COUNCIL OF EUROPE CONSEIL DE L'EUROPE
Committee of Ministers
Comité des Ministres

Resolution CM/ResDip(2008)1
on the revised regulations for the European Diploma for Protected Areas

(Adopted by the Committee of Ministers on 20 February 2008 at the 1018th meeting of the Ministers' Deputies)[1]

Appendix 5: Model plan for annual reports

Annual report for the year ....

Annual reports should describe the changes that have taken place since the previous year in dynamic terms of management and function and not be limited to basic data. Any new text or map introducing a change in the situation of the area should be attached to the annual report.

State: SPAIN

Name of the area: DOÑANA NATIONAL PARK

Year and number of years since the award or renewal of the European Diploma for Protected Areas: 9

Central authority concerned:

Name: JUNTA DE ANDALUCÍA. CONSEJERÍA DE AGRICULTURA, GANADERÍA, PERCA Y DESARROLLO SOSTENIBLE. DIRECCIÓN GENERAL DE MEDIO NATURAL, BIODIVERSIDAD Y ESPACIOS PROTEGIDOS.

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Authority responsible for its management:

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[1] As amended by Resolution CM/ResDip(2014)2 on 2 July 2014 at the 1204th meeting of the Ministers' Deputies.
Internet : http://www.coe.int/cm

1. Conditions: List here all conditions which were attached to the award or the renewal of the European Diploma. Explain either how the conditions have been totally complied with or detail the progress in complying with the conditions. Please also indicate any unresolved difficulties that you have encountered.

1. the Spanish authorities should continue to take all necessary measures to ensure that the Port of Sevilla development projects have no significant environmental impact on the Doñana ecosystems. Any decision should be conditioned by the results of a complementary study to the Environmental Impact Assessment (EIA) report;

There have been no variations in this regard. The project has been rejected by the Spanish authorities and has been taken out of the hydrological planning documents.

2. the Andalusian Government, responsible for the management of the national park and also for water management, should ensure the high quality of water entering the national park and eliminate the illegal extraction of groundwater; in accordance with the Water Framework Directive, it should monitor the status of the aquifer underlying the national park and surrounding lands, the extent of groundwater extraction and the water quality;

As mentioned in the 2018 report, the Guadalquivir Hydrographic Confederation annually submits a specific report that aims to quantitatively analyse and interpret the piezometric information available throughout the corresponding hydrological year. This is carried out by defined sectors based on hydrogeological criteria, regional distribution of the extractions and location of the points of the current control network using an indicator with delimited values between 1 and 0. The valuesobtained are analysed within the framework of a study period that includes each consecutive year since the 1993/1994 cycle.

The groundwater body historically named Almonte-Marismas 01.51, was subdivided in the new Hydrological Plan for the Guadalquivir demarcation, published by Royal Decree 1/2016, based on hydrogeological criteria of the five most homogeneous sub-masses in terms of their state, enabling the focus to be on applying the measurement programme.

An average analysis of the last five years carried out on similar sectors that maintained a stable situation throughout these years was included in the above report submitted to the Council of Europe.

The report corresponding to the 2017-2018 hydrological cycle shows similar results to previous years. Overall, the set of piezometers used has an average Ie[2] indicator value of 0.46, similar to that expected from rainfall (near average for one year with 557 mm and a Ie value of 0.51), although on different sides of the threshold of normality. However, there are three large areas which are differentiated according to their situation:

- One of these areas has a piezometric state consistent with rainfall and without significant downward trends. This is situated on the continuous strip that groups the coast, the dune range, the marshland (Marisma) and the Arroyo de la Rocina (creek). It comprises the Coastal Zone, Abalario, Lagunas de Doñana, Marismas, Vera-Retuerta and Arroyo de la Rocina sectors. With a downward trend in this area in recent years, the evolution of the Coastal Zone sector must be monitored.

- One of these areas has a piezometric state markedly inferior to what can be expected from rainfall and with a significant downward trend in levels and status indicator. It is formed by a strip with a Southwest-Northeast orientation and a width of between 5 and 10 km that borders the limits of the National Park between Cortijo del Alamillo and El Rocío (except the Arroyo Rocina) and continues from there to Villamanrique de la Condesa. Two large cones of piezometric depression appear in relation to the dimensions measured in 1995, one located north of El Rocío and another south of Villamanrique. It comprises the North and South sectors of Arroyo de la Rocina, North of Rocío-Villamanrique, the Midway sector, Ecotone North and South of the Villamanrique-free aquifer. The progress in the last two years of the south sector of Arroyo de la Rocina is very positive.

[2] The values of the status index (Ie) are scored as follows:

- Ie = 1 Maximum Historical Level
- 0.5 <Ie <1 Normal Situation
- 0.3 <Ie <0.5 Normal Situation
- 0.15 <Ie <0.3 Normal Situation
- 0 <Ie <0.15 Normal Situation

Ie = 0 Maximum Historical Level

- One intermediate area which includes three sectors with a piezometric value indicator lower than what could be expected from rainfall and with a statistically significant trend in the indicator but not in piezometric levels (Northern Zone and Northern Head of La Rocina sectors) or vice-versa (south of Villamanrique). The latter sector takes its resources from the free sector, increasing the hydraulic gradient.

Regardless of this situation, the Spanish Administration has been acting vigorously in order to stop the deterioration of groundwater bodies that do not reach “good status”, and to reverse the negative trend. Among the actions that have been carried out, most noteworthy are the following:

- A reduction of around 10% of total water withdrawal from water bodies, after ending the irrigation of 922 hectares from the farmland called "Los Mimbrales". This property has been acquired by the Spanish Administration in order to eliminate crops that were cultivated there and the consequent extraction of water. Also, groundwater used as surface water for the cultivation of 496 hectares has been replaced by surface water. Groundwater used for another 386 hectares will soon be substituted.

-The declaration process has begun for the three bodies of water that do not meet "good status" as bodies of water "at risk of not reaching good quantitative state", in accordance with Article 56 of the Consolidated Text of the Ley de Aguas (Water Law). The procedure is currently in the public information phase.

- Since 2015, and in exercising the competences of the Hydrographic Confederation of Guadalquivir, inspections have been intensified in the area of the Northern Crown of Doñana, in order to prevent the occurrence of water use without qualification, as well as verifying that the conditions of permits and concessions granted are being met.

- As a result of these inspections and the initiation of disciplinary proceedings, since 2015, 254 illegal water extraction wells from the underground water body area of “La Rocina” have been closed and sealed. 81 illegal water extraction wells have also been closed in the municipality of Lucena del Puerto.

2. Recommendations: List here all recommendations which were attached to the award or the renewal of the European Diploma. Explain either how the recommendations have been totally complied with or detail the progress in complying with the recommendations. Please also indicate any unresolved difficulties that you have encountered.

1. all efforts should be made to restore the good ecological state of the river at the level of its catchment (river basin or water basin), within the meaning of the Water Framework Directive; all appropriate measures should be taken in order to make water use and other activities, especially agricultural activities, in this catchment (basin) compatible with this aim;

The framework for achieving this recommendation is the Guadalquivir Hydrological Plan corresponding to the Second Planning Cycle (2015-2021), prepared in accordance with the Water Framework Directive. Although the procedures for drafting the Third Planning Cycle have already begun, in which there will be a specific line of work on Doñana.

According to the latest monitoring report of the 2nd Hydrological Planning cycle of the Guadalquivir basin of 395 MASp, 251 river-type masses retain ecological state/potential with respect to the 2nd cycle, 64 have suffered a deterioration of the ecological state/potential and 80 have improved ecological state/potential.

2. a specific emergency plan for the Doñana National Park should be prepared and a map of natural risks should be drawn up;

The Natural Area has a Self-Protection Plan against oil spills and is a priority area in the plan against forest fires in Andalusia: The INFOCA plan.

There have been no changes to the previous year's report.

3. the implementation of the action plans for the conservation of the flagship species, in particular the Iberian lynx and the Imperial eagle, should be actively pursued; new action plans for other threatened species should be drawn up if needed;

As reported in previous reports, different conservation plans continue to be developed for Doñana’s most symbolic species:
Recovery plan for the Iberian lynx,
Recovery plan for the Iberian imperial eagle,

Recovery and conservation plan for necrophagous birds,
Recovery and conservation plan for steppe habitat birds,
Recovery and conservation plan for wetland birds,
Recovery and conservation plan for aquatic invertebrates and fish,
Dunes and coastal cliffs plan.

The Life Conhabit project, the objective of which was to promote the improvement and conservation of priority habitats of Directive 92/43/EEC in Sites of Community Importance (SCI) on the Andalusian coast, has concluded all its actions, notable among which is the edition of a manual for good silvicultural practices in coastal habitats.

The provisional data on the Iberian lynx for 2019 are not yet available. However, despite having already completed the *LIFE Iberlince* project, the results of the follow-up continue to be encouraging. Nevertheless, there has been a small decrease in the number of cubs located, totalling 21 compared to 25 detected in 2018. According to initial assessments, the total population and the number of territorial females appears to have remained at figures similar to 2018.

With regard to the 2019 results for the imperial eagle it has not been possible to maintain the territories occupied by breeding pairs at 100%, as only 7 of the 9 that occupy the territory have started to reproduce, with a total of 10 chicks able to fly. This implies a productivity similar to that of previous years 1.11 (No. of reproducing pairs/chicks that fly).

The population remains stable and in a relative growth dynamic, supported in part by the recovery dynamic that has been developed at state level in recent years. The actions carried out to promote the reproduction of the imperial eagle have focused on the following: supplementary feeding, placement of artificial platforms, restriction of traffic in areas where occupied nests are located, placement of anti-predation mechanisms, placement of surveillance cameras in the nest.

4. concerning the Port of Sevilla development projects, the Spanish authorities should avail itself of the best international scientific expertise and also take account of the relevant international conventions, such as the Ramsar Convention, the World Heritage Convention and the Bern Convention, and work closely with the relevant international bodies, including the European Union and the European Environment Agency;

As reported in the section corresponding to Condition 1, this project has been officially rejected by the Spanish state

5. the updating of the management plan should be started in 2011;

The current planning of the Doñana Natural Area has been in force since September 2016 (Decree 142/2016, of August 2, published in the Official Gazette of the Junta de Andalucía (Regional Government of Andalusia) of 26 September, 2016), therefore this recommendation has been implemented.

6. the extension of the Doñana 2005 Project to riparian vegetation, correcting erosion problems or extending its scope to adjacent areas of agricultural marsh, should be undertaken;

These measures have not yet been implemented to a large extent, suffering a significant delay due mainly to the implementation of the Special Plan for the Management of Irrigation Located North of the Doñana Forest Crown.

This planning will be carried out with greater likelihood within the framework of the third planning cycle of the Guadalquivir hydrographic demarcation which will include a specific section of actions for Doñana.

7. the possibility of developing co-operation with other European Diploma sites which are deltas, such as the Camargue National Reserve (France) or the Danube Delta Biosphere Reserve (Romania), should be explored.

El Espacio Natural de Doñana tiene suscrito un convenio de hermanamiento con el Parque Natural Regional de la Camarga desde 2008 y desde entonces se mantiene una estrecha relación entre los dos espacios naturales.

Within the framework of the Twinning Programme between the Camargue Regional Park in France and the Doñana Natural Area, an exchange was organised from the 22 to 29 May between the El Rocío school in Spain which welcomed visitors from the Alan Johnson school of Sambuc in France.
This educational experience has allowed schoolchildren from two very similar cultural realities such as the wetlands of the Rhône Delta and Doñana to discover the characteristics of the environment in each of these areas and compare problems and solutions.
The educational project has focused on the breeding of Marismeño horse and monitoring the common flamingo as a species that shares both wetlands.

As for the Danube Delta, no progress has been made in managing a cooperation and development project with this wetland.

3. Site Management: List here any changes to the European Diploma holding site management, in relation to both terrestrial and aquatic environments (as appropriate), and in relation to staff and finances, since the last annual report was submitted to the Council of Europe. Please also indicate any unresolved difficulties that you have encountered.

