



Sacred ibis (*Threskiornis aethiopicus*)

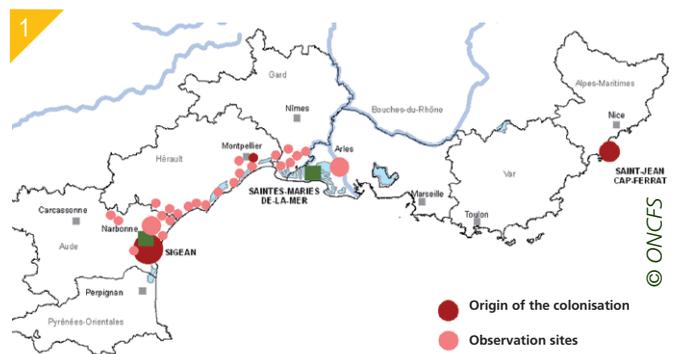
Eradicating the sacred ibis around the Mediterranean basin

National agency for hunting and wildlife

- The public agency was created in 1972.
- The main missions include:
 - enforcing hunting and environmental regulations, assisting the Prefects in maintaining law and order and carrying out administrative procedures in the hunting and environmental fields;
 - conducting studies, research and experiments on conserving, restoring and managing wildlife and its habitats;
 - contributing, as part of the technical and scientific missions set by the 2012-2014 Statement of objectives, to controlling invasive alien animal species (essentially mammals and birds) and species disrupting ecosystems or harming human activities;
 - participating in monitoring, studies and management of alien species found to be invasive;
 - assisting the Prefects concerning interventions on invasive species.
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Intervention site

- The intervention was initiated in the spring of 2007, at a time when the populations of sacred ibis had already reached a large number and had spread widely over the lagoons in the Languedoc and Camargue regions.
- It took place in the five departments (Aude, Hérault, Gard, Bouches-du-Rhône and Alpes-Maritimes) where the species had clearly established habitats.
- The inventories and monitoring of sacred ibises along the Mediterranean coast in France involved counting operations on 55 sites. Management work (elimination and capture) was conducted on four overnight roosting sites, on four nesting sites and on approximately 25 daytime feeding sites.
- The work took place in agricultural areas (rice paddies and meadows), private marshes, nature reserves, sensitive natural areas and parks open to the public (zoological and ornithological parks).
- The installation of the sacred ibis along the French Mediterranean coast took place in several steps:
 - the birds present in the natural environment along the Mediterranean coast come from the zoological park in the



1. Distribution of the sacred ibis around the Mediterranean basin.
2. Sites on which sacred ibises were observed in the Camargue.

- town of Sigean (Aude department) where eight of the birds were imported from the U.K. in the 1980s to see whether they could adapt to the climate;
- the birds were allowed to fly freely and started to reproduce in the natural environment around the year 2000. The numbers increased regularly and reached a maximum of 105 breeding couples on the nearby Bages Pond in 2005. Starting in 2000, a few birds from Sigean were observed in Camargue, 130 kilometres to the east of their introduction site;
- during the summer of 2007, a net in an aviary was torn and 38 sacred ibises escaped from the zoological park in the town of Saint-Jean-Cap-Ferrat (Alpes-Maritimes department). The same year, a private breeder of ornamental birds in the Hérault department released the two sacred ibises that he owned;
- the minimum number of sacred ibises living in the wild in the five Mediterranean departments was estimated in 2007 to represent a total of 360 birds.

Disturbances and issues involved

- The main concern along the Mediterranean coast is the long-term conservation of the breeding colonies of certain species of water birds, including herons, glossy ibises, gulls and terns.

- Sacred ibises have a number of proven and some supposed impacts on nesting birds.

- They are known to be predators for the eggs and chicks of Ardeidae (heron) species, e.g.:

- cattle egrets (*Bulbulcus ibis*) (observations at the Bages Pond in the Aude department in 2004 and in the town of Saintes-Maries-de-la-Mer in the Bouches-du-Rhône department in 2013) and squacco heron (*Ardeola ralloides*) (in the town of Aigues-Mortes in the Gard department in 2003).

