SPECIES REVIEW:

BLACK CROWNED CRANE (*Balearica pavonina*)

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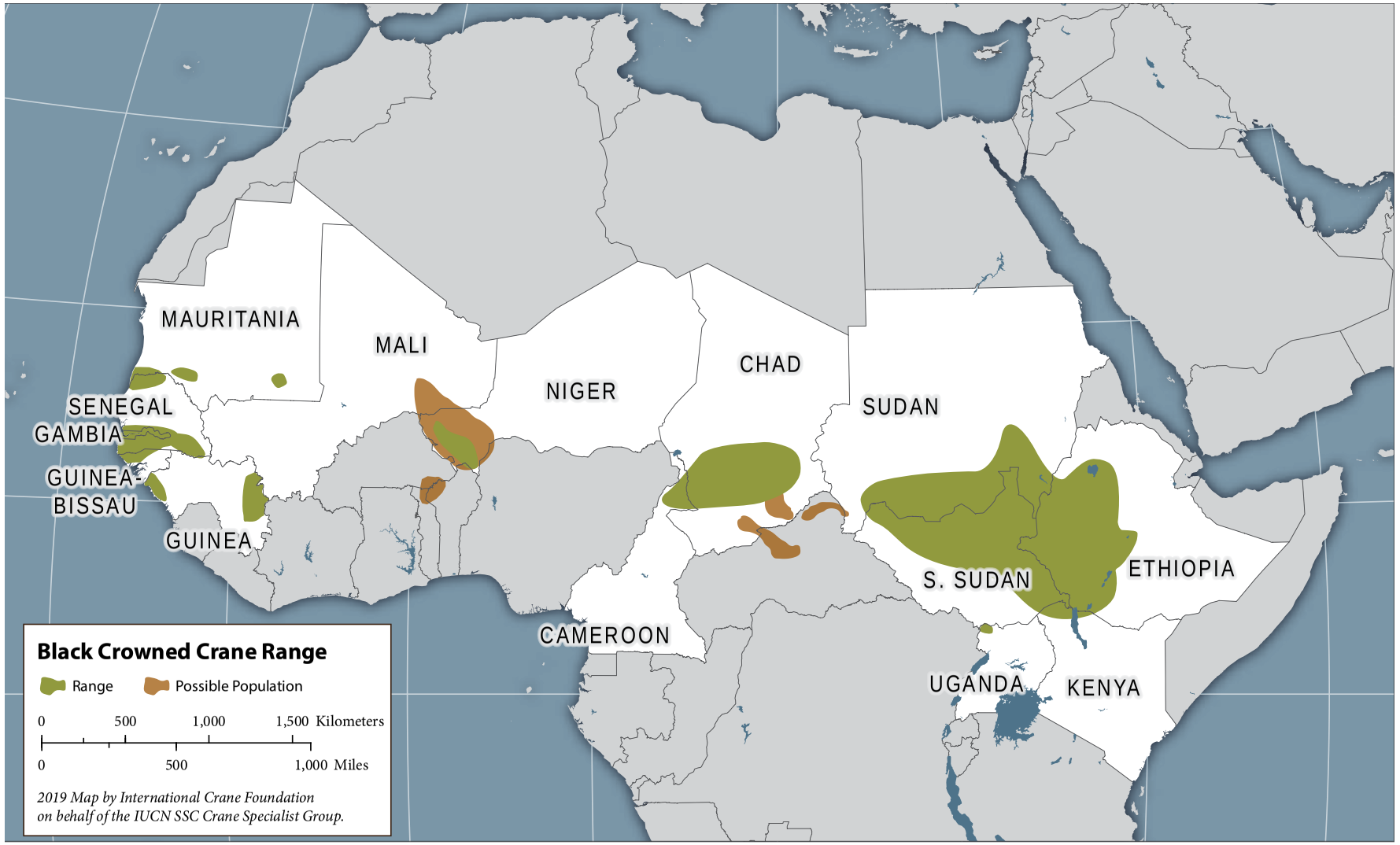
Black Crowned Cranes in a courtship dance at Zakouma National Park in Chad (Photographer: Michael Lorentz, African Parks)

Red List Category: Vulnerable
Population Size: 43,000–70,000
Population Trend: Decreasing
Distribution: Western Africa, Sudan, Ethiopia

Mirande CM, Harris JT, editors. 2019. Crane Conservation Strategy. Baraboo, Wisconsin, USA: International Crane Foundation. 455 p.