In terms of personnel, the figures are similar to those of previous years, with a workforce of approximately 113 workers and a similar number of personnel linked to different projects that support the management of the protected area. The investment in the National Park during 2019 will remain at values similar to those of 2018.

4. Boundaries: Give details of any changes to the boundaries of the European Diploma holding site since the last annual report was submitted to the Council of Europe. If there are any changes, please attach an appropriate map to this report. Please also indicate any unresolved difficulties that you have encountered.

There have been no changes in the boundaries of the national park.

5. Other information: List here any other information about the European Diploma holding site which you consider should be provided to the Council of Europe.

In response to the decision adopted at the 38th meeting of the Bern Convention Standing Committee the certifications and designations that overlap with the Doñana European Diploma are as follows:

World Heritage.
Ramsar site.
Biosphere Reserve.
Place of Community Importance.
Special Conservation Zone.
Special Protection Area for Birds.
IUCN Green List.

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The following sections of the form should only be filled in if your area is in the year before a renewal of its Euroean Diploma for Protected Areas, i.e. year 4 after the award of the European Diploma or year 9 after its renewal.

6. Natural heritage (general abiotic description: geomorphology, geology and hydrogeology, habitats, flora, fauna, landscape) – State of conservation

The Doñana ecosystems are, to a large extent, the result of the evolution of the coastline and the mouth of the Guadalquivir during the last 18,000 years, particularly since the Flandrian transgressive maximum 6,500 years ago. At this time, the estuary of Guadalquivir formed an extensive bay that was progressively closed by systems of coastal spit bars and counter spits, which are still active today, and whose extraordinary magnitude is due to the intense coastline dynamics of a large physiographic area that extends from barrier islands of the Portuguese Algarve to the mouth of the Guadalquivir itself. The enormous deposit of sediment from the great river courses of the Huelva coast (Guadiana, Piedras, Odiel and Tinto) was led eastward by the dominant coastal drift of the west, shaping the sandy spits that have closed the estuary from its right bank. The drift caused by the much less frequent easterly winds led in turn to the formation of coastal counterspits such as that of La Algaida, which also contributed to the progressive closing of the estuary and the development of a large marshland area in the land previously occupied by the inner bay.

From a physiographic point of view, the Doñana Natural Area is the most representative example of the processes that gave rise to the current features of the Huelvan coast and which formed large areas of marshland in the mouths of the Atlantic-Andalusian river courses. The geological characteristics of the land and the general evenness of the coastline have created a very dynamic coastal system, susceptible to being subjected to important morphological changes in recent periods. Environmental changes in the upper Pleistocene and during the last 18,000 years, mainly during the Holocene period (rising sea levels to the Flandrien transgressive maximum, 6,500 BP), have led to the formation of coastal spit systems that led to the closure and subsequent silting of estuaries, as well as the development of other characteristics, such as cliffs and dune ranges. In Doñana, the combination of coastal, estuary, river and wind systems, together with the singular characteristics of the Almonte-Marismas aquifer, are determining factors in the existence of a magnificent sample of geological resources (Georesources), which are a testimony to its recent geological past and, to a large extent, evidence of the current patterns of its natural evolutionary tendencies.

The water resources of the Natural Area constitute one of its main ecological values. The water cycle in Doñana fundamentally supports the wetlands and aquatic ecosystems that encompass the protected area. It is the determining factor in its condition, its function as a habitat and refuge for wildlife and in the strategic importance it exerts for the conservation of biodiversity in the general context of the western Mediterranean, which includes the maintenance of the migratory processes and flows that occur between Eurasia and Africa. It is also a backbone for the rest of its forest ecosystems, the diversity and uniqueness of which are largely associated with the local dynamics of the Almonte-Marismas aquifer, and also largely forms the image and identity of the whole Natural Area, commonly associated with its natural condition as a marshland area and estuary.

The water cycle in the Natural Area is complex and it involves both surface and underground hydrology.

The dynamics of surface waters in Doñana are deeply characterised by the rainfall rate. The characteristic climate is ocean-influenced, sub-humid Mediterranean. The recorded rainfall ranges on average between 500-600 mm per year, with a marked period of summer drought from June to September. The wetlands and lagoons of the Natural Area are characterised by strong seasonal contrasts between wet and dry seasons. Only some areas conserve water throughout the year, although this depends largely on the inter-annual variations of rainfall and alternating wet and dry years. There is also a considerable decrease in the flow rates in the river courses, some of which

depend on the contribution of groundwater for the maintenance of these flows during the low water period. Changes in the natural fluvial contributions to the marsh has substantially increased the dependence on rainfall rates for the wetland flooding process, to such an extent that the marsh's hydroperiod is linked almost exclusively to the volume of recorded rainfall.

In the Doñana Natural Area, a total of 22 surface water bodies are present, of which 6 are rivers, 11 are lakes and 5 are transitional water bodies. Its general characteristics are summarized in the following terms. According to the latest monitoring report of the 2nd Hydrological Planning cycle of the Guadalquivir basin of 395 MASp, 251 river-type masses retain ecological state/potential with respect to the 2nd cycle, 64 have suffered a deterioration of the ecological state/potential and 80 have improved ecological state/potential.

Specifically, those related to Doñana are as follows:

Groundwater:

Código MASb	Nombre MASb	Piezometría Plan 2015-2021	Año 2015-2016	Año 2016-2017	Año 2017-2018
ES050MSBT000055101	Almonte	Alerta	Alerta	Alerta	Alerta
ES050MSBT000055102	Marismas	Alerta	Prealerta	Prealerta	Prealerta
ES050MSBT000055103	Marismas de Doñana	No evaluada	Prealerta	Estable	Prealerta
ES050MSBT000055104	Manto Eólico Litoral de Doñana	Estable	Prealerta	Prealerta	Prealerta
ES050MSBT000055105	La Rocina	No evaluada	Prealerta	Prealerta	Estable

Tabla 31. Estado respecto a la evolución de los niveles. Análisis piezométrico. Fuente: CHG.

Table 31. State regarding the evolution of the levels. Piezometric analysis. Source: CHG.

Surface water:

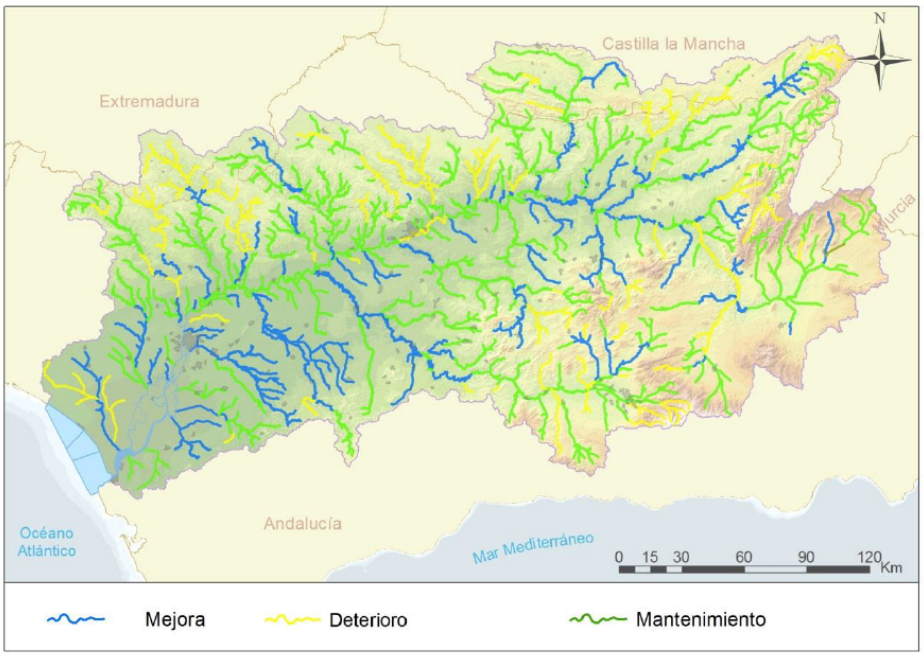

Figura 22. Análisis comparativo entre segundo ciclo de planificación e informe de seguimiento. Estado/potencial ecológico de las MASp.

Figure 22.
Comparative analysis between the second planning cycle and segmentation report. Ecological status / potential of MASp

Hábitats:

The conservation status of these habits within the national park is considered to be largely positive. Nevertheless, these habitats have been specifically inventoried and catalogued according to the criteria of Commission Directive 92/43 / EEC on conservation of habitats and wild species. A 1:10,000 scale inventory of these habitats has been carried out in the Andalusian territory. This inventory shows that in the Doñana National Park, 33 out of the 75 habitats located within in the Andalusian Autonomous Community are represented, totalling 44% of Andalusian habitats. If we add to this percentage the remaining existing habitats (3) in the natural park's expansion phase which are not represented in the national park, it would amount to almost 50% of the diversity of Andalusian habitats.

Of the total 36 habitats that are counted in the natural area, according to the aforementioned directive, 10 of these are considered priority habitats and therefore the State has a special responsibility to guarantee their conservation at European level.

Habitat		Category	Total area in the scope of the Plan (ha)	Relative presence in the scope of the Plan (%)
Code	Description			
1150	*Coastal lagoons (*)*	1	1018.4546	1.69
1210	*Annual vegetation of drift lines*	5	79.4298	0.13
1230	*Vegetated sea cliffs of the Atlantic and Baltic Coasts*		17.0	0.0
1310	*Salicornia and other annuals colonizing mud and sand*	4	1010.7915	1.68
1320	*Spartina swards (Spartinion maritimae)*	4	103.9491	0.17
1410	*Mediterranean salt meadows (Juncetalia maritimi)*	4	0.9194	0.00
1420	*Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)*	4	3709.8918	6.17
1510	*Mediterranean salt steppes (Limonietalia) (*)*	2	8.5644	0.01
2110	*Embryonic shifting dunes*	4	83.0179	0.14
2120	*Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")*	4	1221.4069	2.03
2130	*Fixed coastal dunes with herbaceous vegetation ("grey dunes") (*)*	2	1170.2539	1.95
2150	*Atlantic decalcified fixed dunes (Calluno-Ulicetea) (*)*	2	1832.1384	3.05
2190	*Humid dune slacks*		234.0999	0.39
2230	*Malcolmietalia dune grasslands*	4	2649.7641	4.41
2250	*Coastal dunes with Juniperus spp. (*)*	1	1041.8782	1.73
2260	*Cisto-Lavenduletalia dune sclerophyllous scrubs*	4	7059.9824	11.74
2270	*Wooded dunes with Pinus pinea and/or Pinus pinaster (*)*	3	11327.1930	18.84
3110	*Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)*	1	45.0725	0.07
3140	*Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.*	1	357.1810	0.59
3150	*Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation*	1	75.7654	0.13
3160	*Natural dystrophic lakes and ponds*	1	249.1043	0.41
3170	*Mediterranean temporary ponds (*)*	1	1985.0138	3.30
3290	Intermittently flowing Mediterranean rivers of the Paspalo-Agrostidion		29.32796	0.03
4020	*Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix (*)*	1	65.6776	0.11
4030	*European dry heaths*	4	0.8415	0.00
5110	*Stable xerothermophilous formations with Buxus*	1	84.8996	0.14

	sempervirens on rock slopes (Berberidion p.p.)			
5330	*Thermo-Mediterranean and pre-desert scrub*	4	351.6214	0.58
6220	*Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea (*)*	2	4.8988	0.01
6310	*Dehesas with evergreen Quercus spp.*	5	363.0138	0.60
6420	*Mediterranean tall humid grasslands of the Molinio-Holoschoenion*	1	163.7448	0.27
7210	*Calcareous fens with Cladium mariscus and species of the Caricion davallianae (*)*	2	70.1849	0.12
91B0	*Thermophilous Fraxinus angustifolia woods*	1	161.5617	0.27
92A0	*Salix alba and Populus alba galleries*	5	68.1039	0.11
92D0	*Southern riparian galleries and thickets (Nerio-Tamaricetea and Securinegion tinctoriae)*	5	3.3104	0.01
9330	*Quercus suber forests*	1	796.4849	1.32
9340	Quercus ilex and Quercus rotundifolia forests	4	1.48716	0

Figure 1. Community Interest Habitats in the Espacio Natural Doñana or END [Doñana Natural Area]

The new planning and management documents for the area, Natural Resources Management Plan (NRMP) and Management and Use Plan (MUP) integrate the regulations, criteria and measures necessary to guarantee the favourable conservation state of each of these habitats.

