

Black Stork: a global stork with an uncertain trend

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Introduction

The Black Stork *Ciconia nigra* is a unique stork species in many ways (Strazds 2011). It has the most extensive breeding range of any species of storks (Hancock *et al.* 1992), as well as one of the widest distribution ranges among all bird species – the Black Stork has been recorded in more than 105 different countries (Strazds 1996). At the same time, Black Stork is not common in any country. At the regional level, it is considered to be threatened in most of its range countries (Hancock *et al.* 1992), included as a vulnerable species in a number of countries such as Portugal, Spain, Bulgaria, China, France, Belgium, Luxemburg, Croatia, Czech Republic, Italy, Nepal, South Africa, Lesotho, Swaziland and Estonia, and is considered a endangered species in countries distant from each other such as Republic of Korea, Greece or Uganda.

Despite the sensitive conservation status at regional scales and its inclusion in six international legal instruments and agreements, the Black Stork is listed as “Least Concern” by the IUCN Red List (BirdLife International 2017). The main reason for this is the huge range and total population size criteria, even though the overall trend of the population is unknown, included at a European scale (BirdLife International 2021), and the Green Status of the species is moderately depleted (Cano-Alonso 2021).

Background to the Special Section

The IUCN SSC Stork, Ibis and Spoonbill Specialist Group co-organised the VII International Conference on Black Stork in Doñana National Park from 28 to 30 November 2018. This was the seventh international conference since the first international Conference on Black Stork took place in Kemerli (Latvia) in 1993. Since 1993, a number of researchers, ornithologists, naturalists, managers, rangers and other “Black Stork lovers” have met in the following international conferences: Trujillo, Spain (1996); Saint Michelle, Belgium (2001), Davod-Püspökpuszta, Hungary (2004), Uzlina, Romania (2008) and Châlons-en-Champagne, France (2012). These conferences have generated an enormous volume of knowledge in the last ~ 30 years. In this time, we have discovered the flyways and movements of the Black Storks using satellite and GPS transmitters (Bobek *et al.* 2008, Chevallier *et al.* 2011, Cano and Tellería 2013), we have developed national ringing programmes (Tamás 2012, Tamás and Kalocsa 2016, Strenna *et al.* 2016), and we have increased the knowledge on its ecological requirements, populations, behaviour and conservation challenges (Strazds 1996, Klosowski *et al.* 2002, Hampl *et al.* 2002, Baeta *et al.* 2016, Pruvost *et al.* 2016, Cano-Alonso *et al.* 2021). This special section aims to share to a wider audience a few studies which were presented in the seventh international conference on Black Stork and point out some of the main challenges that the species faces: forest management, power lines, climate change and low productivity. This short but remarkable selection of papers is a significant contribution not only to the basic knowledge of the

Article history

Received: 23 March 2022,
Published online: 04 August 2022

species, but also provides useful inputs for managers and decision-makers who have to put in practice conservation measures for protecting this global stork species.

Black Stork special section

The articles for the Special Section are diverse, but they tackle some of the most important threats and pressures that the species has to deal with. This special section unfortunately misses contributions from Africa, Asia and the Middle East where the species is present, but some of the problems are likely common: climate change, overhead power lines and forest management.

Our colleagues from Belarus gives some evidence of how climate change might affect to Black Stork in Polesie, a vast marshy region in the Eastern-European lowland, but it could happen in other vital swamp areas which are vital for the species around the world (BirdLife International 2017). Increases in temperature, rainfall failures and other climate change might provoke wildfires, a decline of amphibians and other prey of the Black Stork that causes a reduction of the breeding pairs as well as the productivity (Dmitrenok *et al.* 2021).

Overhead power lines are installed all around the world. The uses of satellite tracking techniques have allowed us to know better the movement of the animals, including the Black Storks. These movements have helped identify threats, and the overhead power lines have been revealed as one of the most common man-made fatalities for the species. Our colleagues from Hungary show us the high mortality of first-year Black Stork because of electrocution or collision with overhead power lines, being a transboundary issue due to the migratory movement of the species (Kalocsa and Tamás 2021).

Our colleagues from Ukraine bring a unique case-study: a strict conservation action plan for the Black Stork that is not designed under scientific criteria might provoke animosity against the species as well as conservation problems with the forestry sector. They discussed the arbitrary

establishment of a strict protection zone for the species in forest environments and the consequences, and propose to adjust this protection zone according to other European legislation (Bokotey *et al.* 2021).

Finally, our Hungarian colleagues reveal that apparently natural processes such as infanticide and predation might be behind the low productivity of a number of pairs. They use trail-cameras to reveals “hidden” behaviours of the Black Stork and what might cause such amazing conducts (Tamás and Kalocsa 2021).

The special section closes with the outputs of the seventh international conference that was raised in the plenary discussion with a number of relevant conclusions and recommendations about the species (Cano *et al.* 2021). We hope this special section will be a useful compendium of new information to improve the conservation of this charismatic species.

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