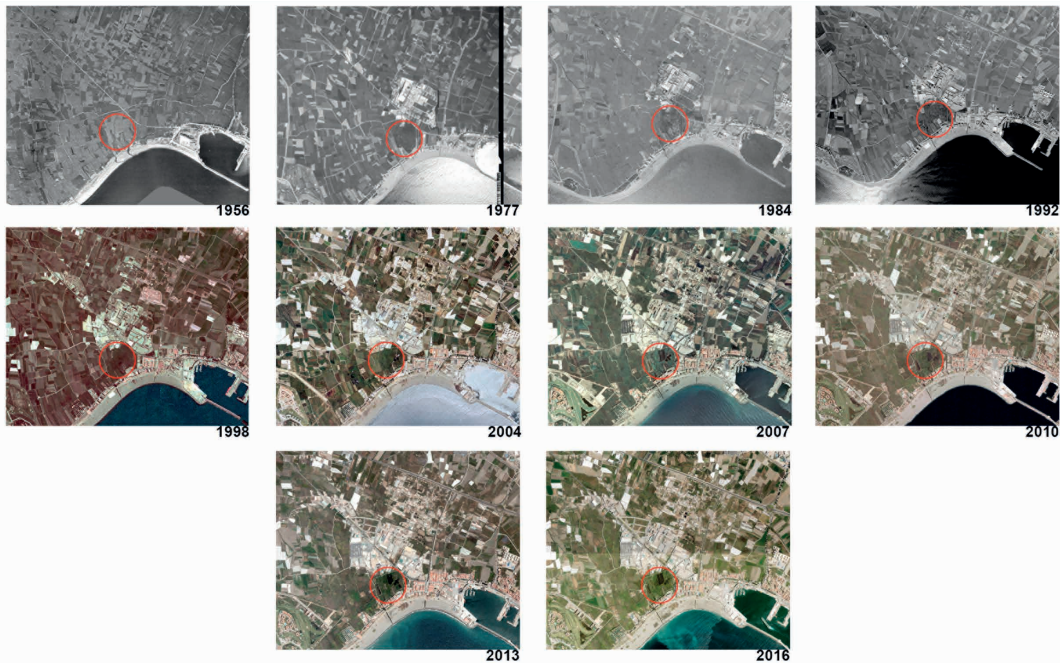
The project developed in the Charca de Suarez tried to address these challenges and nowadays we can appreciate the first and important results in terms of both biodiversity enhancement and life quality improvement.

The Vega del Guadalfeo landscape

The Charca de Suárez (henceforth 'the Charca') is a wetland of approximately 14 ha, situated along the coast of the Granada Province, bounded on the south by the littoral residential part of the Municipality of Motril (Coast of Granada, Spain) and on the north by an industrial site in the same Municipality (Fig. 2). Because of its location and territorial features, it can be actually defined both as a coastal wetland[5] and as an urban wetland (Ehrenfeld, 2000). The Charca is set in a delta known as Vega del Guadalfeo. A vega is a type of Mediterranean huerta

(Meeus, 1995; Mata and Fernández, 2004), an agricultural floodplain considered as a peri-urban, agricultural landscape (Pérez-Campaña and Valenzuela-Montes, 2018), usually linked to historical irrigation systems from the Muslim or Roman period (Trillo, 2005; Hermosilla and Iranzo, 2010). The origin and evolution of the Charca cannot be separated from the origin and evolution of the Vega del Guadalfeo itself. The delta has originated, through a millennial process, from the progressive accumulation of the sediments carried by the Guadalfeo river. In this area, the river tended to overflow and form a braided stream. In addition, the presence of a detritic aquifer with high ground-water level determined the existence of marshy areas. Added to these circumstances, very specific climatic features may be found in the area: the Mediterranean climate is here influenced by the disposition of mountain chains running in parallel to the coastline, protected from an otherwise unstopped flow of cold, northern winds. This has led to the emergence of a subtropical climate which is unique in Europe (Frontana, 1984).