- The reduction in the number of Ardeidae (heron) couples nesting in the Bages Pond (from 680 in 1998 to fewer than 100 in 2007) coincided with the installation of the sacred ibis on Planasse Island. The assumed cause of the reduction is the possible competition for space and/or food.

Interventions

■ Regulatory aspects

- In 2005, the Ecology ministry requested that ONCFS and INRA assess the situation. Their report concluded that it was necessary to limit or to eradicate the populations of sacred ibis in France in compliance with the precautionary principle.

- In March 2006, the Ecology ministry requested that the Prefects of the concerned departments proceed with the elimination of the birds. In 2008, this decision was reinforced by the agreement on the conservation of African-Eurasian migratory waterbirds (AEWA, resolution 4.5).

- Prefectoral orders to eliminate the birds were issued starting in 2007 in four departments (Aude, Hérault, Gard and Bouches-du-Rhône) in the framework of policies for pests and/or invasive alien animals (articles L427-6 and L411-3 in the Environmental code, ministerial decree dated 30 July 2010 prohibiting the introduction of the species into the natural environment in continental France).

- The ministerial order dated 25 March 2004 concerning the operation of zoological parks enabled interventions in the parks where sacred ibises were not constrained.

■ Inventory of populations

- Starting in 2007, ONCFS personnel initiated a number of operations:

- contacts (telephone or email) with the main organisations involved in studying and managing wildlife or in managing natural areas (environmental-protection associations, the managers of protected zones, etc.), with the park in Sigean, and with hunters, land owners and marsh managers to collect information on the habitats of the sacred ibis and to request their participation in the inventory;

- the contacts were a means to inform the managers and land owners concerning the presence of the sacred ibis and its potential impacts in order to obtain permission to access the sites as needed.

- Inventories were carried out regularly to identify the main sites and to monitor changes in population numbers.

- The main ornithological sites were monitored and databases accessible on-line were regularly consulted (particularly Obsmedit).



3. 4. Sacred ibis (*Threskiornis aethiopicus*).

■ A total of approximately 20 organisations participated in locating and counting the sacred ibises

■ Elimination of populations

■ A number of methods were used to remove the sacred ibises from the natural environment with the assistance of approximately 20 people. The initial interventions took place in 2007, in the Aude department.

■ Shooting of adult birds:

- the sessions were organised taking into account the constraints imposed by human activities (sites open to the public, hunting, etc.);
- the shooting occurred on feeding sites, roosting sites and along the itineraries used by the birds;
- different weapons were used, including shotguns, .22 long rifles and .222 Remingtons equipped with scopes and moderators;
- wooden decoys were installed at times to attract the birds;
- where possible, the shot birds were retrieved;
- they were frozen in order to study the stomach contents.

■ In the nesting colonies, nests, eggs, chicks and occasionally adults (shooting) were captured and eliminated from April to October.

■ The birds in the zoological parks in Sigean and Saint-Jean-Cap-Ferrat were captured:

- using bait made of fish treated with chloralose, a sedative;
- in compliance with the requests of the authorised personnel of the parks, the birds were reanimated (warmed) and returned to the aviary or buried if they had died.

■ The participants included:

- ONCFS personnel, the main group of people authorised to eliminate the birds in the natural environment using any means and at any time;
- the authorised personnel of the zoological parks;
- a number of other participants, on the condition for some that they follow a short training course, including wolf-hunting officers, ONF (National forestry agency) and Onema personnel, authorised personnel of protected zones and of land belonging to the Seaside and Lake Conservation Trust, and game wardens in their specific areas.

