

Conference Plenary Discussion, Conclusions and Recommendations of the VII International Conference on Black Stork *Ciconia nigra* (Doñana National Park, Spain)

Luis Santiago Cano^{a,b*}, Enikő Anna Tamás^c and Maris Strazds^d

^a Department of Biodiversity, Ecology & Evolution, Faculty of Biology Sciences, Complutense University, 28040 Madrid, Spain

^b IUCN SSC Stork, Ibis and Spoonbill Specialist Group. Rue Mauverney 28, 1196 Gland, Switzerland

^c MME BirdLife Hungary, Költő u. 21, Budapest, 1121 Hungary

^d Laboratory of Ornithology, Institute of Biology, University of Latvia, Riga, Latvia

* Corresponding author; Email: catuche.gallego@gmail.com

1. PLENARY DISCUSSION

The plenary discussion, open to the floor, compiled main findings, discussions, conclusions and recommendations during the VII International Conference on Black Stork *Ciconia nigra*, that took place in Doñana National Park (Spain) between 28-30 November 2018. The plenary discussion was facilitated by Luis Santiago Cano (IUCN SSC Stork Ibis and Spoonbill Specialist Group), Enikő Anna Tamás (MME BirdLife Hungary) and Maris Strazds (Laboratory of Ornithology, Institute of Biology, University of Latvia, Riga). The following points arose from the plenary discussion based on the presentations during the conference, and have been grouped by topic, although there is some overlap between these.

Research overview

There is an undoubted increase in our knowledge of the Black Stork. While the nineties of the last century and first decade of the 21st century satellite tracking technologies gave a tremendous advance to know

home ranges, movements, stopovers, migratory flyways, mortality rates, conservation problems and challenges that the species has to face across the year and the continents (Vogrin 2006), during the last years camera surveillance and camera traps technologies have given new knowledge in regard to behaviour (e.g. parental and non-parental infanticide), breeding phenology, intraspecific and interspecific competition, predation and matching partner's strategies among other issues (Gendre et al. 2016, Cano and Sundar 2018). In the light of these new researches, assumptions of a number of should be revised, such as a pair's territory or the assumption of a nest occupied during the breeding season equal to a breeding pair. This implies a need to review concepts and establish common standards to (re)estimate population sizes. Therefore, some parts of the breeding population might be overestimated, especially in those countries/regions where it is assumed that an individual present on a nest during the breeding season is different from an individual in another nest or, where the presence of a single bird on a nest is counted as a breeding pair. In general, the trend of breeding populations in many countries in Europe can be established as stable or declining, while it is unknown in the majority of the global distribution range.

Energy production and transmission

Climate change is one of the biggest threats to many non-avian and avian species (Huntley et al. 2006), and alternative energy sources are increasing in order to fight against climate change, especially in Europe, where the EU policies are promoting different renewable energies (Directive 2009/28/EC of the European Parliament), in particular wind energy. However, there is a pressing need to acquiring information about impacts of windfarms on Black Stork. The most pressing need is for effective measurement of Black Stork flight responses to turbines in different periods (e.g. in breeding areas as well as during the migration period along the migration flyways), as well as actual collision rates. We need a greater understanding of bird reactions to turbines in order to address this issue with respect to location and timing, as well as in relation to size and spacing of the wind turbines. To parameterize our collision risk models and to obtain information about avoidance rates, we need more data on flight avoidance behaviour using a combination of different technologies. Preliminary studies tend to show that the Black Stork may not be one of the top-risk species affected by direct mortality and the numbers of Black Storks killed by wind turbines seem to be low in comparison to other species (Berg *et al.* 2018). On the other hand, the installation of wind farms in the vicinity of breeding areas seems to have a strong impact on flight behaviour, breeding success and general population. There is a common practice to split wind farm projects in order to avoid wider environmental impact assessments, therefore there is a need to properly identify the scale of the researches and to take into consideration the cumulative impacts of wind farms in the correct scale. Studies should include not only the impact of turbines but also the hazards of overhead power lines (e.g. evacuation power lines of windfarms, electrical energy transmission of train lines), mainly in connection with the missing insulation or non-appropriate shape of electric poles (very high risk of electrocution) and collisions with overhead electric transmission lines, as the species is very sensitive to overhead power lines, especially during the migration periods. Further studies using satellite tagging, home range and

migration routes need to point out further protection measures.

Forest management

In the Euro-Syberian region and the western part of Asia the most typical Black Stork habitats are different kinds of forests (with low human disturbance) with rivers or water bodies in the vicinity (Tamás 2012). There are many researchers and studies that point out that forestry industry might be one of the most important negative impacts on the species due to habitat loss and disturbance (Strazds 2011), and forest protection and management shall be regarded as key issues to protect and conserve the species.