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DISTRIBUTION AND STATUS OF KEY SITES

Subspecies/Populations

There are two subspecies of the Black Crowned Crane: West African Crowned Crane (*B. p. pavonina*) and Sudan Crowned Crane (*B. p. ceciliae*).

Overall Range

The Black Crowned Crane is a resident of the Sahel and Sudan Savannah regions of Africa, occurring in disjunct subpopulations from Mauritania to Guinea on the Atlantic coast in West Africa to the western Ethiopian Highlands and Rift Valley in Ethiopia. The biogeographical separation between the two subspecies is unclear but likely is east of Lac Fitri in central Chad (Williams et al. 2003, Beilfuss et al. 2007). However, recent photos of Black Crowned Cranes in Chad (shared by Lorna Labuschagne) suggest that the separation could be west of Chad, based on the pattern of the red cheek patches that separate the two subspecies. For purposes of this assessment though, we will consider the split to be east of Lac Fitri. Although considered year-round residents in most of the crane areas, they do undertake local seasonal migrations in response to rainfall, and daily movements are considered to be extensive (Williams et al. 2003, Gichuki 2004).

West African Crowned Crane

The West African subspecies, although once widespread and occurring in almost a contiguous distribution across West Africa, is now severely fragmented with large gaps between many of the subpopulations (Williams et al. 2003, Beilfuss et al. 2007). Most Black Crowned Cranes are now clustered into a few regions, most notably the Senegal River Delta of Senegal and Mauritania; the coastal region from southern Senegal (Casamance) to northern Guinea; Waza National Park in Cameroon; and Lac Fitri, Zakouma National Park, and surrounds in Chad (Tréca 1996, Williams et al. 2003, Beilfuss et al. 2007; Tim Dodman, personal comm.; African Parks Foundation, personal comm.). Sadly, they are now extinct or close to extirpation in several countries, including Nigeria where it is the National Bird (Williams et al. 2003).

Sudan Crowned Crane

Studies provided in Williams et al. (2003) suggest that the Sudan subspecies too had undergone some reduction in range, but further surveys are needed to verify this. They too are clustered into a few regions, with the highest concentrations (based on historic record) by far in the northern regions of the Sudd between South Sudan and Sudan; and smaller concentrations around Lake Tana and the southwestern parts of Ethiopia (Beilfuss et al. 2007, Diagana et al. 2006).

ECOLOGY

The ecology of Black Crowned Cranes is similar to Grey Crowned Cranes in several respects, but it may be a somewhat more wetland-dependent species. Black Crowned Cranes breed and feed in many of major water bodies across their range, including the coastal deltas of West Africa, the inland delta of Mali, the large floodplains of Waza National Park, the Sudd, and other sites. Many aspects of their ecology are, however, still very poorly understood. Dodman et al. (2014) noted that they frequented water points, an indication of their dependency on water. This species is found in wet and dry open habitats but prefers freshwater marshes, wet grasslands, and the peripheries of water bodies, often in association with agricultural lands, especially rice (*Oryza*) fields (Daddy and Ayeni 1996, Meine and Archibald 1996, Ojok 1996, Dodman et al. 2014). Non-breeding flocks throughout the year and large flocks in the dry season are often seen in rice fields and harvested or plowed agricultural lands (Tréca 1996, Tréca and Ndiaye 1996, Ojok 1996, Gichuki 2004, Kone et al. 2007, Dodman et al. 2014).

This species is a generalist omnivore (Eljack 1996, Tréca 1996, Williams et al. 2003). Their diet ranges

from insects (grasshoppers, flies), mollusks, millipedes, crustaceans, fish, amphibians, and reptiles to seed heads, grass tips, agricultural grain, and tubers, for which they dig in soft ground (Urban 1996, Eljack 1996, Tréca 1996).

