



THE MARCHICA LAGOON **ORNITHOLOGICAL PARK**

From nuisance into pleasance



MarchicaMed Agency

The Marchica Med Agency is committed to promote a sustainable development model, respectful of the lagoon's ecosystems and environment



Foreword

The project aims to recreate natural habitats for migratory birds whose route takes them over the Marchica Lagoon site and one of Nador's former lagoon cells. This park will include hosting infrastructure for scientific and pedagogic purposes, with the hope of becoming a reference all around the Mediterranean region.



ORNITHOLOGICAL PARK

By Marchica Med Agency



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I. ORIGINAL STATE

The reconversion of the former liquid waste treatment basin into a bird park is a key environmental project that aims to engage the Marchica lagoon site as a whole in an ecological and environmental dynamic.

Thus, instead of proceeding to a complete dismantling of the previous lagoon basins, a reconversion and development of the site will be put forward as to not impact other sites.

4. Ornithological Park





II. ORNITHOLOGICAL PARK CONCEPT

Park Trail

Hospitality Village

Ornithological Vantage points

Ornithological Park .5



Park trail

The ornithological park trail consists of various water bodies of different depths and salinity in order to attract migrating and sedentary birds.

The first improvements focused on the remodeling of land and marine areas, by way of varying water bodies and small islands, in such way as to rebuild the necessary ecological habitats to ensure bird nesting.



6 . Ornithological Park



Hospitality village



The hospitality village is designed to accommodate and train the local communities in eco-tourism with appropriate teaching aids.

THE HOSPITALITY VILLAGE COMPRISES TWO AREAS

FIRST AREA

genuine natural reservation set as a large landscaped park to welcome visitors.



The ornithological park

SECOND AREA

connected to the city center of Nador, the area offers an opportunity to create outstanding landscaped spaces where small landscaped parks can be added.



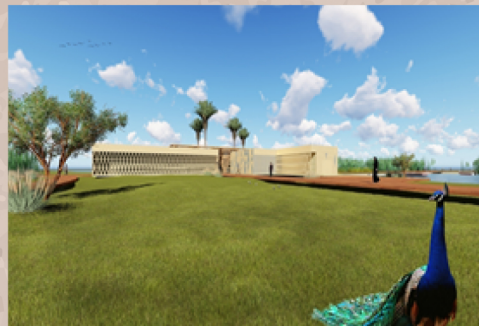
The coastline

THE MARCHICA ORNITHOLOGICAL PARK

will have a set of relays along the agricultural plain that also act as stopover points to other wetlands in the lagoon



“The hospitality village will be a clean sanctuary, shielded from urban pollution”



Ornithological vantage points

The discovery circuit trails will include information panels to be found all around the bird park. These panels will provide educational information about the birds' life, their feeding habits, and their behavior throughout the year.

Bird-watching stations of varying heights and purposes will be placed at strategic locations around "l'Île aux Oiseaux". They will be built in the shape of huts, between 5,4 and 7 meters tall, and shall also serve as a rendezvous point for the park's visitors.

Some of the stations will include a floor equipped for amateurs of wildlife photography and other active members of scientific and other ornithological associations (Bird watchers: two million active members worldwide)

The purpose of these bird-watching posts is to introduce the public to the silent observation and identification of various bird species, thereby fostering a sense of duty to protect the natural heritage of the Oriental region.