Therefore, this new generation of management documents introduces new variables to consider with the aim of guaranteeing the conservation not only of the species of flora and fauna but of the habitats as inherent elements of the region's biodiversity, increasing the value of the protected area.

The exhaustive monitoring of these habitats and the maintenance or, where appropriate, the restoration to a favourable state of conservation of each of these, now becomes an object of mandatory compliance for the area's managers.

Flora:
The flora of the Natural Area is one of the richest and most diverse in the Andalusian region with the presence of a multitude of endemic and endangered species. The floristic catalogue of the protected area amounts to around 1,400 taxa, with a predominance of Mediterranean plants, which constitute 57.3% of those present (species and subspecies). 13% of these taxa are strictly Mediterranean, 12.5% are Iberian-Maghreb endemisms, 12% are Mediterranean-Macaronesian species, 11.5% are from the western Mediterranean, 5% are Iberian endemisms, 2% are Mediterranean-Irano-Turanian taxa, 0.8% are endemisms of the Cádiz-Huelva-Algarve sector and 0.6% (eight taxa) are endemisms or sub-endemisms of Doñana. In addition to the Mediterranean taxa noted above, the catalogue includes Euro-Asian (20.5%), cosmopolitan (7.5%), Atlantic distribution (2.8%), Euro-iberian (2.2%), Circumboreal (2%), and allochthonous taxa, which constitutes 6.4% of the Doñana flora and shows a significant anthropic influence.

The data referring to the vegetation of the Natural Area show the extraordinary floristic diversity that exists, a direct consequence of the heterogeneity and merits of the habitats and ecosystems present. Thus, characteristic flora species belonging to a wide variety of plant formations, habitats and biotopes can be found within the boundaries of the protected area.

Of these, 23 of the species present are listed as 'vulnerable' in the Andalusian Catalogue of Endangered Species (CAEA) established by Law 8/2003 of October 18 and modified by Decree 23/2012, of February 14, which regulates the conservation and sustainable use of wild flora and fauna and their habitats, and are therefore integrated into different conservation and recovery plans and programmes.

SPECIES	CAEA[1]
Adenocarpus gibbsianus Castrov. & Talavera	VU
Althenia orientalis (Tzvelev) P. García-Murillo & S. Talavera	VU
Allium pruinatum Link ex Spreng	VU
Avellara fistulosa (Brot.) Blanca & C. Díaz	ES
Caropsis verticillatoinundata (Thore) Rauschert (Thorella verticillatoinundata (Thore) Briq.)	VU
Dianthus hinoxianus Gallego	VU
Hydrocharis morsus-ranae L.	ES
Juniperus oxycedrus subsp. macrocarpa (Sibth & Sm.) Ball	VU
Lathyrus nudicaulis (Willk.) Amo	VU
Linaria tursica Valdés & Cabezudo	ES
Marsilea strigosa Willd.	VU
Micropyropsis tuberosa Romero Zarco & Cabezudo	VU
Nuphar luteum (L.) Sm.	VU
Nymphaea alba L.	VU
Onopordum hinojense Talavera et al. (O. dissectum Murb.)	ES
Plantago algarbiensis Samp.	VU
Rhynchospora modesti-lucennoi Castrov.	ES
Rorippa valdes-bermejoi (Castrov.) Mart. Laborde & Castrov.	ES
Thymus albicans Hoffm. & Link	ES
Utricularia australis R. Br.	ES
Viola lactea Sm.	VU
Vulpia fontquerana Melderis & Stace	VU
*Wolffia arrhiza (*L.) Horkel ex Wimm.	VU

Table 1. Endangered species of the END

[1]CAEA. Andalusian Catalogue of Endangered Species (established by Law 8/2003 of October 18 and modified by Decree 23/2012, of February 14, which regulates the conservation and sustainable use of wild flora and fauna and their habitats). ES: Endangered Species; VU: Vulnerable; SPR: Special Protection Regime (not included in the catalogue).

As can be seen in the above table, eight of these species are classified as "endangered", and the remaining 15 are classified as vulnerable.

Another sample of the importance of this area in terms of flora can be confirmed in that, of the Doñana flora, 13 species are endemisms: 4 are endemic species of Doñana (*Linaria tursica* Valdés & Cabezudo, *Onopordum hinojense* Talavera et al. (O. dissectum Murb.), *Rorippa valdes-bermejoi* (Castrov.) Mart. Laborde & Castrov. and *Vulpia fontquerana* Melderis & Stace); 2 are Iberian-Maghreb endemisms (*Micropyropsis tuberosa* Romero Zarco & Cabezudo and *Rhynchospora modesti-lucennoi* Castrov.); one of them is an endemism of the Cádiz-Huelva-Algarve Sector; another 2 are from the Huelvan coast; 3 are from the SW of the Iberian Peninsula; and the other 3 are Iberian endemisms..

It also highlights species such as *Hydrocharis morsus ranae*. An aquatic plant which, in Spain, can only be found in the Hondón lagoon.

There has been no recorded disappearance of any flora taxon in the national park since 1994. In addition, the intense research and monitoring to which this area is subjected, has, **in recent years generated findings of new previously unknown species**, thereby increasing the biological value of the park.

From the management team of the Doñana Natural Area and different research and monitoring projects, many of them developed through the Doñana Biological Station (Estación Biológica de Doñana or EBA, each year, intense work is undertaken to monitor vulnerable flora, and various conservation programmes of these at-risk species are developed.

Some of the most important programmes that are carried out in Doñana are as follows:

- Monitoring the reinforcement activities for *Rorippa valdes-bermejo*i in Arroyo de la Rocina.
- Monitoring the reinforcement activities for *Hydrocharys morsus ranae* in the Hondón lagoon.
- Monitoring coastal juniper (J*uniperus oxycedrus subs macrocarpa*).
- Early detection and eradication programme for exotic plant species.

6.1. Environment: changes or deterioration in the environment, of natural or anthropic origin, accidental or permanent, actual or anticipated.

Without significant changes.

6.2. Flora and vegetation: changes in the plant population and in the vegetational cover; presumed causes.

Without significant changes.

6.3. Fauna: changes in the sedentary or migratory populations; congregating, egg-laying and breeding grounds

The ornithological values of Doñana remain exceptional, with an average of over half a million winter aquatic plants and the maintenance of habitats for the reproduction of at least 7 endangered species.

The importance of this area for the conservation of the European ornithofauna is well known. In the END reports of recent years, data referring to this aspect of biodiversity in Doñana can be verified, which shows that this area remains one of the most important wetlands on the European continent. Of particular note is the positive data referring to the censuses carried out on the different species of water birds present in the Bien, many of which are included in the Andalusian Catalogue of Endangered Species[3], due to their poor representation or absence in most of the European continent.

Among these we can highlight that in recent years the reproduction of at least the following species has been verified:

- Red-knobbed coot (*Fulica cristata*), "Endangered" species, in 2015 was supported by the entry of water from the Guadiamar by the Brazo de la Torre and el Travieso towards Las Nuevas achieved through environmental regeneration and restoration actions, with 26 breeding pairs recorded. In 2016, however, the climatic conditions were less favourable and there was hardly any flooding of the marsh during the critical period of reproduction, so only 2 breeding pairs were registered.

- The white-headed duck (*Oxyura leucocephala*) "Endangered" species also had good breeding results in 2015 with 21 pairs, of which up to 6 broods were detected in the Laguna del Tarelo, an area where it had not been breeding for years, whereas in 2016 its reproduction was not verified.

- The reproduction of the marbled duck (*Marmorenetta angustirostris*), an "Endangered" species , has been scarce both years with 9 couples in 2015 and 5 in 2016.

- The great bittern (*Botaurus stellaris*): "Endangered" species, failed to reproduce in 2015, and in 2016 it was observed that only one pair reproduced although around twenty more pairs were observed in the previous months.

[3] Andalusian Catalogue of Endangered Species (established by Law 8/2003 of October 18 and modified by Decree 23/2012, of February 14, which regulates the conservation and sustainable use of wild flora and fauna and their habitats.

- The ferruginous pochard (*Aythya nyroca*), "Endangered" species. It has not been observed during the breeding season for the last two breeding cycles.
- The black tern (*Chlidonias niger*), "Endangered"species. Some concentrations have been observed throughout the spring although no reproduction has been verified over the two years.
- The squacco heron (*Ardeola ralloides*), "Endangered" species. In 2015, 88 pairs were located between FAO, Juncabalejo, Lucio del Cangrejo Grande and Laguna del Tarelo, although their success was variable. In 2016, despite the adverse conditions, 26 reproducing pairs were verified.
- The Iberian pin-tailed sandgrouse (*Pterocles alchata*), "vulnerable" species has also had a presence in the different censuses carried out during the spring (April 2015, 2 specimens) but its reproduction has not been verified.

Despite the aforementioned adverse weather conditions, this information confirms the adequate status of the area's conservation and upholds the standpoint of the latest reports issued to different international organizations by the Kingdom of Spain regarding these variables.

This does not prevent the continued concern for those species that show less recovery capacity and for which the current conservation measures are not offering the expected results. In this regard, initiatives are constantly being undertaken to improve this situation. Therefore, the Recovery and Conservation of Wetland Birds Plan, approved by Agreement of March 13, 2012, of the Governing Council of the Junta de Andalucía (Regional Government of Andalusia), establishes protection measures for a species classified as vulnerable - the osprey - and six in danger of extinction: the great bittern, the marbled duck, the ferruginous pochard, the white-headed duck, the red-knobbed coot and the squacco heron. The scope of the Plan covers the 114 wetlands included in the Wetland Inventory as well as other enclaves suitable for nesting, included among which is Doñana.

In addition, with regard to the marbled teal, various applications for LIFE funds from the European Union have been made. This project was coordinated by the Biodiversity Foundation, who has as partners the Ministry of Agriculture, Food and Environment, through the General Directorate for Natural Environment Assessment and Quality, the Junta de Andalucía, the Government of the Region of Murcia, the Generalitat Valenciana, the Government of the Balearic Islands, the Association of Southeast Naturalists (ANSE) and SEO/Bird Life, in order to undertake coordinated actions for the species, as its conservation depends on global actions outside of the management of a single wetland.

Regarding the wintering censuses taken in recent years, despite the lack of rainfall, the growing trend in the number of birds present in the protected area has continued, reaching above half a million specimens and exceeding 600,000 specimens in two of the last three years. As can be seen in the graph, the volume of animals has not been very consistent over the last 16 years where oscillations have been frequent and very pronounced between consecutive years.

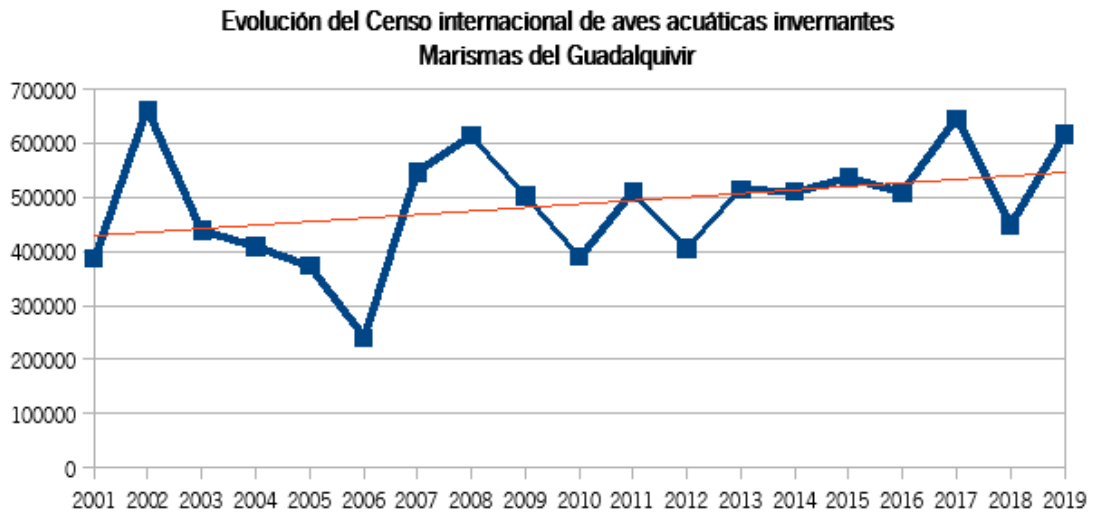

Figure 2: Historical evolution of the winter aquatic censuses in the END

If we carry out a detailed analysis of some of the most symbolic aquatic species of the area which we have been discussing in the latest reports submitted to the World Heritage Committee, we can draw some interesting conclusions about the conservation status of this fauna group and the different behaviours of the species depending on the environmental conditions found in Doñana.

