

SPECIES REVIEW:

GREY CROWNED CRANE (*Balearica regulorum*)

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Grey Crowned Crane spreading its wings
(Photographer: Shawn Olesen)

Red List Category: Endangered

Population Size: 26,500–33,500

Population Trend: Declining

Distribution: Eastern and southern Africa



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DISTRIBUTION AND STATUS OF KEY SITES

Subspecies/Populations

There are two subspecies, the East African (*B. r. gibbericeps*) and Southern African (*B. r. regulorum*) Crowned Cranes that are separated by the Zambezi River system.

Overall Range

The range of the Grey Crowned Crane extends in the north from the eastern Democratic Republic of Congo, South Sudan, Uganda, and Kenya in Eastern Africa, south to the southeastern parts of South Africa in southern Africa. They undertake variable local and seasonal movements.

The Grey Crowned Crane is the national bird of Uganda.

Status of Key Sites

Grey Crowned Cranes are most often found outside of protected areas, often in close proximity to human activity and in agricultural lands. However, we are finding an increasing proportion of Grey Crowned Cranes within protected areas, where they depend on the habitat still available for nesting and the security afforded to them. The number of protected areas and their extent within the range of the species is very limited. Zambia though is the exception, where the majority of the Grey Crowned Crane population is found in national parks and Game Management Areas, most notably the Kafue Flats and the associated Lochinvar and Blue Lagoon National Parks, Liuwa Plains National Park, Busanga Swamps in the Kafue National Park, and South Luangwa National Park. Besides Liuwa Plains National Park, and the Luangwa Valley in Zambia, no other protected areas in sub-Saharan Africa hold at least 1% of the population.

In South Africa, a number of the protected areas included in the Biodiversity Stewardship Programme contain Grey Crowned Cranes. This legislative process enables landowners voluntarily to enter into legally binding agreements with the government to place their properties in the Protected Area network of South Africa, with the added commitment of managing their properties for biodiversity. Likewise, Kenya and Uganda have legislative processes that allow for the development of community-based conservation areas, affording protection to sites which are then managed in collaboration with local communities. A number of key Grey Crowned Crane sites have been identified for these community-based conservation areas in Kenya and Uganda.

The main centers of distribution, containing at least 1% of either the population for the Southern (at least 75 individuals) or the East African Crowned Cranes (at least 250 individuals) respectively are:

South African Grey Crowned Crane

- Moist Drakensberg Foothill Grasslands of the southern KwaZulu-Natal and northern Eastern Cape Provinces of South Africa;
- Mpumalanga Highveld Grasslands of South Africa, encompassing in particular the Chrissiesmeer Lakes District and Steenkampsberg West Grasslands;
- Enkangala Grasslands of South Africa, straddling the grasslands of northern KwaZulu-Natal, southern Mpumalanga and the north eastern Free State;
- KwaZulu Natal Midlands of South Africa;
- Driefontein Grasslands encompassing the districts of Gutu, Chirumanzu, and Chikomba, located in the central region of Zimbabwe; and
- The irrigated farms and pans in the Nkayi and Lupane districts in the western region of Zimbabwe.

East African Grey Crowned Crane

- The Bulozzi Floodplains, encompassing Liuwa Plains and the Barotse Floodplain in western Zambia, and extending north westwards into eastern Angola;
- The Luangwa Valley in Zambia;
- Kafue Flats and associated breeding grounds in Zambia;
- The northeast Lake Victoria Basin in western Kenya encompassing the counties of Busia, Bungoma, Nandi, Uasin Gishu, and Trans-Nzoia; and
- The west-southwest Lake Victoria Basin, encompassing south western Uganda and northern Rwanda, and extending marginally westwards into the catchment of Lake Edward.
- Northwest Tanzania.

ECOLOGY

Grey Crowned Cranes require a mixed wetland-grassland habitat, and are often found in wetlands, on riverbanks, around dams, in open savannas, and in the grasslands adjacent to such sites (Urban 1988, Meine and Archibald 1996). They are also often found foraging in agricultural land wherever available in close proximity to any of the habitats listed here.