There are different experiences in Europe in this regard. While there are some good experiences in some countries how Black Stork and forest protection can co-exist, e.g. Poland (Zieliński 2006), there are a lot of countries where forestry activity is a serious threat to the species. The case of Ukraine is a clear example, and a paradox. Ukraine has approved a restrictive National Action Plan in 2018 with the aim to protect the Black Stork in the country. For instance, a protection area of 1,000 m radius around the nest is established against any forestry activity (that is two to four times the area established in other countries). But the restrictions included in this plan have provoked a negative reaction against the species by the forestry industry, despite that this industry should be a flag stakeholder in the protection of the species.

There is a need for consistency in planning, the measures to be taken and in systematic research as well. Standardized guidance is needed for forest management and the protection of the Black Stork populations, especially in the countries where forestry industry is increasing or is a thriving economic activity. A consolidation and critical revision of the different National Action Plans with the support of systematic research is necessary in order to provide a standardized guidance for conservationists, managers and environmental policy makers.

Ringling programmes

The International Black Stork colour ringing programme has brought an enormous knowledge of the species across the countries since this programme started (Tamás 2012). Dispersal movements, flyways and migration routes, origin of breeders, origin of wintering populations, survival rates and longevity are some issues that researchers have studied thanks to this ringing programme that compile and exchange information from different national ringing schemes. Probably, this international programme is one of the best examples of international collaboration among researchers as ringing and ring-reading activities imply international collaboration and coordination as well as an involvement throughout the range of the species.

The International Black Stork colour ringing programme has reached a good co-ordination level. There is a network of 15 ringing programme managers specialized on the species connected and exchanging information every year. The current co-ordinator, Enikő Anna Tamás, keeps contact with these managers, trying to increase the network and compile information every year. There is also a mailing group to exchange information which is managed by the co-ordinator. In spite of these efforts, there are still some gaps that the programme should be focused on. There is a need of increasing the coverage range of the programme and to incorporate further countries. On the other hand, there is still a need of co-ordinating the code systems among countries to avoid duplication of codes that would damage individually and collectively the ringing programme itself.

Networking

In spite of having the most spread distribution among all stork species, the majority of the researchers and research activities come from pan-European countries. There is a gap in the network that makes lack of knowledge in vast regions within the distribution range of the species, especially in Russia and the Far East. On the other hand, the network relationship is mainly focusing on concrete and few

activities, such as ringing programmes as well as international conferences without any fixed periodicity. There was a pioneer and quite successful experience in 2005 with a European project “Flying Over Natura 2000”, which have not had continuity with other significant common projects. There is an enthusiastic group but there is no common umbrella that might design joint studies, projects, resources and look for common opportunities. The IUCN SSC Stork, Ibis and Spoonbill Specialist Group (SIS-SG) offers its umbrella to this group to constitute a formal working group under the SIS-SG in order to increase the capacity of networking (communication channels, membership, international specialists), resources (website, publications) and opportunities (grants, application for calls) under the prestige of the IUCN SSC, following the recent experience of the International Glossy Ibis Network (IGIN). The Black Stork working group might achieve projects such as a gene flow project at worldwide scale as the IGIN is doing at this moment.

Conclusions

The VII International Conference on Black Stork has brought new issues to be tackled in the coming years in regard to the species, not only new issues to be studied, but also new challenges to be faced with, in order to know and protect the Black Stork better. This conference has also remarked previous challenges, such as the limitation of knowledge of the species across its distribution (most of the presentations come from European and neighbour countries and there is a lack of researchers included in the group beyond these countries, which is partly for sure due to the lack of resources and funding).

Black Stork populations seem to show different tendencies among countries. While a decreasing trend seems to continue in the Baltic countries, there are some countries where the population seems to be stable, reaching a carrying capacity level (e.g. Czech Republic). Anyway, the globally increasing slope showed during the last two decades by the species in many countries seems to be stabilized in the last years. It is difficult to ensure a global trend due to different criteria and methodologies used among

countries, but we should be aware of the tendencies and try to align methodologies in order to have standard criteria. We should try to establish new parameters and standards to estimate Black Stork populations.

EU policies are promoting different renewable energies, in particular wind energy. Preliminary studies tend to show that the Black Stork may not be one of the top-risk species affected by direct mortality, but there is a pressing need to conduct further and specific studies on this species with common standards in proper scales across Europe. Impact of turbines and overhead power lines should be included. The conclusions of these studies could be used as best practice guidelines for other regions across the species' distribution.

Forest management is still an important unresolved issue for the protection of the species. There are still important conflicts between forestry industry development and Black Stork protection. This is especially a serious issue in the countries where forestry industry is a thriving economic activity. Therefore, there is a need of sharing knowledge, experience and lessons learned among countries, promoting researches that might contribute to establishing a standardized guidance for forest managers and policy makers.

Colour ringing programme has played an important role in the improvement of the knowledge of the species and the international collaboration for the last 20 years. However, there is a need of increasing the network and improve co-ordination among programmes to avoid overlapping codes. This is the main issue to resolve in the coming years.