All these conditions allowed the cultivation of sugar cane, which was introduced in the 10th century by the Arabs during the Muslim period. The irrigation techniques associated to the sugar cane have been especially important for the hydrogeological functioning of the delta: a particular irrigation network formed by traditional open ditches (*acequias*, in its Spanish noun, derived from the Arabic *as-Saqyha*), which allowed water circulation on the surface and



water infiltration to the aquifer. Although being predominant, sugar cane coexisted with other crops (subtropical, some of them), such as avocado, citrus fruits, custard apple, vegetables (Fig. 3).

The transformation, during the centuries, of wetlands in agricultural areas has been extensive but still moderate at least until the 1940s, when the Guadalfeo river was channeled and more significant and massif processes of drainage were implemented so that the pre-existing wetlands in the delta were strongly reduced.

More recently, in 2006, the UE subsidy for the sugar cane was eliminated and the sugar cane crops have gradually disappeared given its low profitability. This process came along with a deep change in the Vega del Guadalfeo landscape due to the consequent agricultural land-use changes (and a thorough transformation of *acequias* historical network, that has been canalized or removed in some parts), together with the effect of urban development pressure in the area (Fig. 4), especially since the first years of the present century (Pérez-Campaña and Valenzuela-Montes, 2013), and the increase of greenhouses between last 90s and mid-2000s (Matarán, 2005).

The Charca de Suárez wetland survived to this turn of events and today it is one of the few remnants among the Guadalfeo wetlands that were present in the area before the river canalization in the 1940s and the extensive process of wetland drainage.

Today, the water feeding system of the Charca is the result of ground and surface water interaction. Ground water includes water infiltration from the aquifer (it is a hypogenic wetland), which in its turn fed from the Guadalfeo River, return water from agricultural irrigation, infiltration from runoff, and lateral infiltration from an adjoining aquifer. On the other hand, surface water comes directly from return water.

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Fig. 4 – Landscape evolution, due to agricultural land-use changes and intensive urbanization processes. The Charca wetland is highlighted with a red circle. Source: Orthophotos from the Institute of Statistics and Cartography of Andalusia.

The Charca de Suárez Nature Concerted Reserve

The steps of an innovative practice

The Charca de Suárez has been acknowledged as a Nature Concerted Reserve (*Reserva Natural Concertada*) in 2009. The Reserve establishment is the result of a long and, under many aspects, innovative process (Fig. 5).

In 1987, a series of Special Plans for the Protection of the Physical Environment was approved for each Andalusian Province. These Plans were new planning tools intended for protecting the provincial environmental values and for giving indications to urban local plans about those areas that should have been preserved from urbanization processes. The Charca de Suárez was not included in the Special Plan of Granada. Consequently, the 1990 General Urban Plan of Motril classified the Charca and the surrounding context as an area to be urbanized for residential and industrial uses.

After that, in 1992, Motril Municipality (the Local Council) initiated the drying process of the Charca, but a great social protest emerged from the local community – especially driven by local associations for nature protection with the support of the local educational community (including schools and universities) – and managed to stop the works. This was the starting and triggering point for a debate between the local community, which demanded the urban declassification of the area through a partial abolition of the General Urban Plan, and the administrative bodies. This process ended up with a first agreement between the local community and the Municipality, in 1996, in which the Municipality committed itself to work towards effective protection of the Charca.

Two years later, in 1999, the Municipality initiated the formal process for the establishment in the area of a Nature Concerted Reserve. This is a special instrument provided by the Andalusian regional regulation on Protected Areas (Law 2/1989, Art.2.c). The instrument aims at protecting natural spaces that, although out of the focus of other tools for environmental protection, still deserve singular conservation. In these areas, landowners may call upon the environmental administrative bodies to undertake a concerted protection regime on the basis of a collaboration agreement[6]. An agreement was signed between the Motril Municipality and the Andalusian Regional Government, whose first results were the budget allocation of 180,000 € on the part of the Regional Government, aimed at providing some facilities in the Charca, and the Municipality commitment to acquire the land and modify the General Urban Plan of Motril.

