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## 33 African Sacred Ibis (*Threskiornis aethiopicus* Latham, 1790)

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### 33.1 Common Names

African Sacred Ibis, Sacred Ibis (English), Ibis sacré (French), Ibis Sagrado (Spanish).

### 33.2 Distribution

The African Sacred Ibis (*Threskiornis aethiopicus* Latham, 1790) is a common and widespread bird throughout large parts of sub-Saharan Africa (Fig. 33.1) (Barnes, 2005). A small isolated population persists in southern Iraq (Fazaa *et al.*, 2017). The species still bred in the Nile Valley, Egypt, in the early 19th century but disappeared within a few decades (del Hoyo *et al.*, 1992). All African Sacred Ibises found in the wild outside the African continent have a captive origin, having been deliberately or accidentally released. Breeding outside the native range has occurred in the USA, the Netherlands and Spain, and currently there are still wild populations breeding in France, Italy, Taiwan and the United Arab Emirates. Currently, free-flying African Sacred Ibises are known in Belgium, Germany, the UK, the Netherlands, Portugal and Spain without evident breeding (Yésou *et al.*, 2017).

### 33.3 Description

The nominate form of the African Sacred Ibis is a large, mainly white bird with a long decurved dark bill, a wholly bare dark

head and neck, and a black trailing edge to the wings (Figs 33.2 and 33.3) (Barnes, 2005). Its length is about 65–75 cm, its wingspan 112–124 cm and its weight about 1500 g (del Hoyo *et al.*, 1992). The iris is dark brown and the legs are black. Breeding adults show a ‘dirty’ yellow-toned plumage, with areas of bare red skin on the underwing and prominent ornamental black feathers on the rear back. Juveniles show a feathered neck and head; their tertials and the tip to their remiges are brownish-black. First-winter birds are intermediate, with the head and neck still well feathered and some blackish ornamental feathers. They also show a variable amount of black along the centre of the tertials and greater coverts and, in a few birds, on the median coverts (Barnes, 2005).

### 33.4 Diet

In their native and introduced ranges, African Sacred Ibises feed by day, mainly in flocks and often in mixed-species flocks (Barnes, 2005; Yésou *et al.*, 2017). They feed on locusts, grasshoppers, aquatic beetles, crustaceans, molluscs, and a variety of other aquatic and terrestrial invertebrates (Barnes, 2005). In addition, they can feed on fish, amphibians, lizards, birds and small mammals. Breeding birds sometimes raid other species’ nests for eggs and chicks (Barnes, 2005; Yésou *et al.*, 2017). They sometimes scavenge at refuse sites, abattoirs or feedlots (Barnes, 2005; Yésou *et al.*, 2017). In urban areas, their diets sometimes include vegetable matter and anthropogenic foods (Barnes, 2005; Yésou *et al.*, 2017).

### 33.5 Introduction and Invasion Pathways

Escapee African Sacred Ibis remained a rare sight until it became more common for zoological collections to house free-flying

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**Fig. 33.1.** Global distribution of the African Sacred Ibis (*Threskiornis aethiopicus*) showing its native (green) and non-native (red) ranges.



**Fig. 33.2.** Adult African Sacred Ibises flying in Doñana National Park, Spain (spring 2008). These birds were extirpated immediately after they started showing breeding behaviour at a mixed heronry. (©Photograph: José Antonio Sencianes.)

groups of ibises; the increasing number of escapees then led to the establishment of significant non-native populations in some areas (Fàbregas *et al.*, 2010; Yésou *et al.*, 2017).

In France, 20 African Sacred Ibises were introduced in the 1970s to a private park in southern Brittany. One decade later, the young, left free to fly, moved beyond the park, wandering hundreds of kilometres away along the Atlantic Coast. There were about 1400–1800 pairs in the wild in 2007, totalling

more than 5000 individuals before control measures were employed, resulting in about 250 birds remaining in January 2020 (OFB - unpublished data).