Their breeding seasons are not yet well understood, with several variations recorded. In West Africa, Brouwer and Mullié (1996) and Tréca and Ndiaye (1996) noted that the breeding season coincided with the wet-season months of September to January. Dodman et al. (2014) and Diop (2015) reported the peak breeding season in Senegal to be between July and September, although both nests and young chicks have been recorded between August and October (Idrissa Ndiaye, personal comm.). Similarly, Diagana and Diawara (2015) reported the breeding season in Mauritania to extend between July and October, coinciding with the rainy season. The variance in reporting exists too for the Sudanese subspecies. Daddy and Ayeni (1996) and Ojok (1996) noted that the South Sudan subspecies nested between July and October. Shimelis et al. (2011), however, recorded peak nesting between August and December in Ethiopia.

Black Crowned Cranes generally nest on a loosely constructed platform or mound of vegetation within wet grasslands and in shallow water bodies, often along river tributaries that are relatively inaccessible (Gichuki 2004, Ligtvoet and van Dommelen 2005, Dodman et al. 2014). Very often these nests, at least in Senegal, are either on small islands within river tributaries or on floating platforms surrounded by water in large wetland systems (Idrissa Ndiaye, personal comm.). In the Inner Niger Delta, Kone et al. (2007) found that they preferred vegetation dominated by *Echirochloa stagnina*, and Dodman et al. (2014) recorded them nesting predominantly in *Sporobolus robustus* with *Sesygium portulacastrum* in the Casamance and Senegal River Delta regions of Senegal.

In general, Black Crowned Cranes lay between two and five eggs per clutch, incubate for 28–31 days, and fledge their chicks at between 60 and 100 days. At the same time, a detailed study of the breeding habits of Black Crowned Cranes in the Casamance region of Senegal varied considerably from this, recording an average clutch size of three eggs, an incubation period of 22–25 days, and fledging at between 35 and 40 days (Dodman et al. 2014; Idrissa Ndiaye, personal comm.). They also found that nests were reused between seasons and noted that chicks left the nest after hatching to hide in the grass. In Senegal, active nests are often found in very close proximity to each other, and several nests from previous seasons are often visible in the same area (Idrissa Ndiaye, personal comm.). Idrissa Ndiaye (personal comm.) also reported adult pairs hiding their chicks in extensive wetlands or on islands in rivers whilst they moved off a considerable distance to forage in rice fields. Sexual maturity appears to be around four to five years of age (Diagana and Diawara 2015).

Breeding success varies significantly between seasons. For example, Scholte (1996) recorded 25% of the population as juveniles in northern Cameroon and Western Chad, whereas Ligtvoet and van Dommelen (2005) recorded only 13.7% of the population as juveniles in northern Cameroon. This difference needs further investigation as it could be a result of the semi-arid environment and unpredictability of the weather where they occur, or an indication of reduced breeding productivity associated with a population decline.

Black Crowned Cranes generally roost in trees or, in some areas where they are available, on wooden or steel overhead transmission structures (Allan 1996, Tréca 1996). In the Casamance, Senegal, Dodman et al. (2014) found these cranes roosting in young baobab (*Adansonia digitate*) trees as well as in saline pans. However, in the Lake Tana area in Ethiopia, cranes will also roost in the middle of the wetland on a drier, higher area surrounded by deep water (S. Aynalem, dissertation research 2016, unpublished).

NUMBERS AND TRENDS

The western subpopulation (*B. p. pavonina*) is estimated to have declined from 15,000–20,000 individuals in 1985 to 15,000 individuals in 2004 (Beilfuss et al. 2007), and strong anecdotal evidence suggests that number could be lower at present. Although the eastern subpopulation may have undergone a comparable decline (50,000–70,000 individuals estimated in 1985 to 28,000–55,000 individuals estimated in 2004), the accuracy of initial and current counts is questionable, so stating a trend based on these data is not advisable (Beilfuss et al. 2007). Therefore, based on data from *B. p. pavonina* populations alone, the species is estimated to have declined between 0–25% from 1985–2004. Given the uncertainty around these estimates, we provisionally estimate a worst-case decline of 30–49% over 45 years (three generations), though the true figure may be higher depending on the status of *B. p. ceciliae* (BirdLife International 2012).

The species, although once widespread across its range, has undergone dramatic declines in certain countries, such as Mali, and may even have been extirpated in others, such as Nigeria (Diagana et al. 2006, Garba 1996, Turshak and Boyi 2007).

THREATS

Black Crowned Cranes have declined primarily due to habitat loss and degradation, domestication and illegal trade, and human and livestock disturbance around nesting sites.