They nest within or on the edges of permanent or temporary wetlands but will also use well-vegetated farm dams. The nests are often within tall reedy wetland vegetation around 1 m in height (e.g., *Typha* reed beds), concealed from terrestrial predators and screened from view. They are, however, easily seen from the air. The area around nests is trampled into a relatively circular platform up to a 20-m diameter, supposedly to reduce the chance of predation (Pomeroy 1980, Tarboton 1992, McCann and Wilkins 1995, Smallie 2002). They will also rarely nest in trees (Steyn and Ellman-Brown 1974, Steyn and Tredgold 1977, Ewbank 2003).

Grey Crowned Cranes forage in short to medium height open grasslands, feeding on grass seeds, insects, frogs, lizards, crabs and other invertebrates (Pomeroy 1980, Frame 1982, Gichuki 2000, Muheebwa-Muhoozi 2001). They also forage in agricultural lands, including pastures, irrigated areas, fallow fields, and newly harvested and planted cereal crop fields. This habitat use unfortunately often brings them into conflict with farmers as a result of both the actual and perceived damage caused to crops. The Grey Crowned Crane's generalist foraging strategy has resulted in them adapting to human settlement and they are therefore often seen in human-modified environments (McCann and Wilkins 1995, Meine and Archibald 1996).

Grey Crowned Cranes roost primarily in tall trees in the vicinity of wetlands, but they are also found roosting on overhead electricity transmission towers, and in some cases, on the ground in open wetland-grassland systems. The cranes leave their roosts between dawn and an hour after dawn and return around nightfall (Pomeroy 1980, Olupot 2014).

NUMBERS AND TRENDS

The Grey Crowned Crane was considered the most common crane in Africa in 2004 with the population estimated at 50,000–64,000 individuals (Beilfuss et al. 2007). It has, however, been experiencing a steady, long-term decline across much of its range. When this species was up-listed from Least Concern to Vulnerable in the 2009 Red List update, there was some evidence to suggest that declines may have exceeded a rate of 50% during the past three generations or 45 years (Beilfuss

et al. 2007), but data were regarded as patchy and an overall decline of 30–49% was considered a more reasonable estimate.

With the addition of more complete data, the calculated rate of decline in 2012 was ~65–80%. This sharp decline, together with the fact that the issues causing this decline, has been in existence since the 1960s and are showing no signs of abating, led to the up-listing of Grey Crowned Cranes from Vulnerable to Endangered in the 2012 Red List update (Birdlife International 2012).

In 2014, there were between 19,500 and 26,000 East African Grey Crowned Cranes and between 7,000 and 7,500 Southern African Grey Crowned Cranes, with a total of between 26,500 and 33,500 Grey Crowned Cranes (Table 1). They are most abundant in Kenya, South Africa, and Uganda, although Kenya and Uganda continue to suffer significant declines in numbers. South Africa currently has the most stable and viable numbers on the African continent, and the large floodplains of Zambia support smaller, yet substantial numbers. Mozambique, Rwanda, Tanzania, and Zimbabwe all have relatively small but still viable numbers of between 100 and 2,000 birds each. Burundi, Botswana, Malawi, and Namibia have very few Grey Crowned Cranes remaining, and the status of the species in Angola and the Democratic Republic of Congo is largely unknown. A recent exploratory visit to the Cuvelai Catchment in south-eastern Angola, though, had no sightings of Grey Crowned Cranes, and none of the local communities approached knew this crane (Scott and Scott 2014). John Mendelsohn (personal comm.) also reported no Grey Crowned Cranes during mammal surveys of the Buluzi Floodplain in eastern Angola but reported the potential for good numbers due to the suitable habitat available. Of note is that Southern Sudan has recently reported sightings of Grey Crowned Cranes, a new species for the country, but still in very low numbers. This occurrence is likely a range extension of the species up the Nile River, from the northern parts of Uganda (Timothy Dodman, and Perez Olindo, personal comm. 2016).

Table 1: Estimated number of Grey Crowned Cranes per country

Country	1985 (Urban 1988)	2014 (Morrison 2015)
<i>East African Grey Crowned Crane</i>		
Angola	100	0–100
Burundi	<600	10–100
Democratic Republic of Congo	5,000	300–1,000
Kenya	35,000	10,000–12,500
Malawi	100s	0–100
Northern Mozambique	1,000s	50–100
Rwanda	<1,000	50–500
South Sudan	0	0–10
Tanzania	Low 1,000s	600–1,000
Uganda	35,000	6,500–8,000
Zambia	1,000s	2,000–2,500
<i>East African subspecies total</i>	<i>>90,000</i>	<i>19,500–26,000</i>
<i>Southern African Grey Crowned Crane</i>		
Botswana	100	<20
Southern Mozambique	1,000s	>250
Namibia	100	<20
South Africa	Low 1,000s	6,500
Zimbabwe	Several 1,000s	200–700
<i>Southern African subspecies total</i>	<i>10,000</i>	<i>7,000–7,500</i>
TOTAL	>100,000	26,500–33,500