Fig. 5 – Timeline with the main phases of the project. Source: authors.

Between 2000 and 2003 the Municipality bought the land and re-classified the Charca as part of the "general system of public spaces" and, more specifically, as an "environmental facility". This concept has been applied in the General Urban Plan of Motril as a factual interpretation of the Art. 45 of the Spanish Constitution (1978), which lays down the right for people to an adequate environment, the duty of conserving it and the role of public authorities regarding the rational use of natural resources. The land reclassification of the Charca from urban to non-urban land is indeed an extremely rare process in planning practice, even more along the coveted Euro-Mediterranean coastal areas and in the Spanish case in particular. This reclassification triggered a complex process of property right transfer which eventually led, in 2009, to the Declaration of the Charca as a Nature Concerted Reserve and to the issuing of the connected Use and Management Plan.

Place-making: Planning and design

The Use and Management Plan of the Charca de Suárez Nature Concerted Reserve, approved in 2010, presents several, different and interrelated objectives. Besides "Biodiversity conservation" and "Preservation of local cultural values", an important set of objectives is dedicated to scientific, social and educational issues ("Enhancement of knowledge and research", "Sensitization and environmental education", "Dissemination"), as well as to increasing tourist attractiveness ("Tourism and leisure"), and the monitoring of the environmental quality and of the Plan Implementation itself ("Control and maintenance", "Monitoring of the plan").Thus, the Plan envisages a wide spectrum of goals, that entails both material and immaterial actions, with a strong focus on the integration between conservation and educational/recreation objectives, as well as on policy effectiveness.

As any panning tool – and, in particular, as protected area planning tool typically provide – the Charca Plan entails a regulative section defining zones and uses (Fig. 6). The Plan identifies three different types of zones, connected to different functions and degree of human-nature interaction: (i) Reserve Areas (*Área de Reserva*), namely those areas of major ecological value and habitat fragility, immediately buffering the wetlands, characterized by high biodiversity and uniqueness, where the access is limited and connected to scientific research or maintenance aims; (ii) Regulated Public Use Ar-

2000

General Urban Development Plan modification

Local Council acquires the land

2003

New General Urban Development Plan

Decision to enlarge the non-developable land around the Charca (*Pre-Parque*)

2009

Declaration of the Nature Concerted Reserve

2010

Collaboration Framework Agreement (between Regional Counci for the Environment and Local Council)

Setting of the Follow-up Commission and the Uses and Management Plan

2019

- More than 10.000 visitors per year
- Involved in more than 20 research activities, from individual academic projects to research projects at national and international level
- Threatened fauna reintroduction programmes
- Monitoring programmes (including fauna, flora and water quality)
- Specific collaboration programmes with local educational entities
- Environmental volunteering programme
- Extensive programme of annual activities
- 11 times awarded in national and international prizes since 2006

eas (*Área de Uso Público Regulado*), that is the remaining part of the Nature Concerted Reserve, where well connected and equipped areas can host educational, dissemination and tourism activities; here the pedestrian access is free, although within specific temporal limits; (iii) Free Public Use Areas (*Áreas de Uso Público de Libre Acceso*), that consists of an area identified as "*Pre-Parque*", a sort of buffer zone of the Nature Concerted Reserve, where both pedestrian and driveway access is allowed and where parking areas are located.

The Plan embeds also a policy and design section, where the main strategies to be implemented in order to improve local biodiversity and tourism attractiveness, as well as the spatial design of the Charca landscape, are defined (Fig. 7).

The main landscape elements designed by the Plan and actually implemented in the Charca are the new wetlands, the pathway network and equipment such as bird hides. Concerning wetlands, beyond those already existing that survived to the first drainage work implemented by the Municipality in 1992, two new wetlands have been created in order to increase local biodiversity both in terms of animal and plant species. The bigger one, in particular (around 1,4 ha), was shaped considering specific spatial criteria that foster the creation of new habitats. The overall shape is circular in order to create a large open water surface to host species such as black-necked grebes, common grebes, or northern shovelers. The shores are sinuous to allow the creation of nesting areas for waterfowl and to avoid the impacts of wind and lateral erosion. The new wetlands are 4 meters deep in the central area, to avoid colonization by helophytes, but the hedges have a slight inclination to allow the creation of a belt of marshy vegetation around the lagoons, that is an ideal habitat for species requiring high vegetation. Finally, some peripheral islands were created in the bigger wetland, with a sinuous shape too, to be colonized by plant species and to function as animal shelters (Fig. 8).

