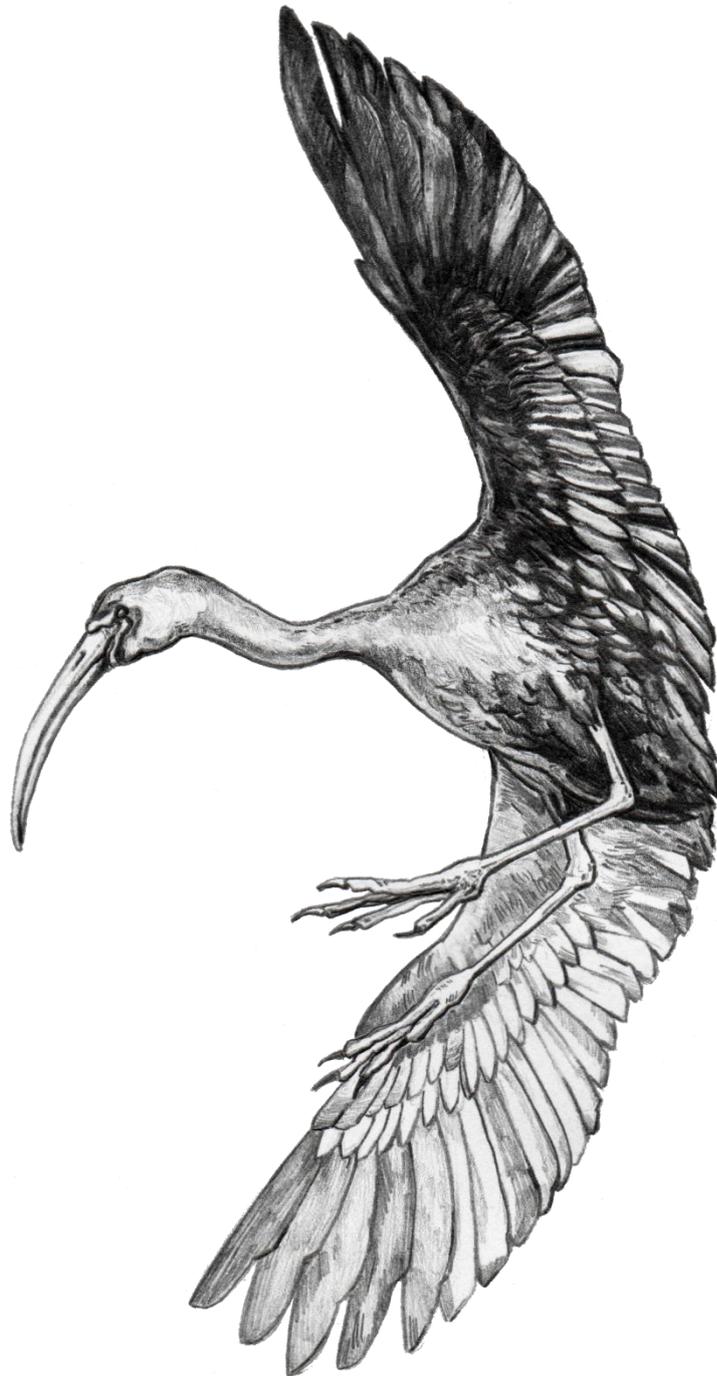


Developing a research network on Glossy ibis, a neglected cosmopolitan species



The Project in a nutshell

The Glossy ibis (*Plegadis falcinellus*) is the only cosmopolitan species of the Threskiornithidae family (ibis and spoonbills) and among the most widely distributed bird species in the world ([1] see map at the bottom of the document). Nonetheless, no knowledge exists on the intraspecific phylogeny and very little is known about the (meta)populations dynamics. We aim to fill this gap by setting up a research network and by implementing modern analytical tools (e.g. molecular and statistical) we nowadays dispose of.

Some puzzling aspects of Glossy ibis abundance and distribution

Little is known about the movement ecology of this species especially when focusing on a large spatial scale. In most ornithology books the Glossy ibis is described as migratory with nomadic elements [2] with populations at tropics being more sedentary than others. However, references are rarely provided and, to the best of our knowledge, only a few data have been ever collected on the Glossy ibis dispersal behavior.