Results and costs

■ Results of elimination work

■ A total of 395 adult sacred ibises and 90 chicks were removed from the natural environment between 2007 and 2013:

- in 2007, 234 adult birds and 30 chicks were removed from the natural environment, i.e. two-thirds of the total counted that year along the Mediterranean coast, of which 90 were sent to aviaries and the rest were eliminated;
- the 38 birds that had escaped from the zoological park in Saint-Jean-Cap-Ferrat were captured in 2007 and 2008;
- all the sacred ibises present in the Aude and Hérault departments were removed from the natural environment from 2007 to 2009;
- in 2013, only three sacred ibises remained in Camargue.



5. A chick caught in the nest.

■ Costs

- To date, it has not been possible to precisely cost the eradication programme.
- The average cost of elimination per bird by ONCFS personnel was calculated by analysing the activity reports of the local offices. This figure varies significantly depending on the situation:
 - it is lower for groups of birds (-) very close to the introduction site and very high for birds (+++) spread in small groups and located far from the source;
 - in addition, the average cost increases when the number of birds to be eliminated decreases.

Summary table of the intervention results and costs.

Site	Interventions	Sacred Ibis captured/eliminated	Dispersion	Unit cost
Saint-Jean-Cap-Ferrat	First intervention over 2 days	36	-	39 €
Aude	Intervention on first site over 2 days	87	+	38 €
Camargue	2007-2013	Approx. 40	+++	711 €
	Last 8 months of intervention	< 10	+++	1 303 €

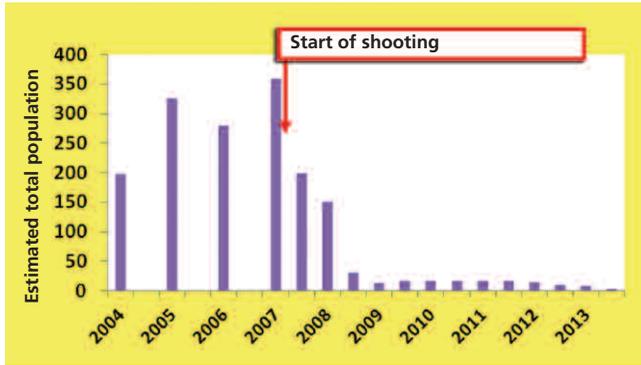
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■ Assessment

- The management work was deemed effective in that only three birds were observed in the natural environment in 2013.
- A number of difficulties were encountered (in terms of logistics and the eco-ethology of the birds):
 - there were no specific regulations suited to exogenous species until 2010 and it was necessary to obtain yearly authorisations with long publication lead times;
 - certain naturalists were hesitant to indicate the locations of the birds;
 - there were restrictions concerning the persons authorised to eliminate the birds and a lack of human resources;
 - certain land owners refused entry to their property;
 - there were safety considerations inherent to work on sites open to the public;
 - reactions to announcements concerning observations were occasionally slow;
 - the time required to organise often exceeded the residence time of the birds on a site;
 - work was complicated by multi-species colonies, roosting and feeding sites given the risk of impacting non-targeted, emblematic species;
 - it was often difficult or impossible to approach the birds within shooting range given that they prefer very open spaces;
 - the great mobility of the birds made it difficult to precisely locate them within their home range;
 - participants were less motivated when the potential numbers of sacred ibis were so low that the probability of a capture fell almost to zero.



Estimated population numbers from 2004 to 2013 (per half year).



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Outlook

- The remaining birds should be eliminated as soon as possible.
- Regular monitoring along the Mediterranean coast, through contacts with the managers of natural areas, will be required to avoid recolonisation by the population from the Atlantic coast in France or by the small groups of birds that may remain in Italy or Spain.

Information on the project

- Efforts are made to inform and raise the awareness of stakeholders concerning the sacred ibis, including the managers of natural areas, the owners of wetlands, naturalist associations, hunters. A memo is distributed explaining the objectives and the resources invested in the management of the sacred ibis along the Mediterranean coast and encouraging the transmission of information on the species.
- A report on the management work for sacred ibises was aired by French public television in March 2013.

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For more information

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