A network of pedestrian pathways (Fig. 9) has also been set up throughout the Reserve, in the Regulated and Free Public Use Areas. Part of this network has been defined following the historical rural paths still existing and bordered by *acequias*. The pathways allow visitors to reach bird hides located near the new bigger wetland (Fig. 10). Some of these hides have been recently designed and built (in 2019) by students from the *Escuela de Arquitectura de Málaga* in the framework of the collabora-

Fig. 6 – The zones of the Charca de Suárez Nature Concerted Reserve according to the Use and Management Plan. In green the Reserve Areas, in yellow the Regulated Public Use Areas, in brown the Free Public Use Areas or Pre-Parque. Source: Use and Management Plan 2010.

tions that the Reserve set up with educational institutions.

Place-keeping: Governance, maintenance and evaluation

The most striking effort of the Charca de Suárez Nature Concerted Reserve has been the setting up a complex governance model that, since the beginning of the creative process, has supported the implementation of the planning and design actions and has granted the long-term management of the area. This governance model has been built step by step throughout the long process above-cited. A first, crucial and completely bottom-up phase consisted in social awareness campaigns implemented at the very beginning of the process, after the first wetland drainage works (1992), by local environmental associations (Buxus Ecologist Association in particular) to sensitize people about the multiple values of wetlands. In the Nineties the belief that wetlands were only a focus of insalubrity still remained in some part of the population, and this idea was used by some sectors to try stopping the restoration and protection project of the Charca. Insalubrity reasons were in fact argued to promote drying and transformation in other Spanish wetlands in the last century (Sebastiá-Frasquet et al., 2014). This local awareness building allowed to manage and overcome any possible social conflicts and eventually resulted in the great social pressure that led, in 2000, to the change in the local urban plan and in the Municipality decision of acquiring the land in order to develop the project.

Then, the choice to establish a Nature Concerted Reserve in this area led to the setting up of a very specific governance model. This category (*Reserva Natural Concertada*) entails a bottom-up establishment process – to be implemented on the basis of the landowner's request (a public landowner, as in the case of Motril Municipality, or private as well) – and is strongly based on a co-management approach. In the case of the Charca de Suárez, the Reserve is managed by a Follow-up Commission with the participation of local and regional authorities and local people (Fig. 11). This Commission is embedded in and sustained by a wide collaborative network and works at two main levels:

- *Local level*: three of the six members of the Fol-

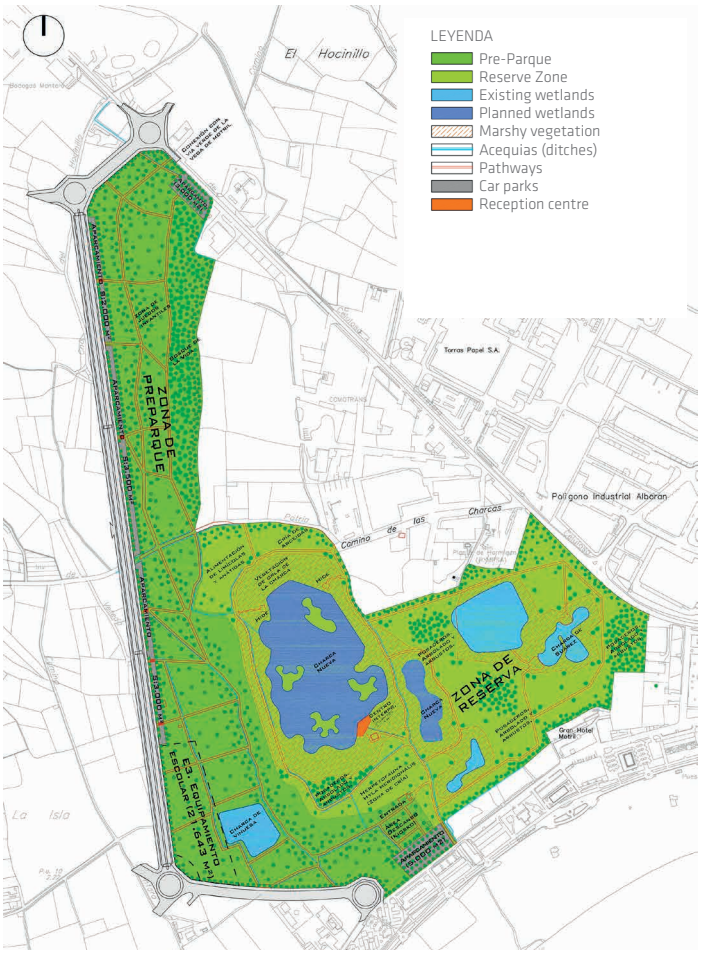

Fig. 7 – The landscape design interventions envisaged by the Use and Management Plan: new wetlands, revegetation areas, pathways, and equipment, such as the reception centre, bird hides and parking areas. Source: Use and Management Plan 2010 (translated legend – original scale: 1:5.000)

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Fig. 8 –A wetland with peripheral islands. Source: authors.

Fig. 9 –Pathways crossing the Charca landscape (Regulated and Free Public Use Areas). Source: authors.

low-up Commission work at the local level, organising the collaborative and supportive network in the area. This part of the network is mainly composed of local people who organize around the open annual Environmental Volunteer Programme to maintain the area, and is coordinated by the Buxus Ecologist Association and the Local Council of Motril. The network also includes primary and secondary schools that develop specific environmental education activities. Tourism Boards both at the local and sub-regional level are present as well. The University of Granada plays an important role, by offering direct advice and receiving information from other components of the network that are involved in various research projects.

- *Regional and national level*: the other three members of the Follow-up Commission connect the Charca project to the regional and national levels. This part of the network moves in the context of regional spatial planning and regional-national nature conservation policies. The Charca is included as an Environmental Protection Zone in the Sub-regional Plan of the Costa Tropical de Granada. It is also part of the RENPA (Andalusian Network of Protected Natural Spaces) and has been

included in the Spanish Inventory of Wetlands. The network at regional and national levels includes universities from other parts of the Andalusian Region together with the Spanish National Research Council (CSIC). These institutions are developing monitoring projects in the Reserve.

Maintenance activities and monitoring and evaluation activities are thus supported by this wide network of different stakeholders. The physical maintenance of the area is implemented not only by the Municipality staff but also by more than 100 volunteers from the local community that work in the framework of the above-mentioned Environmental Volunteer Programme to collaborate in the management of the space. The "emotional" link between the local community and the Charca landscape, and thus the local care for the area, is also promoted by projects such as 'Forest of Life', that entails the invitation to new-borns' parents to plant a tree in a specific area of the Reserve and to take care of it.

Instead, the monitoring and evaluation activities of the area's conditions is carried out with the support of universities and scientific institutions, such as the University of Granada and the Spanish National Research Council (CSIC), with relation to: (i) fauna and flora monitoring; (ii) influence of dams on the hydrodynamics and hydro-chemistry of the aquifer that feeds the wetland; (iii) monitoring of water quality and climate factors. The more recent involvement of the Charca in a monitoring project has come from the Interreg-SUDOE project RISKCOAST (starting October 2019 and finishing September 2022), with the participation of the Local Council of Motril too. The project aims to develop tools to prevent

and manage coastal risks linked to climate change. Beside the scientific monitoring and evaluation of the area's conditions, the Follow-up Commission undertakes a periodical evaluation of the implementation level of all the activities envisaged by the Plan.