According to historical records, breeding was very rare in W Europe while common in North Africa and S Spain before the 20th century when it became almost absent in all these regions [3–5]. In 1996 seven pairs settled at Doñana, a wetland area in SW Spain, from where the species begun an astonishing population increase reaching about 8,000 pairs in current times [6,7]. Since then, the Glossy ibis has started to colonize other areas in W Europe and the Mediterranean Basin from where it had been absent for decades or even had never been recorded as a breeder species. In this region, reproductive colonies currently exist in at least three sites in Spain (Doñana being the numerically most important), in France (Camargue), Portugal, Italy, Morocco, Algeria, Tunisia, and even a breeding attempt has been recorded in Britain in 2014 (Frampton marshes). While numbers in the west side of Europe and in the Mediterranean Basin have experienced a sharp increase, the species abundance in Eastern Europe has apparently - less information is available from these populations - suffered a marked decline over the same time range [8]. It can be therefore hypothesized that these two processes are related and that the origin of the West population has been directly or indirectly (e.g. changing migration routes) boosted by events in the East's. In this context, it must be noted that: (i) one of the rare ringing studies made on the species showed that during the second half of the past century several glossy ibises breeding in the northern Black Sea overwintered in the Western Africa, particularly in the delta of Niger River [9], 5000 Km apart from their reproductive grounds; (ii) North Africa populations have been little monitored in the past and recent evidence exists about individuals moving between Doñana and Morocco.

For the Americas' populations it has been hypothesized that they origin from a first dispersal of individuals from S Africa to S America that successively colonized N America [10]. Notably, at least five individuals marked at Doñana have been observed in Central America in different seasons over the last ten years.

Our experience with Glossy ibis as model species

Several scientific contributions have been published thanks to the monitoring program carried

out by the [Estación Biológica de Doñana](#) (EBD) [11,6,7,12–15] remarking the great potential of the species for ecological studies. First, some hypotheses have been tested about the influence of adaptive and non-adaptive mechanisms on the sex ratio variation [12]. Second, it has been suggested that the Doñana population fueled the spread of the species and that this process was driven by the constant contribution of immigrants (of unknown origin) at Doñana [7]. Third, it has been shown how fast the species responds to extreme climatic events (droughts) in the breeding area strongly enhancing dispersal with consequent species expansion [11]. Fourth, contrary to the classic concept of dispersal behavior as an attribute of one specific sex, some findings support that, depending on environmental or demographic factors, one sex may become more likely to disperse than the other [11,12]. Fifth, it has been investigated the importance of ricefield for the viability of the Doñana population and it has been suggested that, albeit its importance for the species persistence, only dramatic reductions of the ricefield areas would have a negative impact on this population [15]. Finally, it has been found that the plumage appearance of chicks differs between sexes and apparently relate to the individuals' fate (manuscript in preparation).

Local (ongoing) monitoring programs

Currently, the species is ringed in Spain, France, Italy, Algeria and Portugal (the latter two are ring-provided by the EBD). In one of these areas, Delta del Ebro (NE Spain), a growing population trend has been observed while the species has been suggested to be counteracting the spread of an invasive gastropod. Breeding of Glossy ibis has been recorded also in other areas of Spain, Portugal, France, Morocco, Tunisia, Italy and E Europe where the species is barely monitored and no ringing programs are currently ongoing.

Why the need for a network

Lack of monitoring programs from several sites has been likely due to sporadic presence, lack of funding and/or scientific appealing. This is unsurprising considering that investigating one specific local process may be of little interest; however, investigating several local processes is the baseline to unravel ecological processes. In this context, a great advance would be made possible by creating a network involving different research entities collecting data from this species with a number of shared aims and methodologies. Analogous networks on other bird species have shown to be really effective to gather knowledge on both the biology of the species and on ecological processes. For instance, such a network exists on the Greater flamingo (*Phoenicopterus roseus*) and on the Eurasian spoonbill (*Platalea leucorodia leucorodia*) over which species an [International Workshop](#) was held at the [Tour du Valat](#) (France, TdV) in November 2015.

The first international workshop on Glossy ibis

As a first step to initiate a working network on the species we aim to organize an International Workshop to be tentatively held in November 2017 at the [Doñana Biological Reserve](#) organized by the Estación Biológica de Doñana and in collaboration with the Tour du Valat. We aim to involve researchers able to actively contribute to the network with a special emphasis on those proceeding from areas that are likely to be part of the above suggested metapopulation. However, we expect that an important contribution to the aims of the workshop will come from the participation of researchers working on Glossy ibis from different world areas where the species is present. In particular, we define eight major objectives:

1 – Proposal of a common procedure to be followed in the monitoring program of the species from each Participant (Euro-Mediterranean researchers). This would include the definition of periods of the year when to concentrate resightings effort, aspect of the ringing procedure, sexing of individuals, etc.

2 – Preparation of a charter for the use of data collected under the monitoring programs above defined. This would imply an agreement about the coordination of data management through a hopefully common database of ringing and resightings as well as a suitable web interface to host it.

3 – Preparation of a special issue to be published in the first issue of [SIS Conservation](#), a peer-reviewed publication of the IUCN Stork, ibis and Spoonbill Specialist Group. It would comprise an updated summary of our knowledge of the species with a special emphasis on aspects of the population dynamics in the Euro-Mediterranean region.