Habitat loss and degradation are significant threats, occurring through drought, wetland drainage and conversion for agriculture, large irrigation schemes in floodplain wetlands, siltation, overgrazing, fire, agricultural and industrial pollution, industrial construction, and dam construction (flooding wetlands upstream and desiccating those downstream) (Boyi and Polet 1996, Brouwer and Mullié 1996, Eljack 1996, Garba 1996, del Hoyo et al. 1996, Olofin 1996, Scholte 1996, Stopfords and Mustafa 1996, Williams et al. 2003, Gichuki 2004, Beilfuss et al. 2007, Turshak and Boyi 2007, Shimelis et al. 2011, Dodman et al. 2014, Diagana and Diawara 2015, Diop 2015, Lecoq et al. 2015, Diagana 2016, Gemeda 2016). In the Senegal Delta and in the rice fields behind the coastal mangroves in southern Senegal / Guinea-Bissau, climate change and dams upstream have caused changes in the hydro-agriculture of these regions, resulting in the deterioration of the rice fields that serve as important feeding sites for cranes (Tréca and Ndiaye 1996, Dodman et al. 2014). Of particular concern too is the potential construction of the Jonglei Canal for the Sudd in Sudan, which would drain the swamp for pastoralists to raise livestock if its construction were resumed (Eljack 1996, Ojok 1996, Beilfuss et al. 2007).

Droughts have both directly and indirectly impacted this species' habitat. A series of dry years has resulted in significant shrinkage of and changes within key wetland areas (Turshak and Boyi 2007, Diagana and Diawara 2015, Diop 2015) and in increased salinity of the coastal wetlands, such as the case for the Casamance region of Senegal, that caused habitat loss (Dodman et al. 2014). Indirectly, droughts have forced people to migrate to relatively moist, less populated regions, which are then subjected to the associated pressures mentioned above (Boyi and Polet 1996, Brouwer and Mullié 1996, Garba 1996, Tréca 1996, Tréca and Ndiaye 1996, Williams et al. 2003, Gichuki 2004). The resultant increase in disturbance from both people and livestock also has a negative effect on the breeding productivity of cranes (Brouwer and Mullié 1996, Daddy and Ayeni 1996, Scholte 1996, Turshak and Boyi 2007, Diagana and Diawara 2015, Lecoq et al. 2015, Diagana 2016). Disturbance will result in reduced number of breeding pairs and decreased number of chicks that fledge due to more time being spent observing potential danger than provisioning for the chicks. A study by Ligtvoet and van Dommelen (2005) showed that Black Crowned Cranes were far more sensitive to people than they were to cars and were less sensitive to disturbance when in a large flock than in small flocks or family groups.

The illegal removal of cranes from the wild for the domestic and international captive trade markets is a significant threat to this species (Brouwer and Mullié 1996, Scholte 1996, Tréca 1996, Beilfuss et al. 2007, Kone et al. 2007, Turshak and Boyi 2007, Morrison 2009, Lecoq et al. 2015). The domestication—keeping of cranes around homesteads, hotels, and other local places of interest—is reportedly common practice across several range states of the Black Crowned Crane. A detailed study conducted in the Inner Niger Delta in Mali suggested that there were more Black Crowned Cranes in domestication than there were in the wild (Kone et al. 2007). Cranes are held to symbolize prestige and wealth, to bring good luck, to keep compounds free of insects, to keep watch over the house, to serve as time pieces, and protect the family from evil spirits. Kone et al. (2007) noted that up to 90% of all captured birds died before reaching their destination, and that many more died prematurely in domestication due to a lack of care. Also notable is the fact that Black Crowned Cranes could be found for sale in markets in Nigeria at least into the 2000s, despite the fact that they had been essentially extirpated from the country (Turshak and Boyi 2007).

International trade, however, is also of concern. From 2004 and 2014, between 343 and 372 Black Crowned Cranes were reported as being exported from Sudan and South Sudan (CITES trade statistics derived from the 2016 CITES Trade Database, UNEP World Conservation Monitoring Centre, Cambridge, UK). A study conducted by Hashim (2010), however, found that government officials only reported 37% of the traded cranes that they knew about and only provided CITES certificates for 12% of these. This information suggests a much larger number are being exported than reported in the CITES Trade Database. Recent unsubstantiated reports also suggest that Sudan and South Sudan are significant trading countries for Black Crowned Cranes. Guinea also appears to currently be a key export country for Black Crowned Cranes and serves as a gateway to international markets for cranes captured across the West African region (unconfirmed reports from confidants).