Used as indicators of the development of bird groups monitored due to their uniqueness or degree of threat, we can see that in recent years, the main species of water birds continue to demonstrate a positive behaviour and in general agree with the annual climatic conditions. For example, as noted in previous reports, the glossy ibis populations *(Plegadis falcinellus*), disappeared as breeders in Doñana around 1958 (Máñez, M. and Rendón-Martos, M. (Eds.). 2009).[4] However, after reproducing 7 pairs in 1996, there were more than 7,000 breeding pairs recorded in 2011 and 2015, maintaining a spectacular growth trend and serving as a pivotal focus for new breeding settlements in the peninsula.

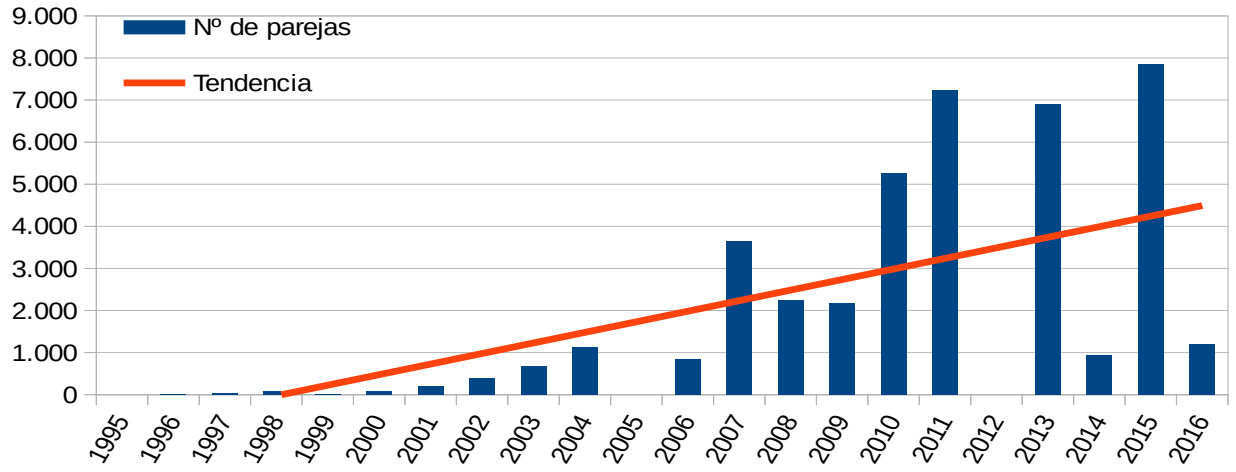

Figure 3: Evolution of the number of glossy ibis pairs in the Doñana Natural Area. It is observed that the species does not nest in dry years. EBD data.

4 Máñez, M. y Rendón-Martos, M. (Eds.). 2009. *El morito, la espátula y el flamenco en España. Población en 2007 y método de censo.* SEO/BirdLife. Madrid.

Similar developments can be seen in other species of reproducing storks such as the Eurasian spoonbill (*Platalea leucorodia*), which has a long historical record, the greater flamingo (*Phoenicopterus roseus*), herons such as the grey heron (*Ardea cinerea*) or the great egret (*Egretta alba*), all of which, in general, have retained a very significant presence in area and do not show symptoms that suggest imminent threats to these wildlife groups.

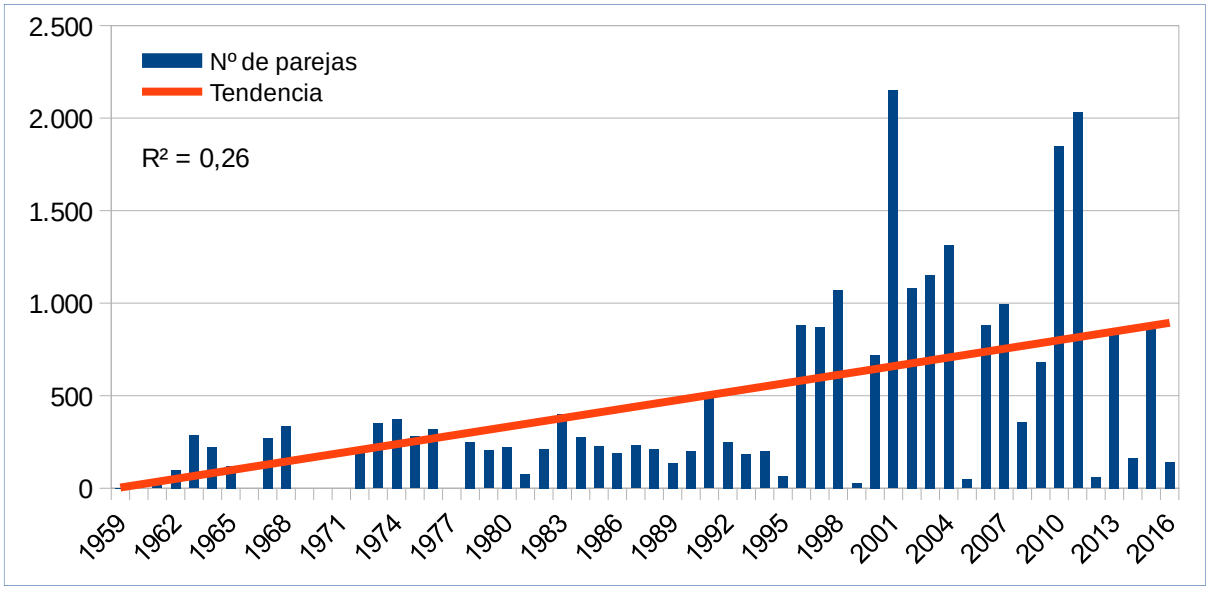

Figure 4. Number of Eurasian spoonbill pairs in the Doñana Natural Area. The years without figures is because there was no recorded data (during the 1960s and 1970s). EBD data.

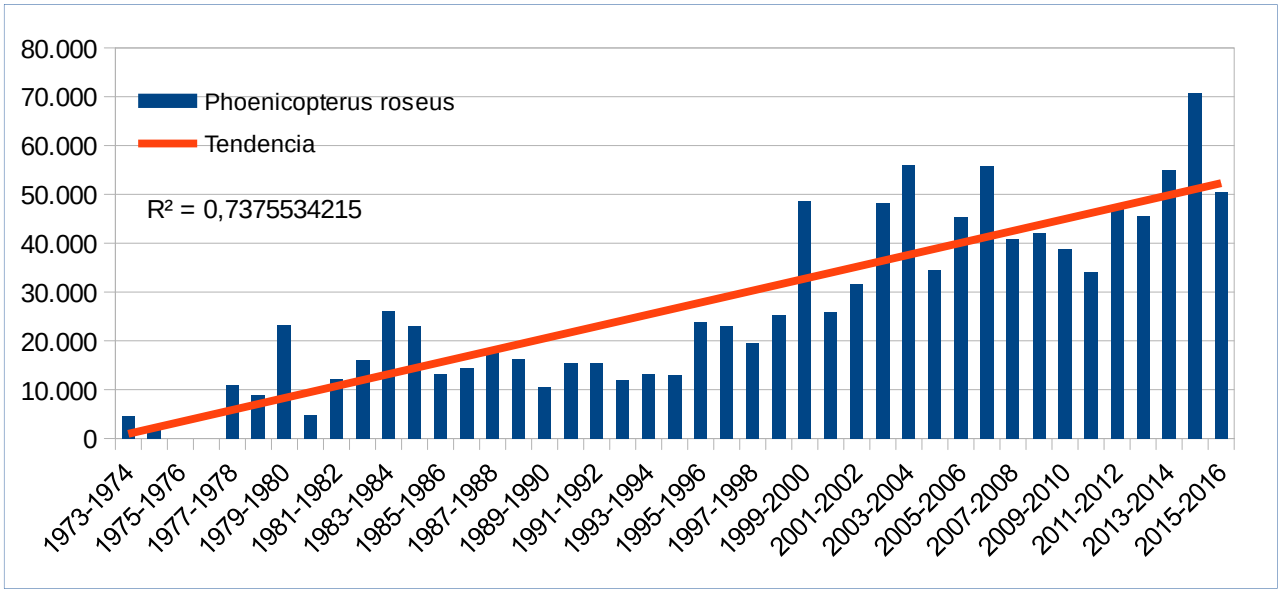

Figure 5. Graph showing the maximum number of greater flamingo in the Guadalquivir marshes according to the monthly aerial census. There are no data for the years 1975/76 and 1976/77. EBD data.

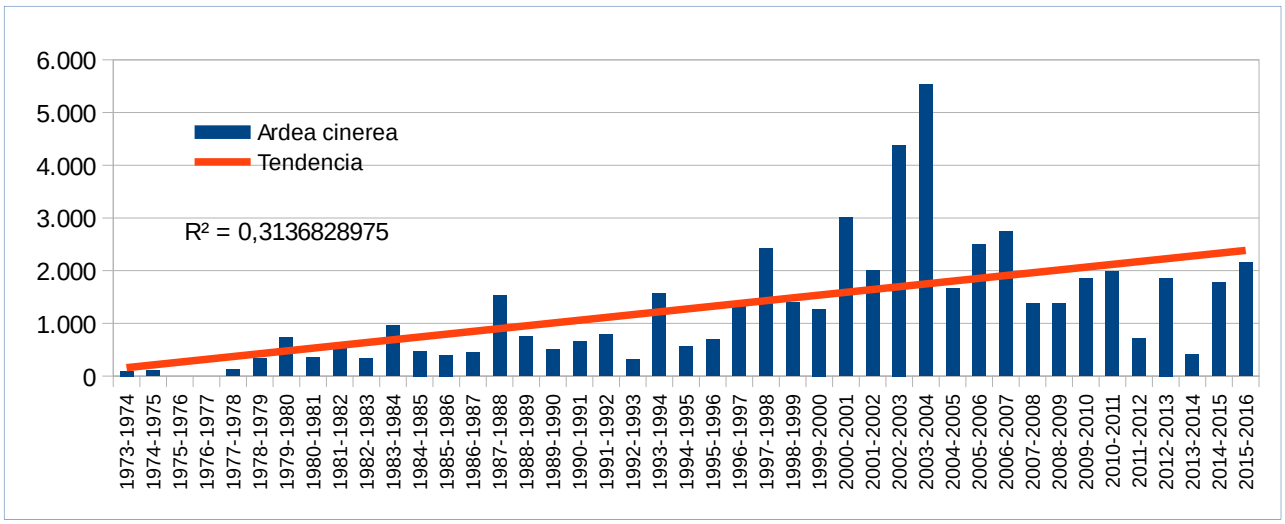

Figure 6. Graph showing the maximum number of grey heron flamingo in the Guadalquivir marshes according to the monthly aerial census. EBD data.