Bird-watching station



Information panel

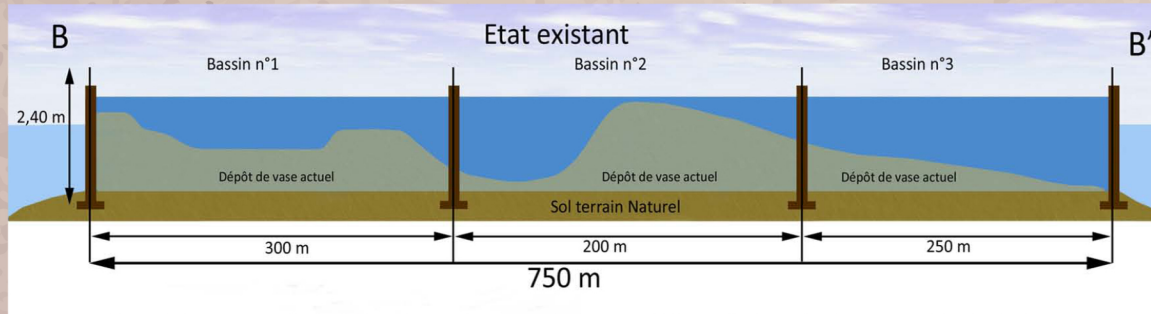


Large ecological cage

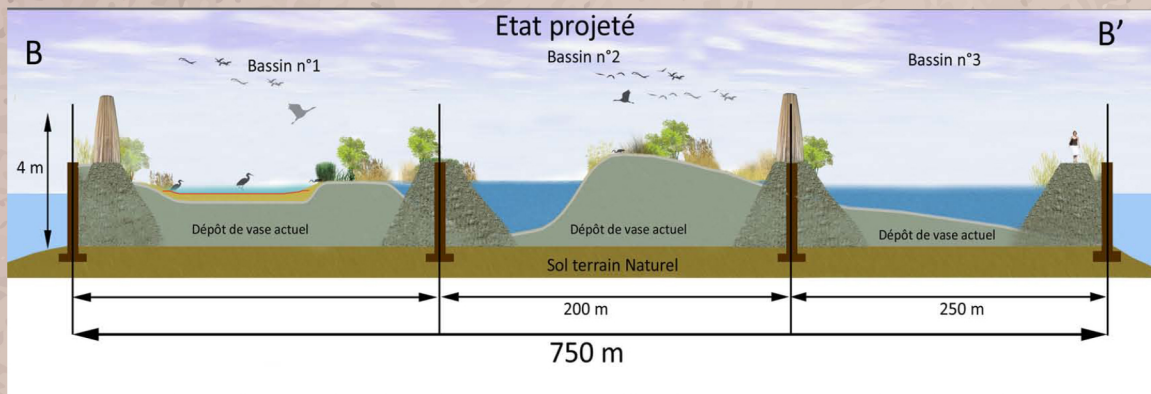


Birds viewed from the observation post

III. DEVELOPMENT PROCESS



Etat existant des bassins d'épuration de Nador



Projet du parc ornithologique après remblaiement des bassins

The backfilling of the three former liquid waste treatment basins should, on one hand, stabilize the mineralized sludge deposits in the basin floor; and on the other hand, allow the implementation of appropriate models that are vital to the future natural habitat of the avifauna.

The successful rehabilitation of the Bird Park's geomorphology is contingent on the reinstatement of the broadest possible variety of birds in the Marchica Lagoon.

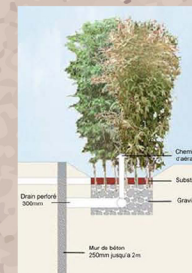
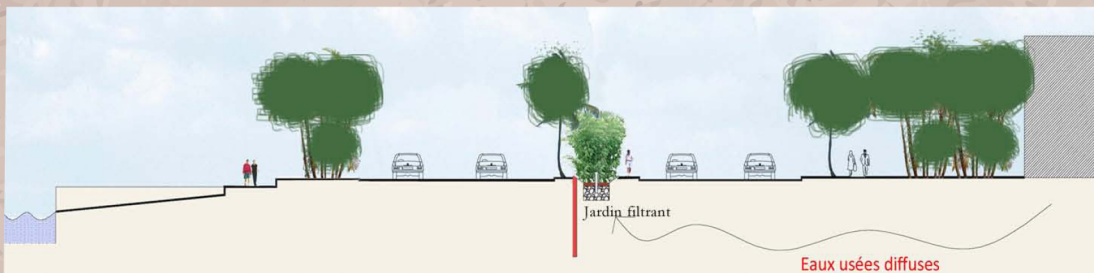
The backfilling of highly polluted areas significantly reduced water and odor pollution.

Dewatering studies recommended against the demolition of concrete structures and other existing constructions.





Management of various water qualities



The Bird Park largely depends on the readiness of multiple water qualities with varying physic-chemical characteristics: freshwater from either the wells or the new water treatment plant, brackish waters and brine water. The ornithological park's hydric revitalization will come about by the effective interconnectedness of water bodies and released into an artificial fresh water body, as well as a brackish pond (specifically the biocenosis : the pond's living system)

The reorganization of the artificial lagoon's hydraulic workings, to adjust water qualities and levels, allows for a harmonious and well-balanced development of the local avifauna.