THREATS

An International Single Species Action Plan for Grey Crowned Cranes outlines clearly the current threats to the species and their level of threat (Morrison 2015). The unlawful removal of wild cranes for the illegal trade market is a significant threat to the species (McCann and Wilkins 1995, Hudson 2000, Smallie 2002, Morrison et al. 2007). Most often, chicks are removed and, through a well-developed market chain, either end up in domesticated situations within country or in the local or international captive trade markets. Kept at hotels in Burundi and Rwanda or in private households in the Democratic Republic of Congo, Rwanda, South Africa, and Uganda, Grey Crowned Cranes have been sought after as status symbols or as “decoration” for gardens. They are also acquired for captive facilities around the world, adding beauty and value to mixed savanna exhibits or contributing to private bird collections. Although Europe and the United States of America were key contributors to this threat in the 1970s and 1980s, it is now the Middle and Far East that pose the greatest threat. Although Grey Crowned Cranes are strongly sought after for captive facilities and can breed well under the correct conditions, there are currently no viable managed populations in captivity in the world. This situation is changing as zoos belonging to formalized zoo associations have acknowledged the concern and are now initiating collaborative programs to rectify the situation. However, the challenge is in working with the 90% of captive facilities around the world that do not belong to a zoo association and do not collaborate with other such facilities in any meaningful manner.

There has been significant loss and degradation of suitable wetlands for nesting, and in the surrounding catchment for foraging, as a result of agriculture, afforestation, changes in hydrology, mining, and siltation. The rate of transformation of wetlands and surrounding grasslands, savannas, or forest catchments into various forms of agriculture in Eastern Africa is particularly alarming. This transformation started in earnest in the 1970s across many parts of Eastern Africa. In several places, catchments have now been completely transformed into subsistence agriculture, such as the catchment for Rugezi Marsh in northern Rwanda and the catchment for Nyamuriro wetland in southwestern Uganda. In other areas, the speed and rate of transformation is increasing, such as the spread of sugarcane (*Saccharum*) and Eucalyptus plantations used to supply the power line industry in parts of western Kenya and rice (*Oryza* spp.) production in Uganda. The 2011 South African National Biodiversity Assessment predicted that by 2050 no natural habitat would be left outside of protected areas in KwaZulu-Natal, based on the current rate of transformation; this area is key for Grey Crowned Cranes in South Africa. In addition, proposed coal mining and gas extraction have become an increasing concern for the grasslands and wetlands in South Africa, and plans to extract peat from many of the large wetlands in Rwanda for power production are major concerns for the future of the species in these countries.

The rate of fragmentation of natural habitat, growing human populations, and increase in agricultural activity have resulted in increased human activity and disturbance levels around wetlands where Grey Crowned Cranes would naturally breed. Disturbance has impacted on breeding success, with pairs no longer breeding in areas with high disturbance and a reduced productivity in other areas where fewer chicks are raised to fledging (Morrison 2015).

Habitat loss and degradation, disturbance, and illegal trade are linked threats that can escalate each other. For example, as habitat fragmentation increases there is a corresponding intensification of human activities that results in higher disturbance levels. Breeding cranes become more visible to communities living in the area, and with improved access to the cranes, the removal of cranes from the wild escalates.

The fourth major threat is poisoning. Persecution is a major threat in certain areas, most often in the form of poisoning, in an attempt to reduce the real or perceived damage that cranes cause to crops (Johnson and Barnes 1986, Smallie 2002, McCann 2003, Morrison 2015). Being opportunistic, Grey Crowned Cranes are often seen foraging in agricultural lands. Although eating insects and other potential pests and weeds, they do also cause damage to germinating maize (corn, *Zea mays*), wheat (*Triticum aestivum*), beans, cabbages (*Brassica oleracea*), cobs of maize when ripe, and other crops. Whether on subsistence or commercial agriculture, this behavior results in conflict frequently resolved through deliberate poisoning. In addition, farmers that target other birds causing crop damage inadvertently poison and kill cranes. Finally, cranes are sometimes incidental in poisoning aimed at obtaining other birds and mammals for food. Cranes are often left after poisoning and not eaten because they do not have a crop (or crop, a muscular pouch near the throat used as temporary storage for food), and the belief is that if crops are removed quickly enough after ingestions then the poison will not harm the people eating the meat. In other cases, local taboos against eating cranes may also be at play.