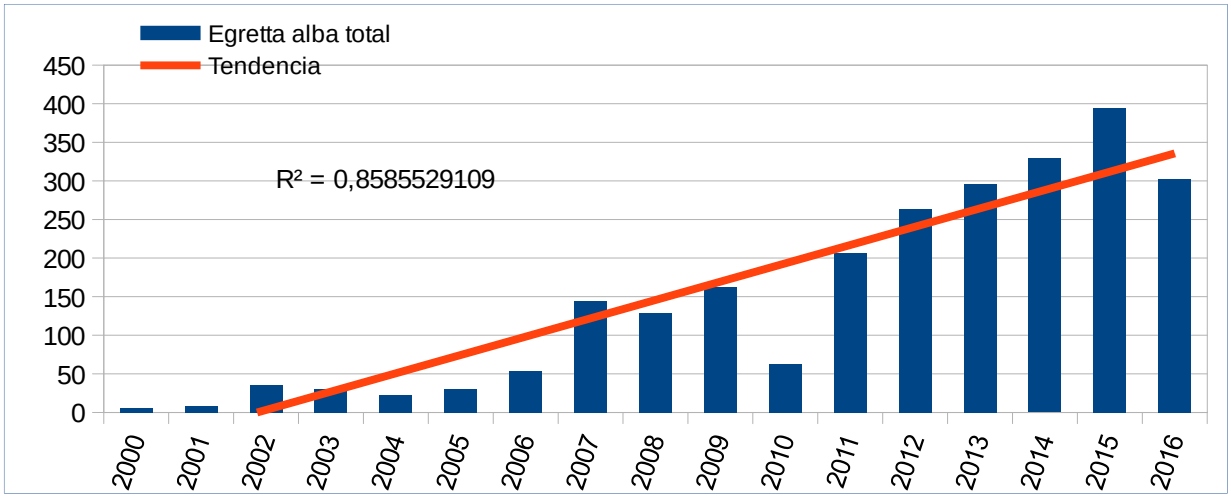

Figure 7. Graph showing the maximum number of great egret in the Guadalquivir marshes. January land census. EBD data.

Another species indicative of the health of the Doñana marshes is the Greylag Goose (*Anser anser*), whose winter populations in this wetland have always been counted in the thousands. It is a species of great importance in the region with current populations similar to those recorded in the second half of the last century. Despite being a species with significant inter-annual fluctuations, they maintain a stable trend, with no indications of any decline and with noteworthy figures in recent years.

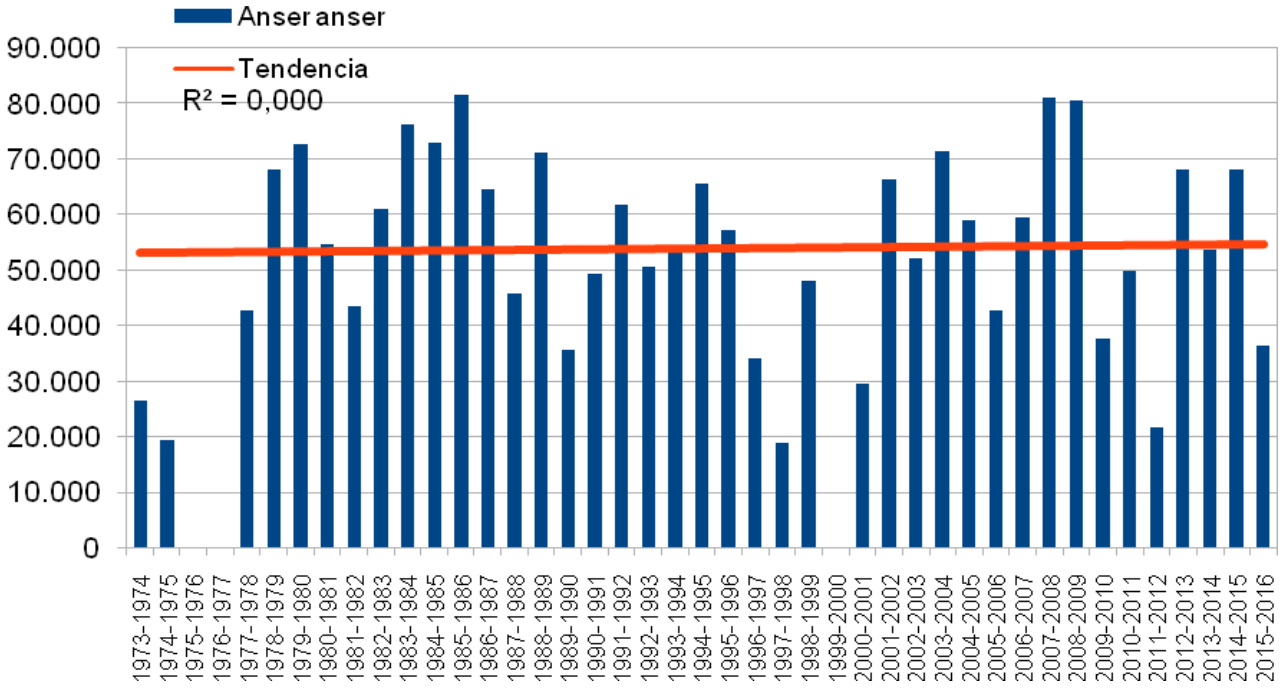

Figure 8. Graph showing the maximum number of Greylag Goose in the Guadalquivir marshes according to the monthly aerial census. There are no data for the years 1975/76 and 1976/77. EBD data.

The Iberian imperial eagle has reversed its trend since the Urgent Measures Plan began in 2005 with the aim of achieving 16 chicks that reach flight phase in 2016. This is the second historical reproducing maximum for the species since records began.

The group of raptors continues to maintain stable and balanced populations in line with previous reports. The reproduction of the two species of this group catalogued as “Endangered”, imperial eagle (*Aquila adalberti*) and red kite (*Milvus milvus*) continues uninterrupted which is of particular importance. This data together with those set out in the aquatic section shows that of the 9 species of endangered birds in Doñana, 7 have reproduced in recent years, and most have been doing so continuously for decades.

Focusing more specifically on the two most endangered raptors of Doñana, specifically the Iberian imperial eagle (*Aquila adalberti*), although it is still far from its historical maximums for breeding pairs, it has seen an important recovery in the last ten years, currently maintaining a very positive trend. The turning point in this situation occurred with the implementation of the Urgent Measures Plan that was implemented from 2005 to 2009. Since then, through breeding support measures that have significantly mitigated the impact of the viral strain that decimated the populations of its main food staple, the rabbit, the population appears to have stabilised.

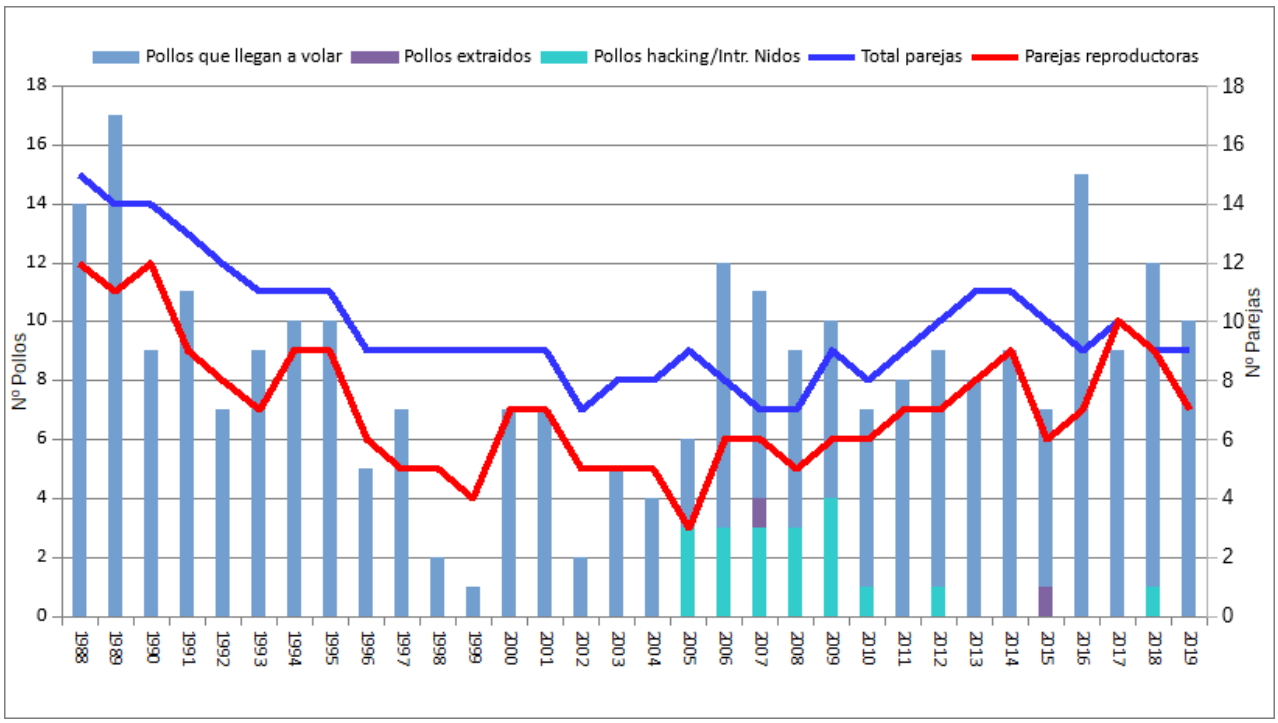

Figure 9. Historical evolution of the imperial eagle in the END

The graph shows the growth seen since 2005 and the notable increase in reproduction in 2016. Collaboration between the private and public sector deserves to be highlighted. In this case, through an agreement between the Ministry of Environment and Territorial Planning and the company Red Eléctrica, which facilitates and enhances actions to support reproduction, monitoring and the healthy state of the birds.

The situation of the red kite (*Milvus milvus*), however, gives cause for concern with a progressive loss of breeding pairs in the natural area and a rather low reproductive activity. The last breeding cycles confirm that concern for the species is rising because of its poor reproductive success, as few pairs are able to reproduce. More effort is being made from the management and research fields on this aspect of conservation of the species, in order to try to find out the causes of this reproductive regression and reverse the trend as soon as possible.

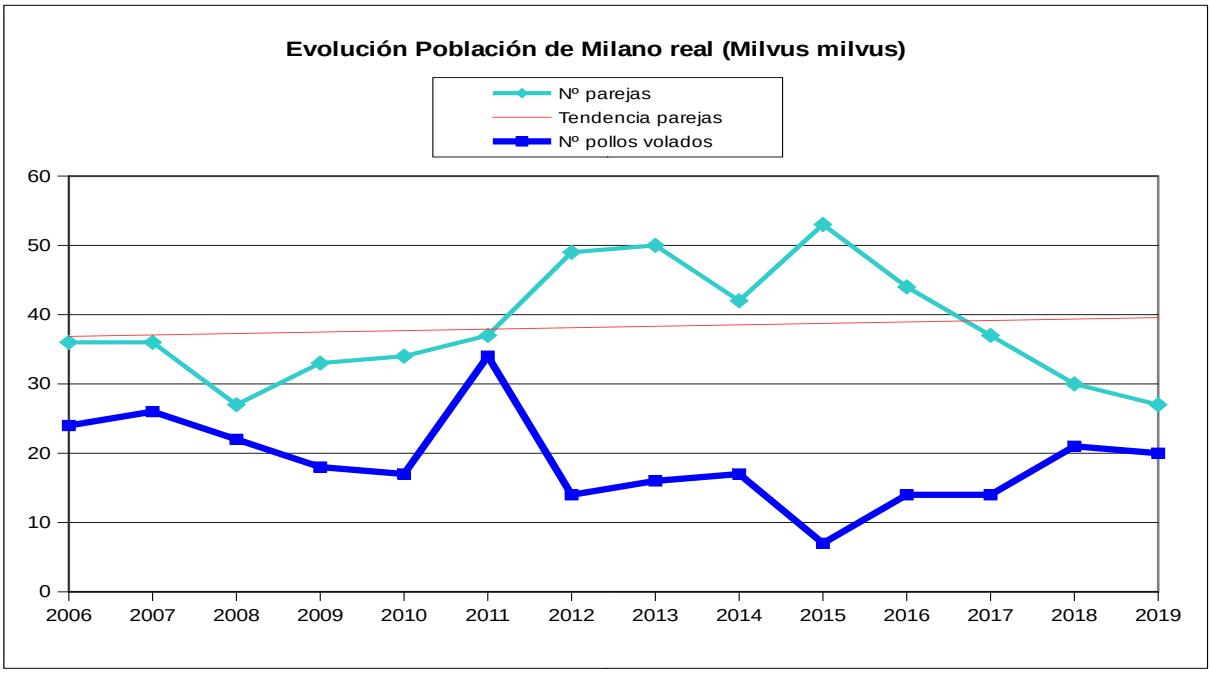

Figure 10. Red kite (*Milvus milvus*) population

The great effort dedicated to the conservation of the Iberian lynx have taken the population out of a critical situation and have placed it in a position to face the future with greater chances of survival. The appearance of the new viral hemorrhagic pneumonia strain has been a new risk factor for the species against which efforts have been redoubled.