4 – Preparation of a scientific publication that would investigate the intraspecific phylogeny and populations genetics by means of biological samples provided by the entire distribution area (including Africa, Asia, America and Oceania). In this sense it is worth noting that besides Glossy ibis mtDNA (for phylogeny), also are available microsatellites from the taxonomically closest species, *Plegadis chihi* [16,17] and other affine species [18].

5 – Definition of research objectives based on the integration of already existing data from different entities.

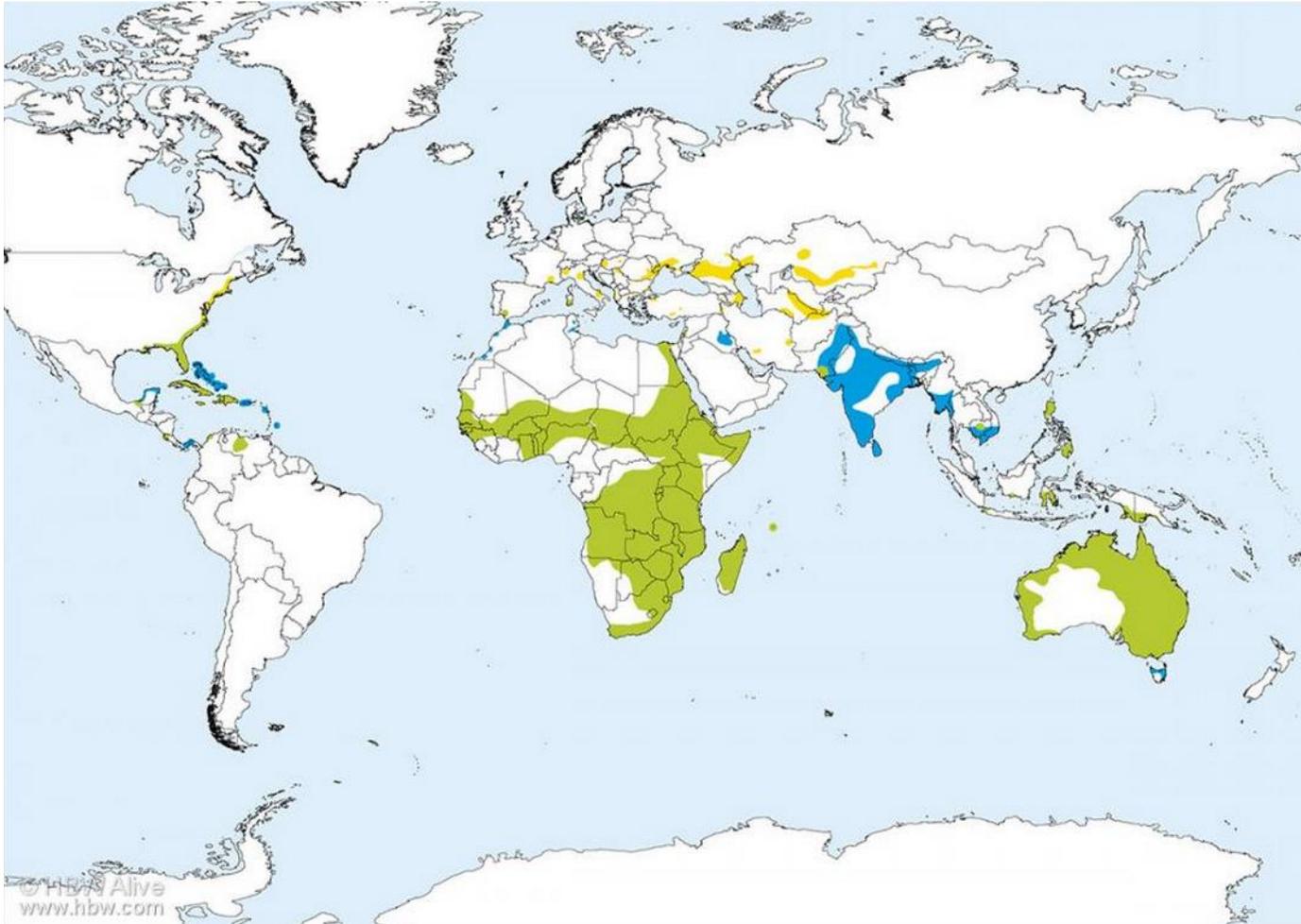
6 – Definition of research objectives that would involve the collection of new data by means of specific methodologies (e.g. usage of tracking devices) and/or sampling surveys (e.g. expeditions to wintering sites).

7 – Proposal of conservation measures to be followed for the safeguard of the species with a special emphasis on those areas where the populations are currently in decline.

8 – Proposal of a location and tentative schedule for the celebration of a second International workshop.

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World-wide know distribution (drawn by [2]). Notation: Yellow, Breeding visitor; Green, Year-round visitor; Blue, Winter visitor.