In southern France, a similar case occurred leading to about 300 individuals and around 100 pairs in the wild in 2007; this population has since been fully extirpated. In Italy, breeding in the upper Po Valley, Piedmont, began in 1989, and a census coordinated in late 2016 by the Piemontese Ornithological Group found 4068 individuals in 13 roosts in north-west Italy. In Spain, free-ranging ibises have nested in the Canary Islands (Fuerteventura and Lanzarote) since at least 1997, with a few pairs nesting sporadically to date (Lorenzo and González, 2015). A colony formerly established in a park in Barcelona was controlled in 2001 (Clavell, 2003). In spring 2008, a group of 11 birds of wild French origin (including one bird colour-ringed as a pullus at Lac Grand Lieu, near Nantes, in 2006) was settled at Doñana National Park in a mixed heronry, and nest building began: culling action was immediately carried out by National Park staff before laying could take place (Gutiérrez-Expósito, 2008).

Since 1989, a small introduced population persists on Sir Bani Yas island in the United Arab Emirates (Yésou and Clergeau, 2005) and probably disperses to Bahrain and Qatar. A dozen birds that escaped from a zoological garden in Taiwan in the early 1990s rapidly established a thriving population, with hundreds of birds living in the wild by 2002 (Ding *et al.*, 2017).

In the Netherlands, free-flying African Sacred Ibises that escaped from a zoological park attempted to breed in 2001, and successful breeding occurred in 2002, but eradication measures



**Fig. 33.3.** An adult African Sacred Ibis feeding with two Cattle Egrets (*Bubulcus ibis*) at El Rocío, Doñana National Park, Spain. This bird was tagged as a chick in the colony at Lac Grand Lieu, France, and had dispersed up to 1200 km; it was one of the members of the colonizing group found in the area in spring 2008 that were later extirpated. (©Photograph: Carlos Gutiérrez-Expósito.)

reduced the number to a few birds with possibly new escapees or birds arriving from Germany (Smits, 2010; Robert *et al.*, 2013).

In the USA, five African Sacred Ibises escaped from Miami Zoo, Florida, in 1992 when Hurricane Andrew destroyed their enclosure. Local government and state and federal administrations joined forces to eradicate the species, and now all African Sacred Ibises living in the wild in southern Florida, approximately 75 birds, have been removed (Herring and Gawlik, 2008).

### 33.6 Breeding Behaviour

The African Sacred Ibis is a colonial breeding species. Nests comprise a platform, usually built on islands or near the water on a variety of supports, mostly trees and bushes but sometimes on the ground or among rocks, using sticks, reeds, twigs or driftwood collected close to the site (Hancock *et al.*, 1992). A fidelity to nesting sites is observed year after year, and pairs lay quickly after arrival at the colony. In the native range, breeding usually starts during or just after the rain season. In the Loire estuary, western France, the first clutches are laid in late March or early April, and laying peaks in the second half of April and occurs up to the last week of July; whether late nests are related to late breeders or to replacement clutches is not known. Females lay two to four eggs, and both parents alternately incubate the eggs and share the feeding duties once the eggs have hatched. The survival rate for African Sacred Ibis chicks is low, and it is rare that more than one chick leaves the nest alive in its native range. Parents continue to feed the young until they are fully fledged. In France, the average ( $\pm$  SD) clutch size ( $2.41 \pm 0.68$  eggs per nest,  $n = 58$ ) and the productivity (1.46 young fledged per pair,  $n = 486$ ) were higher than most values from the African natural range of the species (Yésou *et al.*, 2006).

Yésou *et al.* (2006) suggested that both relatively low predation rates and rich food resources, including rubbish dumps, helped higher breeding success.