The Iberian lynx population in the area of Doñana called Doñana-Aljarafe, has different characteristics to those of Sierra Morena, as it does not constitute a nucleus as well defined as that of Andújar. It behaves like a meta-population composed of several nuclei. The location of these nuclei includes the Doñana Natural Area and unprotected peripheral areas. The Aznalcázar area is of particular importance. Since the conservation efforts of this species were redoubled in 2002 with the support of several LIFE projects co-financed by the European Union, very satisfactory results have been obtained.

According to the data provided by the Life-Iberlince team, since 2002, the population of Doñana-Aljarafe has doubled, increasing not only the number of specimens but, more importantly, the number of territorial females, which has tripled in number, going from 9 to around 25 in recent years. However, a cloud overshadows this spectacular growth. a new strain of viral pneumonia was identified in 2012 which has decimated rabbit populations, a fundamental prey species in the diet of the Iberian lynx. This event has caused a significant slowing of the trend of the last decade, and has now become the focus of efforts to try to achieve a viable and sustainable solution. Since 2002 it has been identified that rabbit shortages and increases in the population influence the occupation of other areas outside protected areas that present the most potential risks to these animals, with the risk of being run over having the most effect on the population.

In addition to the absolute data shown in the table, it has also been possible to develop an important qualitative advance to guarantee the viability of the population through the contribution of new

genetic material from the reintroduction programmes. These practices have made it possible to reinforce the genetic diversity of a very depleted population with specimens from the population of Sierra Morena, which will undoubtedly result in a greater ability of this species to adapt to changes and a decrease in potential genetic defects caused by excessive inbreeding.

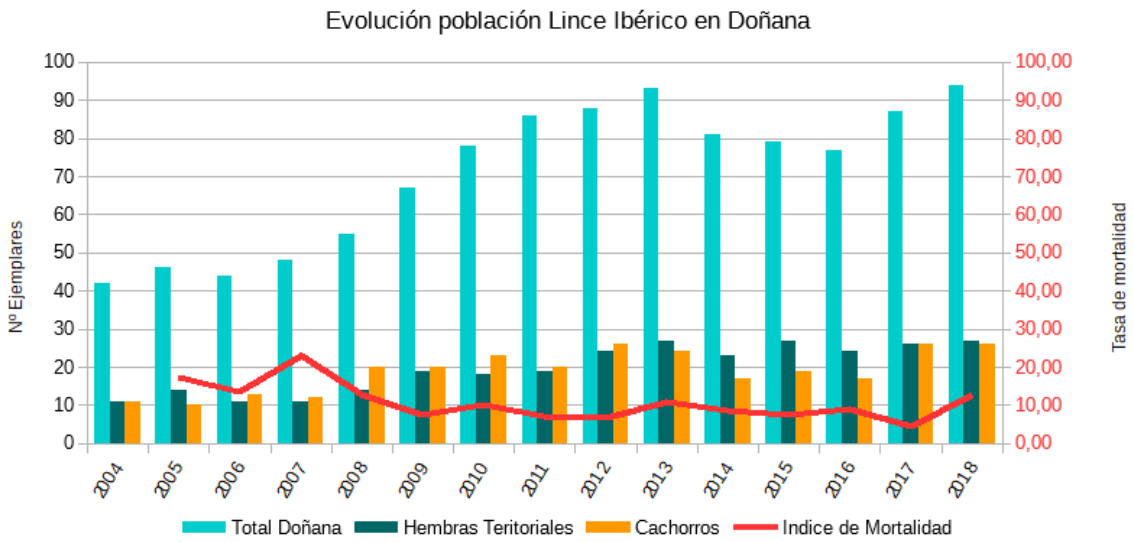

Figure 11. Iberian lynx population of Doñana-Aljarafe

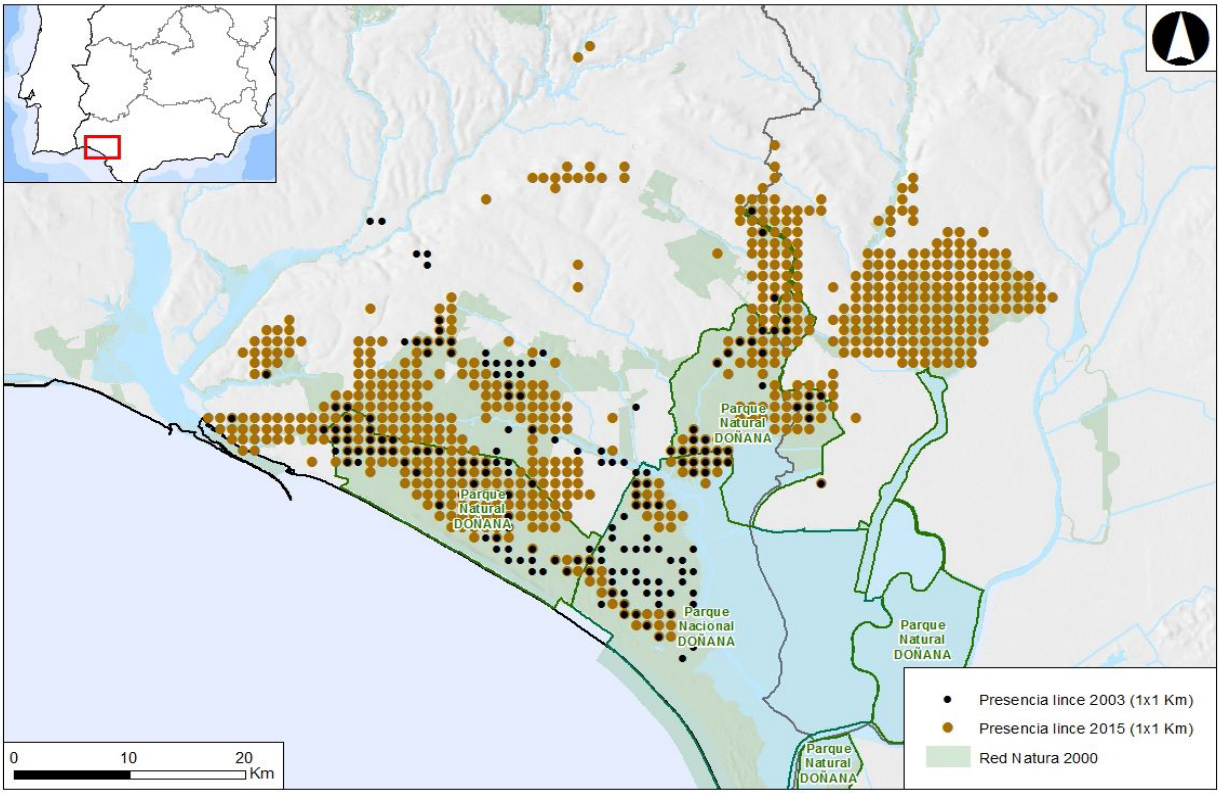

Illustration 1: Presence of Iberian lynx in the Doñana area.

This genetic reinforcement plays a fundamental role in the Iberian Lynx Breeding in Captivity programme which began in 2004, and as indicated in previous reports, was created with two fundamental goals:

- The first is to maintain a captive population as a genetic safeguard, so that in the event the species disappears in nature, it can be recovered from the ex-situ population. For this first objective the purpose was to preserve 85% of the genetic variability present in nature during a 30-year period. It being necessary to establish a captive population consisting of 60 breeding specimens (30 males and 30 females). Currently this objective is being met, and even exceeds the percentage of 85% of genetic variability initially sought.
- The second aim was to provide adequate specimens from an ethological, healthy, reproductive and genetic perspective, to be used in reintroduction programmes in the natural environment, either to recover their historical distribution or to genetically reinforce existing populations. This second goal was to be reached by 2010, provided the growth predictions projected by the genetic and demographic management programme were fulfilled. This was successful.

In 2014, the Iberian Lynx Ex-Situ Conservation Programme reached another important milestone by releasing more animals than were initially taken from the field as founders of the programme (49 specimens to date). Currently there are 248 lynx born in the breeding programme which have been reintroduced into the wild up to the end of 2019, 3 of which have reinforced the population of Doñana-Aljarafe.

In summary, the "in-situ" and "ex-situ" actions undertaken with this species have proven effective and currently we can see the gradual conservation of the species from its initial critical situation. However, there are still very important threats that must be removed in order to have some peace of mind regarding the future of this species. In this sense, Doñana contributes to the conservation and improvement of the status of a species that has seen its IUCN rating fall in 2015 from "Critically endangered" to "Endangered" which displays more hope for the future.

7. Cultural heritage and socio-economic context

7.1. Cultural heritage

A good synthesis of the situation of the Cultural Heritage of Doñana, can be found in the description made in this regard in the Natural Resources Management Plan of the Doñana Natural Area so that, as of 2019, we can begin from real foundations. This document refers to the cultural heritage of Doñana in the following terms:

The historic importance of Doñana was evident in 1994, when it was declared a World Heritage Site by UNESCO, thereby recognising its exceptional importance to the common heritage of humanity. However, it can be confirmed that, to some extent, the ecological value of Doñana has eclipsed its historical and cultural dimension, and there is a certain ignorance that has motivated the recent adoption of measures aimed at correcting this deficit in the number of projects and research surveys dedicated to the cultural heritage of Doñana.

The historical and cultural heritage of the whole of the Doñana region is made up of numerous archaeological sites and Sites of Cultural Interest (Bienes de Interés Cultural or BIC), including monuments, historical sites such as the Colombian places of Moguer, La Villa de Rociana and the Historical Centre of Sanlúcar de Barrameda, and historical sites of exceptional interest such as the Santuario de Nuestra Señora del Rocío, as well as other elements typical of the popular tradition of the area and with great cultural relevance.

The numerous existing archaeological sites marked out an empty space around the marshland area. This area has historically lacked human occupation, and due to its natural dynamics, it has received a large volume of sediment that has buried any remains of past ages.

Recently the scientific community has declared that the Doñana Natural Area was inhabited by human beings in the Neolithic period. This has been verified by archaeological evidence. The distribution of archaeological sites reflects the importance of the Roman period. Although this area has seen the passage of various civilizations such as the Phoenicians, Greeks and possibly the Tartessians, there are Roman settlements between the second and fifth centuries BC dedicated to fishing, salting, and the production of garum, which had greater relevance in antiquity. This is evidenced by the ancient Roman port found in the Pozo de los Cabreros, near the town of Sanlúcar de Barrameda. Remains of buildings have also been located in this area in the form of small enclosures that may be secondary sanctuary rooms located around the main cultural area of pre-Roman origin (Pre-Roman Sanctuary of Monte Algaida).

Although the presence of humans in the region of Doñana over time has given rise to an extensive and varied historical and cultural heritage, it should be noted that the vast majority of these buildings are outside the territorial scope of the Doñana Natural Area. Here 28 elements have been located, all of which are archaeological or in some cases architectural in nature, such as the Modern Period watchtowers that flank the coast. Only 4 of these 28 inventoried items (the Archaeological Area of the Modern Age Ship, and the Torre Carbonero, Torra Zalabar and Torre de San Jacinto monuments) have been declared Areas of Cultural Interest.

In addition to the historic relevance of these isolated sites, there are also rural buildings, wineries and individual buildings of ethnological interest, typical of the popular tradition of the area. In particular, forest villages (such as Mazagón), providing evidence of the traditional way of life and the development of the region.

The management of these sites carried out over recent years has chosen to enhance the cultural heritage of the Doñana Natural Area through various initiatives related to projects for the improvement and re-conditioning of buildings and infrastructure, restoration and recovery of historic assets, traditional culture recovery projects, as well as the development of the Inventory and characterization of property for incorporation into the Andalusian Historical Heritage General Catalogue (CGPHA).