Conclusions

To date we can say that the main Use and Management Plan's objectives – in terms of biodiversity conservation, education and recreation – have been effectively met in the Charca de Suárez. Biodiversity in the area has significantly improved since 2009 (a major success has been the reintroduction of endangered species, such as the crested coot and the Iberian tooth carp) and today more than 10.000 people per year visit the wetland for educational and recreational aims. The eleven national and international prizes awarded to the project since 2006, including those from United Nations and International Union for Conservation of Nature, are also proof of this success.

We can argue that an important driver of this general policy effectiveness is the actual embedding, in the Charca experience, of the 'place-making' dimension into a 'place-keeping' dimension conceived as long-term management. This approach allowed both to trigger the actual implementation of the project, as defined by the Use and Management Plan, and to maintain over time high standards in terms of area's spatial and environmental quality. It is an approach that seems to be particularly suitable for the design of new habitats in urban contexts since it allows to address from the very first phases of the creative process possible social conflicts connected to the design of new habitats and to assure

the effectiveness over time of spatial planning and design choices. In this terms, management process effectively complements spatial choices (e.g. in the Charca, on the one side, the shores' shape and slope were designed to host a highly biodiverse fauna and vegetation; on the other side, a constant maintenance action allowed to address the risks connected to invasive species and to make the wetland a real cradle for local species, whose quantity and quality has been constantly monitored).

The long-term management approach implemented in the Charca could be also defined as an adaptive co-management approach. Adaptive co-management combines the dynamic learning aspect of adaptive management – that is typical of natural resource management (Stankey et al., 2005) and is characterized by monitoring, valuation and continuous learning – with the participatory aspects of collaborative management (Plummer et al., 2012; Plummer et al., 2013). In the Charca case, this dynamic and participatory approach has been fostered by an innovative Protected Area category, the Nature Concerted Reserve, that institutionalizes the local community participation in the management activity of natural resources[7]. This approach and its peculiarities provide a further contribution to the current scientific debate about coastal urban wetland management (Hettiarachchi et al., 2013; Vélez et al., 2018).

Actually, even if other regions in Spain or worldwide have not a similar protection tool, the Charca project may be inspirational for the design and management of new urban habitats and, more generally, for biodiversity-driven landscape projects in high density urban areas. This experience shows that, in order not to reduce urban biodiversity con-

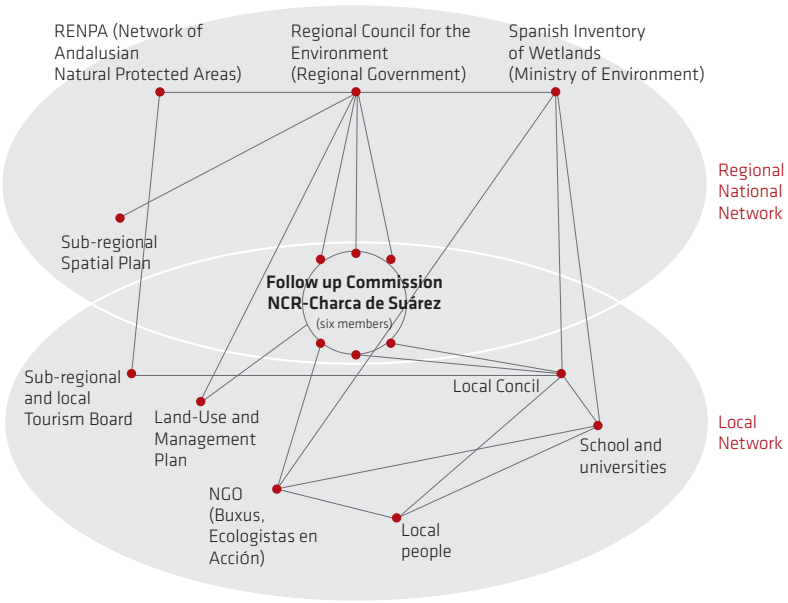

Fig. 11 – The Follow-up Commission in the framework of the wider collaborative network (main actors and tools). Source: authors.