### 33.7 Habitat

The African Sacred Ibis is adapted to a wide range of mainly wet habitats including inland marshes and freshwater wetlands, mud flats, meadows and cultivated fields. The species also inhabits coastal lagoons, intertidal areas, offshore islands (del Hoyo *et al.*, 1992) and mangroves. It may also visit rubbish dump or dung heaps. It feeds by wading in very shallow wetlands or slowly stomping in wet pastures with soft soil. In France, it also forages in waste-water plants, in ploughed fields or in open-air poultry farms.

### 33.8 Impacts

In its native range, the African Sacred Ibis can raid nests for eggs and/or chicks of a variety of bird species including pelicans, herons, spoonbills and cormorants, gulls and terns on offshore islands, and two endangered species, the African Penguin (*Spheniscus demersus*) and the Cape Cormorant (*Phalacrocorax capensis*). They can even take eggs of the Nile Crocodile (*Crocodylus niloticus*; Williams and Ward, 2006). In introduction areas, such predation behaviour has been observed on a variety of bird species, including the Mallard (*Anas platyrhynchos*), Garganey (*Anas querquedula*), European Shag (*Phalacrocorax aristotelis*), Cattle Egret (*Bubulcus ibis*), Little Egret (*Egretta garzetta*), Night Heron (*Nycticorax nycticorax*), Squacco Heron (*Ardeola ralloides*), Black-winged Stilt (*Himantopus himantopus*), Northern Lapwing (*Vanellus vanellus*), Common Redshank (*Tringa tetanus*), Black Tern (*Chlidonias niger*), Sandwich Tern (*Sterna sandvicensis*), Common Tern (*Sterna hirundo*), Black-headed Gull (*Chroicocephalus ridibundus*) and European Herring Gull (*Larus argentatus*). Predation is sometimes opportunistic, but there are documented instances of African Sacred Ibises deliberately and systematically searching for eggs or chicks (Yésou *et al.*, 2017).

In France, farmers, particularly those rearing cattle and ducks, expressed concern that the growing numbers of African Sacred Ibises might be significant carriers of disease. African Sacred Ibises regularly feed at rubbish dumps and can also commute to farmland, which may exacerbate the problem. Studies have shown that the risk of the African Sacred Ibis to farm animals is only moderate, except in cases where specific outbreaks of an avian disease are causing concern (Bastian *et al.*, 2010), although Vorimore *et al.* (2013) described a pathogen new to science from non-native African Sacred Ibises.

### 33.9 Control

Apart from wild boars (*Sus scrofa*) destroying clutches in reedbeds, the African Sacred Ibis has no obvious natural predators

in Europe. In France, the national wildlife service (Office National de la Chasse et de la Faune Sauvage), renamed from 2020 Office Français de la Biodiversité has been carrying out an eradication programme of the African Sacred Ibis since 2007, culling adults and subadults with firearms. Killing adults is the best way to significantly reduce a bird population with a long lifespan. Culling gives better results during the rearing period of chicks, as adults use specific paths from the nest to the foraging sites and back. The use of flocks of artificial African Sacred Ibis decoys in the early morning, imitating birds foraging on meadows, improves the shooting efficiency. In winter, the birds do not have the same feeding pattern and are more dispersed, reducing the efficiency of shooting. Shooting on breeding sites is not recommended when African Sacred Ibises nest in mixed colonies with other species. In nature reserves where shooting is prohibited, a programme of egg sterilization ensures that most eggs do not hatch. In western France, about of 9150 African Sacred Ibises were culled between 2007 and

2019, and 3500 clutches were sterilized at Lac de Grand Lieu nature reserve colonies in 2009–2019. The population declined from 5000 birds in 2006 to around around 250 birds in January 2020. However, the population still disperse over much of the area occupied before the eradication programme began, now in much smaller groups at a much lower density, which makes completion of the programme difficult (personal observation). In recent years on the Mediterranean Coast, 485 ibises were removed from the wild when coming back to a zoological park to feed; 395 of them were killed and 90 were captured alive and placed in an aviary.

### 33.10 Uses

No specific use has been reported apart from being used as an ornamental species in zoological gardens.

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