As regards to the proposal to formalize a working group within the IUCN SSC Stork, Ibis and Spoonbill Specialist Group, more and formal information about duties and responsibilities is required in order to assess the potential benefits of being integrated under the umbrella of this IUCN SSC group.

Anyway, we all agree that collaboration is the most promising way forward.

Conference recommendations

These recommendations seek to encapsulate the specific discussion points above, arising from the plenary session that followed the conference presentations. The conference recommends the continuation and the strengthening of the relationship within this group to tackle the following:

(1) Information dissemination, sharing international experience and publishing joint data for different topics where different researchers are working is essential. We encourage researchers to publish in peer-reviewed scientific journals as currently many reports and findings of Black Storks reside in 'grey' literature that is not always readily accessible, nor assessed in terms of scientific rigour.

(2) More co-operative data collection effort with standardized guidance.

(3) Development of common standards and good practice guidance for populations' estimations, assessment on wind farms and overhead power line impacts and forest management.

(4) Aim to adopt an integrated approach for studying the species, with special focus on a revision of the population sizes and trends in Europe and all over the range, applying the common standards mentioned above.

(5) The results of researches need to feed back into mechanisms for recommending guidelines and best practices to environmental managers and policy makers.

(6) The ringing programme should continue working and trying to extend its coverage and all over the range.

(7) IUCN SSC Stork, Ibis and Spoonbill Specialist Group should disseminate information through the group's e-mail list about advantages to become a formal working group under its umbrella.

(8) In fundraising terms, it is highly recommended to jointly look for unexplored (or little explored) fundraising opportunities (EU programmes, energy companies, international grant opportunities). Once again, sharing and exchanging information about funding opportunities is the best way to access to funding resources.

Acknowledgements

The authors would like to thank the Biological Station of Doñana (EBD-CSIC) for hosting the conference; Jordi Figuerola, Deputy of the EBD-CSIC; Junta de Andalusia (Andalusian Region) that partially funded the Conference, in particular José Manuel López Vázquez; everyone who attended the conference: Paul Brossault, Béla Kalocsa, Frantisek Pojer, Patric Lorgé, Isabelle Zwick, Marc Jans, Sellis Urmas, Piotr Zielinsky, Bartosz Janic, Natalie Dzyubenko, Andriy Bokotey, Pavel Pakul, Marina Dmitrenok, Nicolas Gendre, Annie Chapalain, Frederic Chapalain, Claude Chapalain, Manuel Mañez, Ruben Rodriguez, José Luis Arroyo, Antonio Martínez, Cathy King, Daniel Auclair, Daniel Dupuy And Vitor Encarnaçao.

REFERENCES

- Berg, S., F. Iseret, M. Jurczyk, S. Fronczek, N. Reischke, C. Jung, D. Braun and D. Thielen. 2018. Analysis of Black Stork flight behaviour under different weather and land-use conditions with special consideration of existing wind turbines in the Vogelsberg SPA. https://landesplanung.hessen.de/sites/landesplanung.hessen.de/files/Fassung%20B_Schwarzstorch_TitelseitenPlusZusammenfassung_EN.pdf, access 3 March 2019.
- Cano Alonso, L. S. and Sundar, K. S. G. (Eds.) 2018. VII International Conference on Black Stork *Ciconia nigra*: Programme and abstracts. IUCN-SSC Stork, Ibis and Spoonbill Specialist Group Special Publication 1. Seville, Spain and Mysuru, India.
- Tamás, E. A. 2012. Breeding and Migration of the Black Stork (*Ciconia nigra*), with Special Regard to a Central European Population and the Impact of Hydro-Meteorological Factors and Wetlands Status. PhD Thesis, University of Debrecen, Debrecen, Hungary. 146 pp.
- Gendre N., Brossault P., Strenna L., Chapalain F. And Godreau V., 2016. Actes du Colloque Cigogne noire. 21, 22 & 23 septembre 2012 - Châlons-en-Champagne - France. *Ornithos*, Hors-serie n°1 - 2016. 224p.
- Huntley, B., Y.C. Collingham, R.E. Green, C. Rahbeck, and S.G. Willis. 2006. Potential impacts of climate change upon birds. In *Wind, Fire and Water: Renewable Energy and Birds*. *Ibis* 148 (Suppl. 1): 8–28.
- Strazds, M. 2011. Conservation Ecology of the Black Stork in Latvia. PhD Thesis, University of Latvia, Riga, Latvia. 96 pp.
- Vogrin M. (Ed.) 2006. Proceedings of the 4th International Conference on the Black Stork *Ciconia nigra* Davod-Püspökpuszta, Hungary, 15-18 April 2004. *Biota* 7 (1/2). 230 pp.
- Zieliński, P. 2006. The Role of Forest Reserves in the Protection of the Black Stork *Ciconia nigra* in Central Poland. *Biota* 7 (1/2): 119-123.