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Fig. 10 – A look on the wetlands from a bird hide. Source: authors.

servation to a rhetorical slogan, an actual link between 'place-making' and 'place-keeping' should be achieved. Such link, in turn, entails a challenging integration between scales and tools (urban plans and local landscape projects), actors (public authorities, local community, planners and designers), and disciplines (urban planning, landscape architecture and environmental sciences).

We should hope that a similar integrated approach could be implemented in the areas surrounding the Charca as well. Until today, the Charca (Reserve Zone and Pre-Parque) is the only not built-up area along the coast which has been declassified from urban area to "environmental facility" area in the Motril General Urban Plan. Instead, the Plan allows the urbanization of nearly all the surrounding rural coastal areas. Nowadays, no urbanization process has been undertaken yet, but the Plan's provisions are an actual threat for the Charca landscape quality. Surrounding urbanization could deeply affect factors such as water quality and ecological connectivity and jeopardize the results which have been achieved. To preserve and enhance the current Charca landscape values, a landscape network approach should be put in place, considering the Charca as a node of a wider system of open areas, thus avoiding its 'insularization'. Again, this should entail the above-mentioned integration among scales, tools, actors and disciplines.

Endnotes

[1] This article is the result of the combined research activity undertaken by the two authors. The final written version of the different sections is to be attributed as follows: Sections "A long-term management approach for the design of new urban habitats", "Place-making: Planning and design", and "Conclusions" to Emma Salizzoni; Sections "The Vega del Guadalfeo landscape", "The steps of an innovative practice", and "Place-keeping: Governance, maintenance and evaluation" to Rocío Pérez-Campaña.

[2] Namely "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" (Cohen-Shacham et al., 2016, p. 2).

[3] Moreover, "there is a disproportionately large body of urban design and planning guidance which focuses on the importance of place-making. Such guidance encourages well-designed, safe and inclusive places which are well-connected, environmentally sensitive and built to last (...). Such 'assets' should be managed 'effectively and appropriately' but guidance is often lacking in providing evidence of how this can be achieved in practice (...)" (Dempsey and Burton, 2012, p. 12).

[4] Since 'governance' is a complex and multifaceted concept, it is worth specifying that we intend as governance as "the interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken and how citizens or other stakeholders have their say" (Borrini et al. 2012, p. 10).

[5] Even if the Charca is not included in the Ramsar List, the Ramsar Classification System for "Wetland Type" allows us to classify it as "Marine/Coastal Wetland: Coastal freshwater lagoons; includes freshwater delta lagoons". We cannot forget here to mention that the Ramsar Classification System also includes "Man-made wetlands", including "Canals and drainage channels, ditches".

[6] "Nature Concerted Reserves are those areas that, although do not meet the requisites set in other legal figures, still deserve specific protection. The land owners might encourage the administrative environmental bodies to apply a concerted protection regime. To this end, the Regional Government and the land owners may undertake a collaboration agreement where the specific protection regime will be defined for a given area" (Law 2/1989, Art.2.c). Nature Concerted Reserves are thus of local competence, but a positive report by the Regional Council for the Environment of the Andalusian Regional Government is required.

[7] Community participation in Protected Area management has been a central topic of the international debate on nature conservation since several years, and it is still an important issue (Borrini-Feyerabend et al., 2013). On the wave of the V World Park Congress of the International Union for Conservation of Nature (IUCN), held in Durban (2003), the so-called "new conservation paradigms" (Phillips, 2003) were launched, promoting, among other things, Protected Areas "run with, for, and in some cases by local people". In this direction, IUCN and CBD proposed, for each management category of Protected Areas (Dudley, 2008), an appropriate governance model, identifying four governance types (governance by government, shared governance, private governance, governance by indigenous people and local communities). Both classifications (management and governance categories) are not-normative, but they have an indicative and strategic values. What it is interesting in the Charca case is that the co-management approach has been acknowledged from a normative point of view, being the core feature of the management category itself ("Nature Concerted Reserve"). The NCR model seems therefore to respond to the still current need, for Protected Areas, of more articulated models of co-responsible and participative governance, involving different subjects and based on flexible and shared strategic frameworks (Gambino, 2015).

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