Cultural heritage comprises one of the fundamental components relating to the identity of the Doñana region's population. Therefore, the identification and cataloguing of its constituent features, as well as their dissemination, represents a fundamental aspect of the sustainability of this territory. In this sense, the Second Sustainable Development Plan of Doñana (June, 2010) has included actions aimed at enhancing knowledge about the cultural values of the area. These include the development of the Cultural Heritage planimetry of the Doñana region and the creation of the Cultural Heritage Charter of the Doñana region, in order to identify all the cultural elements in its scope. This means that not only is their loss avoided but they can be taken into account as a positive factor in all sustainable development processes.

1. *Cultural Heritage in the scope of the Plan*

MUNICIPALITY	***DENOMINATION***	***TYPE***	***PROTECTION SCHEME***
Almonte	*Barco de Edad Moderna*	*Archaeological*	*BIC / CGPHA*
Almonte	*Cerro del Trigo*	*Archaeological*	-
Almonte	*Torre Carbonero*	*Archaeological / Architectural*	*BIC / CGPHA*
Almonte	*Torre Zalabar*	*Archaeological / Architectural*	*BIC / CGPHA*
Almonte	*Torre de San Jacinto*	*Archaeological / Architectural*	*BIC / CGPHA*
Almonte	*Doñana. Palacio I*	*Archaeological*	-
Almonte	*Doñana. Casa de Santa Olalla*	*Archaeological*	-
Almonte	*Doñana. Caño de la Raya*	*Archaeological*	-
Almonte	*Doñana. El Piuretano*	*Archaeological*	-
Almonte	*Asperillo Torre del Oro*	*Archaeological*	-
Almonte	*Chozas del Pichilín*	*Archaeological*	-
Almonte	*Doñana. Santa Olalla lagoon*	*Archaeological*	-
Almonte	*Taraje lagoon*	*Archaeological*	-
Almonte	*Doñana. Palacio II*	*Archaeological*	
Almonte	*Torre de la Higuera*	*Archaeological / Architectural*	-
Almonte	*Camino de Bodegones*	*Archaeological*	-
Moguer	*Mazagón-Arroyo del Pino*	*Archaeological*	-
Moguer	*Mazagón-Poblado I*	*Archaeological*	-
Moguer	*Mazagón-Poblado II*	*Archaeological*	-
Moguer	*Mazagón-Poblado III*	*Archaeological*	-
Palos de la Frontera	*Mazagón forest settlement*	*Archaeological*	-
Palos de la Frontera	*Torre del Loro*	*Archaeological*	-
Sanlúcar de Barrameda	*Pre-Roman Sanctuary of Monte Algaida*	*Archaeological*	-
Sanlúcar de Barrameda	*Casa La Algaida*	*Archaeological*	-
Sanlúcar de Barrameda	*Pozo de los Cabreros*	*Archaeological*	-
Sanlúcar de Barrameda	*Pozo de Monteagudo*	*Archaeological*	-

Villamanrique de la Condesa	*La Zapatera*	*Archaeological*	-
Villamanrique de la Condesa	*El Pozo de los Infantes*	*Archaeological*	-

CGPHA: recorded in the General Catalogue of Andalusian Historical Heritage; BIC: declared a Site of Cultural Interest.

Source: Andalusian Historical Heritage Information System (SIPHA), 2013. Documentation Centre of the Andalusian Institute of Historical Heritage. Ministry of Education, Culture and Sports. Regional Government of Andalusia (Junta de Andalucía).

Finally, El Rocío and its romería (religious pilgrimage), stand out owing to their indisputable charm and their roots in the human and cultural landscape of the region, in addition to the unquestionable effect on tourism. The village was declared a Site of Cultural Interest in 1973 as a Picturesque Location, and in 2006 as a Historic Site. Another centuries-old cultural tradition such as the so-called Saca de las Yeguas is also particularly noteworthy. This livestock event attracts a large number of visitors and involves herding many of the horses that graze in the Natural Area towards the centre of Almonte.

7.1.1. Changes concerning cultural heritage

However, beyond the inventory of resources, there have not been any significant changes to the cultural heritage situation of Doñana since 2010.

7.2. Socio-economic context

A more recent analysis (2014-2016) of the socio-economic context of the Doñana National Park protected area is available on the website of the National Parks Autonomous Agency (OAPN) under the Ministry of Ecological Transition in the section Area of Socio-economic Influence.

This study is attached as Annex (Spanish only).
https://www.miteco.gob.es/es/red-parques-nacionales/divulgacion/memoria-red-2017_tcm30-488218.pdf

7.2.1. Changes concerning the socio-economic context.

Currently, the general data referring to the four municipalities with municipal districts in the Doñana National Park that have been updated after 2010 are as follows[5]:

Municipalities / official websites	**Province**	**Population 2018**	**Area (ha)**	**% of the Municipality within the NP**	**% of the Municipality within the PPZ**
Almonte	Huelva	24,013	86,011.96	33.49	2.26
Hinojos	Huelva	3,909	32,033.71	30.52	0.00
Aznalcázar	Sevilla	4,495	45,042.04	32.33	0.00
Puebla del Río	Sevilla	11,879	37,514.15	0.21	0.00
TOTAL		44,296	200,601		

From 2010 to 2019 the municipalities of Almonte and Aznalcázar have increased their population significantly while Hinojos has remained almost the same (-17 inhabitants). Puebla del Río has seen its population reduced by more than 300 inhabitants.

[5] Municipal area data (total, in the national park and in peripheral protection zone) have been calculated through analysis with geographic information systems based on the version of municipal district limits updated as of November 18, 2015 by the National Geographic Institute and the latest versions of boundary layers of the national parks, which may explain slight possible variations with respect to the total surface data of the national parks included in the regulations for the declaration, reclassification or extension of the parks.

Municipality	Men 2010	Women 2010	Both sexes 2010	Men 2018	Women 2018	Both sexes 2019	Total Balance
Almonte	11,131	11,073	22,204	11,642	12,371	24,013	1,809
Hinojos	1,979	1,947	3,926	1,962	1,947	3,909	-17
Aznalcázar	2,089	2,039	4,128	2,257	2,238	4,495	367
Puebla del Río (La)	6,045	6,165	12,210	5,879	6,000	11,879	-331

Regarding the economic situation, unemployment has grown in the municipalities of Almonte and Aznalcázar and has fallen in Hinojos and Puebla del Río, although both movements are of small percentages.

Municipality	Demand. H 2010	Demand. M 2010	Total Demand 2010	Demand H 2018	Demand. M 2018	Demand. Total 2018	Total balance
Almonte	1,163	741	1,904	899	1,248	2,147	243
Hinojos	155	105	260	109	119	228	-32
Aznalcázar	174	131	306	173	241	414	108
Puebla del Río (La)	921	790	1,711	605	827	1,432	-279

8. Education and scientific interest

8.1. Visitors – Information policy

The visitor data collected from the different Visitor Centres of the Natural Area of Doñana are as follows:
The table shows the decline suffered over the last decade and the rebound in recent years that has managed to bring figures back up to those seen in 2010.

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Acebuche	82,006	82,438	76,658	71,264	73,928	69,565	63,292	54,985	77,674
Acebrón	52,058	47,665	39,762	40,981	40,633	40,558	41,605	41,104	41,087
Rocina	23,265	22,653	17,454	9,445	21,360	22,145	21,718	20,010	22,950
J.A. Valverde	40,767	40,145	29,475	35,409	39,159	41,564	37,605	39,947	43,073
F.Hielo	60,628	57,450	57,831	62,429	65,786	68,441	62,336	70,344	73,829
Centenales	2,719	2,630	3,023	3,404	2,282	1,646	2,120	1,197	
P.I. Aznalcázar			210	440	486	706	585	1,035	70
Total	261,443	252,981	224,413	223,372	243,634	244,625	231,277	230,639	260,701

8.1.1. Arrangements for receiving and informing the public (building, booklets, maps, cards, etc.)

As of December 2018, the visitor centres in the Doñana Natural Area are as follows:
Visitor Centres (VC)

1. "Visitor Centre El Acebuche". Exhibitions, audiovisual room and footpaths. Accessible.
2. "Visitor Centre La Rocina". Audiovisual room, La Romería Del Rocío exhibition hut, footpath. Accessible.
3. "Visitor Center Palacio de Acebrón". Exhibitions, audiovisual room and footpaths. Accessible.
4. "Visitor Centre Jose Antonio Valverde". Architecture similar to traditional marsh huts. Accessible.
5. "Visitor Centre Ice Factory". Former association of fishermen and ice factory. Accessible.
6. "Visitor Centre Los Centenales". With exhibitions and audiovisual walkway. Accessible.
7. "Visitor Centre Dehesa Boyal". Administrative concession. It has an exhibition, multi-purpose room, bar-cafeteria. Accessible.

Accommodations

1. "Aula de la Naturaleza". The "El Acebuche" country house, has capacity to accommodate 92 people. Closed to the general public. Only those involved with volunteering at the Breeding Centre of the Lynx of Acebuche are authorized.

Information point (IP)

1. Temporary IP of Cuesta Maneli. Accessible to cliff.
2. Temporary IP of Arenosillo
3. Permanent IP of Casa Grande de Aznalcázar

Recreative areas (RA)

1. RA Parador de Mazagón. Has tables, benches and barbecues.
2. RA The Hermitage. Has tables, benches and barbecues.
3. RA Pinar de la Algaida. Has tables, benches and barbecues.
4. RA of the Acebuche. Has tables and benches

Cycle lanes

1. Carril del Asperillo
2. Carril del Arrayán (Hinojos pine forest)
3. Carril de la Algaida (Sanlúcar de Barrameda pine forest)

Itinerant exhibitions.

1. "Doñana Ecomarca", itinerant exhibition.

Wildlife Observatory

1. Acebuche Iberian lynx observatory.

Interpretation/Itineraries

Guided tours

1. Itinerary VC Acebuche - La Plancha - VC Acebuche in off-road vehicles.
2. River itinerary Sanlucar de Barrameda - Salinas de Bonanza - La Plancha - Sanlucar de Barrameda.
3. Equestrian itinerary La Rocina river.
4. Itinerary by horse-drawn carriage, Camino de Moguer.
5. Equestrian itinerary and horse carriages "Camino de Hinojos-El Rocío".
6. Equestrian itinerary "Coto del Rey".
7. Equestrian itinerary "Abalario-Asperillo".
8. Guided tours of La Algaida and Bonanza marshes.
9. Rocío Itinerary - Coto del Rey - VC José Antonio Valverde in all-terrain vehicles.
10. Itinerary VC Acebuche - Beach - Asperillo - Abalario Rocina - C.V. Acebuche.
11. Itinerary VC Centenales - Arrayán - Coto Rey - C.V. José Antonio Valverde - VC Centenales.
12. Itineraries by bicycle.
13. Acebuche - Rocina Acebrón - Acebuche.
14. Centenales - Arrayán - Raya Real - Palacio Coto Rey.
15. Raya Vázquez - Caño Guadiamar - J.A. Valverde - Villamanrique - Centenales.
16. Equestrian itinerary VC Acebuche - Beach - Asperillo - Abalario - Rocina - VC Acebuche.

Self-guided Routes

1. Pedestrian path “Lagunas del Acebuche”
2. Pedestrian path "Laguna del Huerto and Las Pajas”
3. Pedestrian path "Charco de la Boca”
4. Pedestrian path "Charco del Acebrón”
5. Pedestrian path "Cerro del Águila”
6. Pedestrian path "Cuesta Maneli”
7. Pedestrian path "Laguna del Jaral”
8. Pedestrian path "Ribetehilo”
9. Pedestrian path “Dunar”

8.1.2. Frequentation by visitors and behavior (number, distribution in time and space)

A comparative analysis of the profiles of Doñana visitors is done annually, which aims to establish trends and identify the main characteristics of visitors to the Doñana Natural Area. This is based on visitor files recorded by public service staff on the use of equipment for Public Use that the Natural Area administration has made available. The main conclusions of the study conducted for 2018 provide the following information:

In the reports developed in the previous two years (2016 and 2017), an attempt was made to establish a predominant profile of the type of Doñana visitor, based on the records made in the visitor centres. In this way, a Doñana visitor prototype could be characterized as the following: "Spanish, from an autonomous community other than Andalusia, middle-aged adult (between 30 and 50 years old), travels with his/her his family and/or a group of friends during Holy Week or in August. Visits the visitor centre of El Acebuche (if accessing the territory through the A-49 Huelva-Seville Highway) or Ice Factory (if accessing through Sanlúcar de Barrameda), with personal vehicle, does not spend the night in the territory or if so stays in a hotel for between one and three nights and takes the Southern or River Itinerary."