The final major threat to Grey Crowned Cranes is related to energy generation and transportation, including collisions with overhead power lines, electrocutions on electrical infrastructure, and the possible collision with turbines on wind farms. Power lines pose a collision hazard to both young inexperienced birds and adults, particularly in poor weather or low light conditions, and transformer boxes and t-pole structures on 11 and 22 kV lines pose an electrocution risk when Grey Crowned Cranes attempt to roost or perch on electrical infrastructure (McCann and Wilkins 1995, Smallie 2002). Power line interactions are a major cause of mortality for Grey Crowned Cranes in South Africa but appear at present still to be a low threat in other African countries, perhaps due to the relatively restricted power line network and lack of systematic and dedicated/frequent power line surveys. As the African continent continues with its electrification plans, and more power lines are erected across the continent, so will this threat grow for Grey Crowned Cranes.

CONSERVATION AND RESEARCH EFFORTS UNDERWAY

Conservation Action

- An African-Eurasian Migratory Waterbird Agreement (AEWA) Single Species Action Plan has been developed for Grey Crowned Cranes across their range. The development of the plan brought together government department representatives and crane experts from each of the significant range countries, in a coordinated and focused approach to secure the future of Grey Crowned Cranes. The plan was endorsed at the AEWA Meeting of the Parties in November 2015. An International Working Group will be established to ensure the plan's implementation;
- A Biodiversity Management Plan for Species is being developed for cranes in South Africa, a legislated process to outline and ensure relevant conservation action for the future of the species in the country. Such plans are being developed for Grey Crowned, Wattled, and Blue Cranes in collaboration with all relevant stakeholders;
- The International Crane Foundation (ICF) / Endangered Wildlife Trust (EWT) Partnership is addressing trade through the African Crane Trade Project. This project works simultaneously with the supply side of the market where cranes are removed from the wild, on the compliance and legislative areas, and with the demand sector both in Africa and globally;
- In Rwanda the crane trade and domestication of Grey Crowned Cranes is being addressed through a collaboration of a number of key stakeholders, including the Rwanda Wildlife Conservation Association, Rwanda Development Board, Akagera National Park / African Parks Collaboration,

and others. The project is creating awareness of the threat and is confiscating all illegally held cranes, either to be released or to be held in a suitable captive situation;

- The ICF/EWT Partnership has a Cranes, Wetlands and Communities Project aimed at securing and improving the ecological integrity of wetlands and catchments in key crane areas across Africa. This effort involves collaboration with local communities and relevant authorities and includes the development of livelihoods as alternatives to practices that degrade wetlands, or that add value to the wetland. In South Africa, full-time EWT staff cover the grasslands of Mpumalanga, KwaZulu-Natal, and the north Eastern Cape grasslands. In other countries, the ICF/EWT Partnership works through partnerships with in-country organizations to achieve this goal;
- The ICF/EWT Partnership, working with the Zambian Wildlife Authority, has initiated a crane and wetland project in Zambia. This project aims to obtain a good understanding of the status of Grey Crowned Cranes across the large flood plains of the country and to unlock the interrelationship between crane distribution and breeding and the hydrology of these systems. In addition, the threats to cranes and their habitats are being investigated and mitigation measures explored, for example, for the control of *Mimosa pigra* on the Kafue Flats;
- The Kipsaina Crane and Wetland Conservation Group and Community Action for Nature Conservation (CANCO), in partnership with the ICF/EWT partnership, are working to increase awareness, and to secure and improve the ecological integrity of sites important to cranes in western Kenya;
- In partnership with the ICF/EWT partnership, Nature Uganda has a community-based crane and wetland project focused on increasing awareness and securing and improving the ecological integrity of important crane sites in the country;
- Nature and Livelihoods, a non-governmental organization, is conducting research to better understand Grey Crowned Cranes in the eastern part of Uganda;
- BirdLife Zimbabwe has a project in the Driefontein Grasslands in Zimbabwe that supports crane and wetland conservation in collaboration with local communities, and has been exploring ways to mitigate for crop depredation caused by cranes;
- The Rwanda Polytechnic: Kitabi College and the ICF/EWT Partnership have partnered to ensure the ecological integrity of Rugezi Marsh in Rwanda, together with enhancing local community livelihoods and involving relevant government authorities;
- In a study conducted by the ICF/EWT Partnership, University of Massachusetts, and the Tanzania Bird Atlas, the only sustainable Grey Crowned Crane population in Tanzania outside of protected areas was found in the Rungwe Region. Further investigations are required to explore the options for a community-based conservation project in this area;
- The ICF/EWT Partnership is working with an agrochemical company in South Africa to explore the registration of a crop deterrent used effectively in the USA to deter Sandhill Cranes from eating germinating crops. This substance would be used in commercial agriculture to reduce damage that cranes and other birds cause to crops;
- The EWT's Wildlife and Energy Programme (WEP) has a strategic partnership with Eskom, South Africa's power utility company, aimed at addressing and mitigating the threat that power line