Warfare and political instability affect nations across the range of the species and may pose a very significant threat to the species both through indiscriminate shootings and inability to implement conservation measures. Many of the past and present core population centers for the West African subspecies are highly threatened by warfare associated with various insurgencies, including the Inner Niger Delta of Mali, Waza National Park in Cameroon, northern Nigeria, and much of southern Niger and Chad. The Sudan subspecies has suffered from chronic warfare in (now) South Sudan for more than 50 years, as well as southern areas of Sudan / northern Kenya / southwestern Ethiopia, where the implementation of conservation measures has frequently been impossible to proceed (Tréca 1996, Tréca and Ndiaye 1996, Williams et al. 2003, Gichuki 2004). Oil exploration in and near the wetlands also poses a threat (Williams et al. 2003).

In addition to indiscriminate shooting associated with warfare, Black Crowned Cranes are hunted in parts of their range, although not a common occurrence (Brouwer and Mullié 1996, Ojok 1996, Gichuki 2004, Diagana 2016). Parts of dead Black Crowned Cranes, notably the head and wings, are used in traditional healing (Williams et al. 2003, Diagana and Diawara 2015, Diop 2015). In Ethiopia children have been observed collecting eggs and catching and killing chicks (Shimelis et al. 2011), although adult cranes are strictly protected through cultural taboos.

Indiscriminate pesticide application that may be leading to harmful bio-accumulation of toxins, and direct poisoning to reduce crop depredation also have been reported in East Africa (Williams et al. 2003, Gichuki 2004).

CONSERVATION AND RESEARCH EFFORTS UNDERWAY

Range-wide

- The Black Crowned Crane is listed on Appendix II of the Convention on International Trade in Endangered Species (CITES), which means that any trade in this species should be carefully regulated (http://www.arkive.org/black-crowned-crane/balearica-pavonina/);
- In 1999–2002, the International Crane Foundation and Wetlands International launched a Black Crowned Crane Programme to determine the status of the species and to prepare an action plan. A Status Survey and Conservation Action Plan for the Black Crowned Crane *Balearica pavonina* was developed as a result of this programme (Williams et al. 2003);
- The ICF/EWT Partnership is working on the African Crane Trade Project, which focuses on research and monitoring to understand trade issues, increasing awareness of the threat, advocacy for needed policy changes and legislation, and advocating for the development of sustainable captive populations negating the need for wild caught trade; and
- The International Waterbird Census coordinated by Wetlands International includes monitoring of a number of key sites for Black Crowned Cranes across its range.

West Africa Subspecies

- Wetlands International has been supporting a range of initiatives focused specifically on the Black Crowned Crane in Mauritania, Senegal, Guinea-Bissau, Guinea, Mali, and Nigeria, most notably in the rice-growing region of the western coastline;
- Birdlife International launched a regional project on the conservation of migratory birds in 2011 in the coastal zone of West Africa between Mauritania and Sierra Leone, working closely with the Wadden Sea Flyway Initiative and Wetlands International. This Conservation of Migratory Birds (CMB) Project deals with the development and implementation of national species action plans, including, in some countries, the Black Crowned Crane;
- BirdLife International, Wetlands International, the African Eurasian Migratory Waterbird Agreement, Nature Mauritania, Vogelbescherming Nederland, and the MAVA Foundation have developed a National Species Action Plan for Black Crowned Cranes in Mauritania (Diagana et al. 2015);
- BirdLife International, Wetlands International, the African Eurasian Migratory Waterbird Agreement, Human-Centered Design for Smallholder Families, and the MAVA Foundation have developed a National Species Action Plan for Black Crowned Cranes in Senegal (Diop 2015);
- BirdLife International, Wetlands International, the African Eurasian Migratory Waterbird Agreement, MAVA Foundation, Organização para a Defesa e Desenvolvimento das Zonas Húmidas, Gabinete de Planificação Consteira, and Instituto da Biodiversidade e das Áreas Protegidas have developed a National Species Action Plan for Black Crowned Cranes in Guinea-Bissau (Lecoq et al. 2015);
- Birdlife International, the African Eurasian Migratory Waterbird Agreement, MAVA Foundation and Guinee Ecologie, in collaboration with the Ministère de l'Environnement, des Eaux et Forêts, and Office Guinéen des Parcs et Réserves (OGUIPAR) Rapport, have developed a National Action Plan for Black Crowned Cranes in Guinea (Diagana 2016); and
- Bird monitoring and conservation activities, including cranes, have been carried out in parts of Chad, yielding some recent data about Black Crowned Crane numbers.