Another efficient way to create island appropriate for the avifauna is to implement freshwater bypasses for watering and irrigation purposes, coupled with the creation of channels leveled with the sea, the basins' reorganization and spatial division and the soil accumulation formed by water streams and the sea.





IV. ACCOMPLISHMENTS



12. Ornithological Park

PHASE 1: DREDGING AND PARTIAL FILLING



THIS PHASE HAS ALREADY BEEN IMPLEMENTED

It involved sludge stabilization of accumulated wastewaters on the basins' floor and the creation of emerged islands to support a favorable ecosystem for the birds. Backflow equipment also helps strengthen embankments along the seashore and inside the basins.

PHASE 2: EARTHWORK, MODELING AND EMBANKMENT STRENGTHENING



EMBANKMENT STRENGTHENING FOCUSES ON THE EMBANKMENTS EXPOSED TO WATER LAPPING ON THE LAGOON SHORES AND THE INLAND EMBANKMENTS THAT DON'T HAVE ACCESS TO BACKFLOW EQUIPMENT.

This phase also includes grading of water bodies along the isthmus. The earthwork provides run-of-the-mill materials necessary to the strengthening of the embankments and the pathways along those.

This phase has already been implemented



PHASE 3 : LANDSCAPING AND PLANTING INITIATIVES

THE 3RD PHASE FOCUSES ON INLAND LANDSCAPING WORKS BETWEEN ROAD AND INLET, AS WELL AS THE IMPLEMENTATION OF FRESHWATER BODY FOR BASIN 1.

Planting initiatives involve the revegetation of the Bird Park through :

- Bermed area inside the basins
- Pathway banks along the embankments to ensure visitors' safety
- Along the pathways on open-ground
- Contact point between the road and the new city in to delineate the Bird Park and provide a protective vegetal barrier.

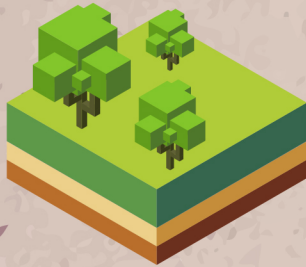
This phase is currently underway

The landscaping works include:

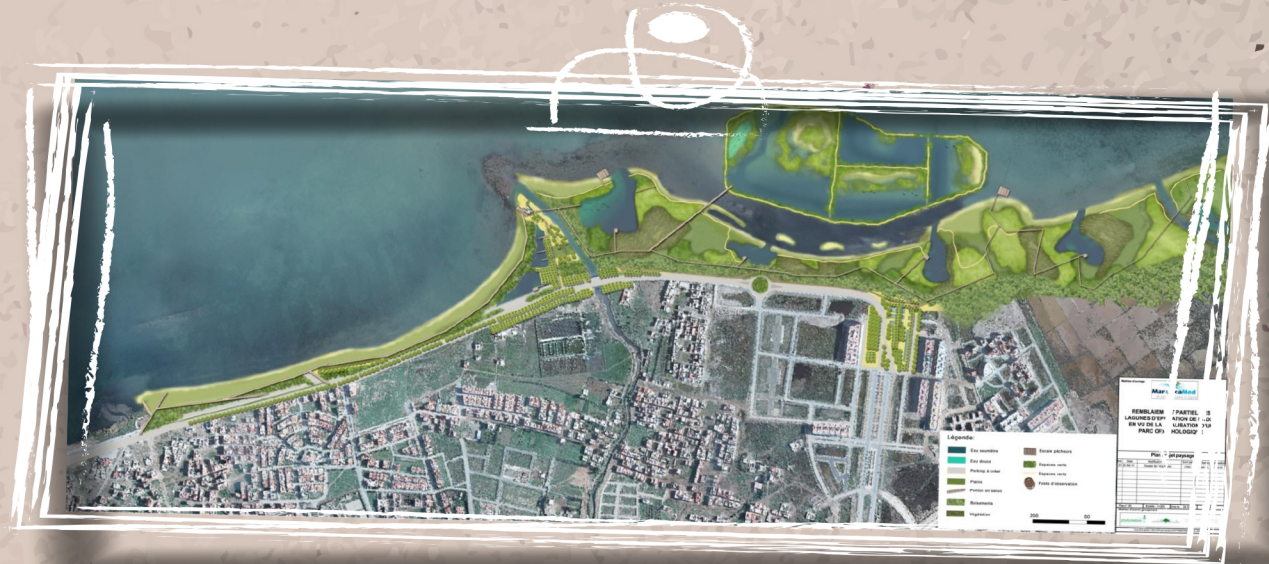
- Walking pathways and tracks
- Concrete plots for the installation of bird-watching stations
- Concrete frames for water flow between inlet and the lagoon
- Access lane to the lagoon's basins
- Completion of water bodies on the isthmus