On the dominant characteristics of the public at visitor centres during 2018, profiles similar to that of the previous two years are noted. Although in terms of origin, Andalusian visitors has risen again this year, standing at 48% (in 2016 it was around 40% and in 2017 it was 46%) and thus, it could be said that the average visitor to the centres is mainly Andalusian, coming largely from the province of Seville.

With regard to the absolute data on visitor numbers, a significant increase in number is seen compared to the previous two years. The number of visitors rose to 258,683, which represents a significant increase both with respect to 2016 (229,262 visitors) and to 2017 (228,622 visitors), which means a significant increase of 30,061 visitors (13%) compared to 2017. With these figures, the decline dynamics detected in the last two years has been broken and a very significant recovery can be seen for 2018, showing the best results of the present decade.

Similarly, of noteworthy significance is the increase in visitors experiencing El Acebuche during 2018. It has recovered its visitor number leadership which it lost to the Ice Factory Centre the previous year. Seeing a 41% increase in visitor registration with respect to 2017 and an increase of 22,688 visitors, although the Ice Factory has also seen its figures rise by 3,485 visitors which is an increase of 5%.

The other centres have generally seen increases (José Antonio Valverde with 3,126 more visitors, an increase of 7.8%, and Rocinas with 2,940 more visitors, an increase of 14.7%), while Acebrón saw figures almost equal to those of 2017. Those of the Information Point of Aznalcázar has fallen, remaining at a very low figure of 70 visitors.

The recovery in visitor numbers is interesting and highlights the growing interest in exploring Doñana. It also highlights the role that the Centres for Public Use have in bringing people closer to thebenefits of the Natural Area, recovering their position as an essential component in presenting the tourism of the Doñana area to the public. The descending inertia produced in the period coinciding with the economic crisis of the country has broken and figures more in line with the first decade of the century are seen, although they are still far from the more than 300,000 recorded visitors in 2007.
On the typology of visitors, we must assess the increase in people from Andalusia, which could mean a new trend or perhaps only a reduction in the number of non-Andalusian national visitors, a dynamic that has been observed since last year. The number of visitors from outside Spain remains at similar percentages to previous years, with an overwhelming majority of visitors from the European Union.

Among visitors outside of Spain, during a visit to Doñana, English is the language most used for communication at 83% percent, while French, German or Portuguese is used less commonly. Therefore, it seems clear that the visitor service staff must master English at least for their professional development and meet the expectations of the visiting public.

In the other features analysed, such as age or type of grouping, similar figures to those of previous years are maintained, highlighting that the type of Doñana audience is still of adult age and is accompanied by family or a group of friends.

Other items to address on the current Doñana visitors profile report are the need to continue investigating the interests, needs, expectations and behaviour of the public that visits Doñana through its publicly available features. This aims to incorporate new parameters into the records compiled so that more complete profiles can be configured.

8.1.3. Special visits (distinguished persons, groups, etc.)

In Doñana, a multitude of visits or institutional events are registered annually, representing national and international political and scientific groups and distinguished personalities from a variety of sectors of society.
No specific statistics are collected regarding these types of visits, but among them are visits by the President of the Government of Spain, German Chancellor Angela Merkel, different international delegations from the Council of Europe, IUCN, the Ramsar Committee, Parliamentarians and European Commissioners, Parliamentarians of the Congress of Deputies of Spain and the Parliament of Andalusia, delegations from countries such as China, Nigeria, Turkey, etc.

8.2. Scientific research.

The coordination of research in Doñana is carried out by the Doñana Biological Station. As a sample of the research background developed in Doñana. For a more adequate assessment of this aspect, the RESULTS OF THE RESEARCH IN THE DOÑANA NATURAL AREA, 2018 report is attached.

8.2.1. Current or completed research (observation, experimentation, etc.; identification or inventory of the species listed in the appendices to the Bern Convention, etc.)

8.2.2. Scientific publications

9. Site description (vulnerability, protection status, ownership, documentation)

9.1. Changes in legislation or regulations

The most important change in this regard has been the approval of Decree 142/2016, of August 2, which expands the territorial scope of the Doñana Natural Park, declares the North and West Doñana a Special Conservation Zone or ZEC and approves the NRMP and the MUP of the Doñana Natural Area (Andalusian Official Bulletin or BOJA, No. 185, of September 26) which represents the framework document for planning in Doñana

In addition, the approval of Law 30/2014, of December 3, on National Parks which becomes the framework Law for the protected area awarded with the European Diploma is particularly important . The purpose of this law is to establish the basic legal regime to ensure the conservation of the national parks and the network that they create, and establish the different instruments of coordination and collaboration.

In addition, in development of the previous law, Royal Decree 389/2016, of October 22, is approved, authorising the Master Plan of the National Park Network as a basic guideline for the planning, conservation and coordination of national parks in accordance with the provisions of Article 19, sections 1.d) and 2 of Law 30/2014, of December 3, on National Parks, and the basic guidelines of legislation protecting the natural environment in accordance with the provisions of Article 17, sections 2 and 3 of Law 42/2007, of December 13, on Natural Heritage and Biodiversity.

With a more sectoral character but of special importance for the conservation of Doñana, it is also worth noting the publication of Decree 178/2014, of 16 December, which definitively approves the Special Plan of Irrigation Areas located north of the Doñana Forest Crown and the Plan's programme of complementary measures. (BOJA nº 254 of 12/30/2014).

9.2. Changes in ownership title (conversion to public property, rentals, etc.)

There have been no changes in this regard.

9.3. Extension or transfer, new uses (for example, conversion into total reserve)

There have been no changes in this regard.

10. Site management (management plans, budget and personnel)

10.1. Improvements made

10.1.1. Ecological action affecting the flora and biotopes; controls of fauna

The conservation measures carried out in Doñana over these 10 years are numerous, although most of them are recurring actions for the management of species, populations or natural systems. Listed below is a synthesis of the most relevant carried out in recent years:

Recovery of vulnerable species:

- LIFE Iberlince project actions consisting of the restoration of habitat for the recovery of the mountain rabbit.
- Various actions of the LIFE Conhabit project for the conservation and improvement of priority coastal habitats: cartographic revisions, elimination of 160 eucalyptus and 30 acacias and monitoring the effects of the action taken in 2015 to eliminate the Stone Pine that penetrates inside the boggy area of the Atlantic heath of Ribetehilos.
- Monitoring and management of the imperial eagle with results from 9 occupied territories, 9 breeding pairs, 6 successful pairs and a total of 13 chicks, of which 11 flew.
- Monitoring and management of the red kite with results from 37 territorial pairs 18 started incubation, of which 8 pairs were successful with a total of 14 chicks that managed to fly.
- Monitoring the *Hydrocharysmorsus -ranae* reinforcement action in the Hondón lagoon. In 2017, the decrease in the number of specimens has continued since the population was reinforced in 2010 and 2012.
- Monitoring the *Rorippa valdes bermejoi* in the Arroyo de la Rocina. In the locations where specimens were restored to the natural environment,a positive development has been confirmed inside the protection boundaries, although a few individuals have been found outside of these.

Control or eradication of exotic species:

- Elimination of 70 *Asclepias curassavica* bases (El Puntal).
- Various *Nicotiana glauca* in Marismillas and Huerto de los Zorros were eliminated.
- Several stands of *Datura stramonium* in the Pinto were removed.
- Shoots from the balloon cotton (*Gomphocarpus fruticosus*) in Marismillas were removed.
- Eucalyptus stump removal in several locations.
- Control actions of the capeweed (*Arctotheca calendula*) in Marismillas, Coto del Rey and the dune trail of the National Park.
- *Oenothera drummondii* was also surveyed in the mobile dunes of Marismillas where specimens have been removed.
- Control and surveillance of *Azolla filliculoides* confirming its extensive development in the marshland. A follow-up was carried out both from the ground and by remote sensing systems.
- In May 2017, a forest warden discovered an American blue crab (*Callinectes sapidus*) in a fishing net.

Prevention and fire-fighting:

Various actions were carried out such as inspection of power lines, maintenance of auxiliary fire belts and main roads through clearing and grading, clearing around buildings and trails, collecting anthropogenic waste, preventive actions in the mountains of the Guadalquivir Hydrographic Confederation, and preventive mechanized forestry in the provinces of Huelva and Seville for the 2017 Romero Plan.

Soil conservation:

- Creating erosive brakes and repopulations for the recovery of natural flows in micro-channels of the National Park. Inventories, censuses, catalogues and thematic cartography:
- The annual census of the Iberian lynx gave a result of 85 specimens, 24 territorial females, 24 cubs.
- The monthly livestock census yielded a load data of 2,569 UGM on average.
- Annual census of fallow deer: 753 specimens

- Annual census of red deer: 2,274 specimens
- International census of wintering aquatic birds: 644,655 specimens

Inventory of beach strandings: 22 chelonian, 7 cetaceans.

Ecological Monitoring Actions:

In the Doñana National Park the following actions of this type are cited:

- Monitoring climatic parameters.
- Monitoring the landscape.
- Monitoring flood dynamics.
- Monitoring scrub structure.
- Monitoring the structure of the coastal pine-juniper plots.
- Ecophysiological monitoring of ships in the sabinar.
- Monitoring cork oak in the Doñana Biological Reserve aviary (Pajara de la Fuente del Duque).
- Monitoring terrestrial invertebrates.
- Monitoring of limnology.
- Monitoring amphibians.
- Monitoring lizards and geckos.
- Monitoring vulnerable anatidae and the red-knobbed coot.
- Monitoring the Audouin gull population.
- Monitoring the post-nuptial passage of migrant passerines.

Conservation and monitoring:

- Monitoring the reproduction of non-colonial waterfowl.
- Monitoring the Aviary of the Doñana Biological Reserve.
- Monitoring the reproduction of vulnerable or scarce diurnal raptors.
- Monitoring the wintering of raptors.
- Monitoring the wintering of water-birds.
- Monitoring the red-knobbed coot.
- Monitoring the partridge in the Doñana National Park.
- Monitoring rabbits in the Doñana Natural Area.
- Monitoring hare in the Doñana National Park.
- Monitoring wild boar.
- Monitoring deer in the bush.
- Monitoring competing carnivores.

10.1.2. Protection against the elements (fire, water regime)

The main measures of this type developed in Doñana are devised within regional or sub-regional programmes of autonomous authority such as the INFOCA plan, against forest fires over which the Doñana Natural Area Management Team has no authority.

Similarly, the **Self-Protection Plans** are already integrated into the planning of emergency actions in Andalusia by the Territorial Emergency Plan of Andalusia (PTEA) approved by the Government Council on 6 October 1998 and revised in depth in 2011.

Given the high risk of oil spills, the planning that applies to protected natural areas of Andalusia, is called **Self-Protection Plans for protected natural areas**. Together with the work involved in drawing up these plans, there must be trained personnel prepared to intervene in emergency situations and who have sufficient resources to carry out such interventions successfully.

10.1.3. Approaches and thoroughfares (paths, roads, car parks, signposting, fencing, etc.)

Without significant changes.

10.1.4. Field equipment (hides and study facilities)

Without significant changes.

10.1.5. Waste management

Without significant changes.

10.1.6. Use of renewable energy systems

Without significant changes.

10.2. Management

10.2.1. Administrative department: changes made
Without significant changes.

10.2.2. Wardens' department: changes made
Without significant changes.

10.2.3. Internal policing measures
Without significant changes.

10.2.4. Infringement of regulations and damage; legal action
Without significant changes.

11. Influence of the award of the Euroean Diploma for Protected Areas