Sudanese Subspecies

- NABU (Nature and Biodiversity Conservation Union, a German Crane Working Group) and the Ethiopian Wildlife Natural History Society had a monitoring programme (now discontinued) aimed at gathering baseline information and an awareness project around Lake Tana in Ethiopia that included Black Crowned Cranes;
- Research projects, linked to Bahir Dar University and Jimma University, are currently underway on Black Crowned Cranes around Lake Tana, supported by ICF; and
- Efforts towards establishing a waterbird monitoring programme in South Sudan have been made by the Wildlife Conservation Society, Office National de la Chasse et de la Faune Sauvage (ONCFS), and Wetlands International.

CHANGE SINCE 1996

Black Crowned Crane numbers have declined dramatically since 1996, with less than 70,000 individuals estimated to be remaining. Unfortunately, this is likely an overestimate as our understanding of the species, its status, and threats is very limited at this time. The threats to the species have escalated and intensified since 1996 and currently show no signs of abating – likely these threats will escalate further in the face of climate change, water scarcity, agricultural conversion of wetlands, persistent regional conflict, and other challenges. Large parts of the range of this species are no longer easily accessible to researchers and conservationists due to political instability, warfare, and the presence of violent extremist organizations.

PRIORITY RESEARCH AND CONSERVATION ACTIONS

Research and Monitoring

- Understand the breeding biology and ecology of the species and their habitat requirements;
- Conduct a status, distribution, and threats assessment of the crane population in Guinea-Bissau, a key part of the West African coastal population, for which limited information is available;
- Conduct regular monitoring of cranes in the Senegal Delta across both Senegal and Mauritania, and investigate breeding productivity;
- Understand the distribution, status and breeding productivity of Black Crowned Cranes in Casamance, Senegal;
- Undertake surveys to determine whether cranes exist in the northern regions of Guinea;
- Conduct surveys of the large wintering flocks in Zakouma National Park, Chad, in January / February when juvenile cranes can still be identified. This effort will provide information on the population size in that area and an indication of the recruitment rate in this subpopulation. During the breeding season, assess the distribution of Black Crowned Cranes outside of Zakouma National Park and conduct threat assessments in key breeding areas identified;
- Monitor population trends through regular standardized surveys;
- Monitor local migration (movement) through regular standardized methods;
- Assess the biogeographical separation between the two subspecies; and
- Consolidate information on and monitor the rates of habitat loss and degradation and the key threats and drivers behind this threat.

Conservation Action

- Secure and improve the ecological integrity of key crane sites and their catchments across their range, in collaboration with local partners, communities, and relevant authorities, using sustainable management practices that incorporate climate change and promote alternative livelihood practices that benefit both cranes and people;
- Reduce disturbance during the breeding season by increasing awareness and regulating the use of key sites through management plans;
- Minimize the impact of the local and international wild-caught crane trade by sustainably managing captive populations, reducing demand and supply, increasing awareness, and improving capacity and law enforcement through the market chain. Consider a national pride campaign to raise particular awareness about the impact of domestication on wild cranes;
- Develop projects to minimize the domestication of cranes across West Africa;
- Reduce the risk of poisoning through the development of cost-effective and affordable methods to reduce crop damage, promote responsible agrochemical use, and strengthen law enforcement and regulations as they relate to poisoning;
- Through training and capacity building, establish a network for monitoring cranes across their range;
- Increase awareness of Black Crowned Cranes, their habitats, and their threats at key sites;
- Contribute to the development of policy and legislation for the conservation of the species and their habitats in countries holding key populations of the species; and
- Develop a consolidated action plan for the species across their range, focusing primarily on countries where conservation action can be implemented.

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