collisions, electrocutions, and the wind energy industry represent for cranes and other bird species. A project aimed at sharing the skills and expertise gained in South Africa and building capacity in other countries in Africa is preparing a proactive approach to this threat; and

- The Wetlands International/IUCN Crane Specialist Group has a focus on cranes and power lines, and has developed a plan for shared learning and proactive action globally.

CHANGES SINCE 1996

Grey Crowned Crane numbers have declined dramatically since 1996, with less than 33,500 individuals remaining. The threats to the species have escalated and intensified since 1996 and currently show no signs of abating, only of escalating further.

PRIORITY RESEARCH AND CONSERVATION ACTIONS

The top priorities for research and conservation action for Grey Crowned Cranes have been drawn from the AEWA Single Species Action Plan, ICF's Strategic Vision for 2020, and this Crane Conservation Strategy developed for the Wetlands International / IUCN Crane Specialist Group. Note that the actions below are not in any particular order.

Research

- Develop standardized monitoring techniques for Grey Crowned Cranes across their range so that population trends and breeding success can be assessed, providing information on the status of the population and guidance for the adaptation of conservation action required;
- Obtain an understanding of the factors that influence the population dynamics of the species, including the influence of disturbance and other factors that specifically affect breeding productivity and adult and juvenile mortality;
- Understand the types and extent of damage that cranes cause to food crops and test methodologies that are both cost effective and efficient for use to reduce conflict between people and cranes in subsistence agriculture;
- Understand the interaction between cranes and people and how this relates to habitat requirements and extent of suitable habitat available for Grey Crowned Cranes;
- Analyze potential risks and opportunities arising from strategic long-term urban, infrastructure, energy and land use development plans;
- Understand the impacts of climate change on habitats and cranes and how the interactions between cranes and people will also change;
- Better understand the extent of poisoning across the Grey Crowned Crane range;
- Understand the ecological and economic value of cranes;
- Develop protocols to measure the effectiveness of conservation measures and encourage uptake of the protocol;
- Understand the trade demand for cranes and the market chains being used; and
- Understand crane movement patterns seasonally and temporally.

Conservation Actions

- Secure and improve the ecological integrity of key crane sites and their catchments, in collaboration with local communities and the relevant authorities, using sustainable management 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 or designating sites as protected areas;
- Minimize the impact of the wild-caught crane trade through sustainably managing captive populations, reducing demand and supply, increasing awareness, and improving capacity and law enforcement through the market chain;
- 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;
- Reduce the impact of mortalities from power lines by providing cost-effective mitigation measures, and by implementing the resolutions and applying the conservation guidelines on avoiding and mitigating the impact of power lines on birds, adopted under AEW and CMS;
- Proactively seek to prevent planned afforestation that would have impact on crane habitat;
- Reduce the destruction and degradation of key crane habitats as a result of agriculture through the provision of alternative livelihoods and the development and implementation of best practice guidelines for environmentally friendly agriculture;
- Strengthen law enforcement and regulations relating to habitat destruction and degradation at key Grey Crowned Crane sites;
- Identify Grey Crowned Crane sites threatened by alien invasive plants, and develop and implement mitigation plans to remove this threat, where possible using methods that benefit the local community; and
- Address the impact of energy development, including power lines, wind farms, coal mines, peat extraction and gas extraction, in sites important to cranes.

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