V. EFFECTS AND ENVIRONMENTAL IMPACTS OF THE PROJECT



Perspectives



Testimony

“

The ornithological park, built over old liquid waste treatment basin and Nador's former wastewater treatment plant, has become a cluster of sites that represent the Marchica Lagoon's entire ecosystem: reed beds, shallow waters, intertidal zones, salinity basins with freshwater expanses and a temporary lake.

These areas are feeding, resting and reproduction grounds for multiple shorebirds, like flamingos, godwits, ringed plovers and pelagic birds such as terns and seagulls.

The park is a sanctuary to over fifty species of winter migratory birds such as flamingos, cormorants, common shelduck, the northern shoveler and great crested grebes. Other bird species come during the summer to reproduce, such as little and common terns, pied avocet, mallards, Black-winged stilt, godwits and collared pratincole.

The park is a triumphant success, even prior to its completion considering the number of permanent birds and the return of new breeding birds on the lagoon, as well as the arrival of new visiting birds in 2016 such as the Western Swamphen and Spotted Crake. Recently, we've even spotted the recurring appearance of the whiteheaded duck, an endangered species, in the Marchica Lagoon.

”



Mr. Said AZAOUAGHE

*Member of the national research group
for the protection of birds in Morocco*





Overview of the floral species in the Ornithological Park

ESPÈCES TRÈS RARES



Cotula coronopifolia



Rumex palustris



Oenanthe peucedanifolia



Mentha aquatica



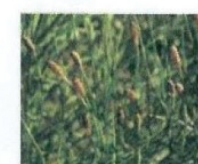
Eleocharis palustris



Glyceria fluitans



Arundo donax



Equisetum ramosissimum



Paspalum vaginatum



Ipomea imperati



Spartina densiflora



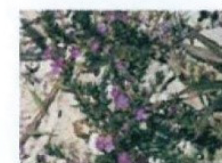
Calystegia sepium



Androsace chamaejasme



Retama monosperma

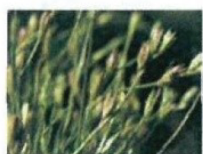


Junceum lythrum



Salicornia

ESPÈCES ENDÉMIQUES



Juncus Bufonius



Lotus chazaliei



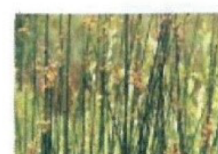
Limonium binervosum



Salicornia



Scirpus maritimus



Scirpus lacustris



Amophila arenaria



Typha angustifolia



Overview of the wildlife species in the Ornithological Park



Greppes huppe



Fuligule milouin



Canard siffleur



Grebe a cou noir



Avocette elegante



Echasse blanche



Glaréole à collier



Puffin cendré



Flamant rose



Foulque macroule



Goéland d'Audouin



Grand cormoran



Sterne pierregarin



Gravelot à collier interrompu



Sterne naine



Goéland railleur



Traquet rieur



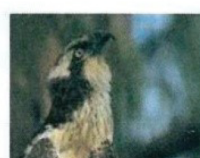
Tadorne de belon



Le harle huppé



Merle bleu



Balbuzard pêcheur



Faucon crecerellette



Océanite tempête



Mouette tridactyle



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MarchicaMed Agency





Agence MarchicaMed
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AGENCE POUR L'AMENAGEMENT DU SITE DE LA LAGUNE DE MARCHICA

وكالة تهيئة موقع بحيرة مارشيكاميد

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