

Results of a 2017 partial survey of Grey Crowned Crane *Balearica regulorum gibbericeps* in Kenya

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Summary

This report on partial counting of Grey Crowned Crane in Kenya took place between 1st and 15th Dec. 2017, with additional observations until 31st Dec. In nearly four decades, there has not been any national-level regular counting of cranes in Kenya except the African Waterbird Census whose coverage leaves out potential sites that cranes occupy. Different authors have reported a continuously declining population of cranes in eastern Africa and therefore, an attempt to determine the current status of the Kenyan population, its distribution and threats facing the species was deemed imperative. A total of 43 localities in 15 Counties were covered by this survey. The Lake Victoria basin was not incorporated due to uncertain political situation at the time of the survey. A total of **1,234 Grey Crowned Cranes** were recorded, 3.24% being juveniles. This figure was unexpected given that most of the cranes' strongholds were visited compared to an estimated population of 10,000 to 12,500 individuals (Morrison, 2015). This raises uncertainty about the status of the Kenyan cranes population. Nyandarua and Uasin Gishu Counties had the highest number of cranes with 302 and 198 individuals respectively. At single sites, Lake Ol' Bolossat had the highest population of 286 while Northlands had the largest flock of 124 cranes. This survey took place during the peak of the breeding season where birds could have been missed out as

they attended to eggs or chicks deep in the swamps and/or were skulking. Additionally, areas surveyed were not comprehensively covered. This survey also followed heavy rains across the country meaning that most cranes were widely spread. Consequently, it should be considered to recommend a comprehensive survey in mid March, when adults and young flock together and can be counted more easily. A bigger team too could ensure that counting lasts a shorter time than two weeks. In terms of threats, it is evident that adult cranes are still being poached (mostly for local consumption and/or trade) besides collection of eggs and juveniles at breeding sites and habitat loss. These factors are negatively affecting the crane populations across Kenya severely and therefore, practical actions are urgently required to enhance conservation and protection of the species and their habitats. This may include stamping out poaching, halting wetlands and grassland loss and/or degradation, restoration of habitats, and enactment or amendment of legislation and policies as necessary. The latter could embrace drafting and implementation of a National Single Species Action Plan for the Grey Crowned Crane, banning of captive custody of ALL endangered species, and robust management of suitable breeding sites such as the recently gazetted Lake Ol' Bolossat Protected Wetlands Area and several others across Kenya.

Cover photo: A flock of Grey Crowned Cranes feeding in a wheat stubble field in Kasuku, Lake Ol' Bolossat, Nyandarua County. (Photo: Günter Nowald, CCG)

Background

Morrison (2015) describes the Grey Crowned Crane (*Balearica regulorum*) as an icon of Africa's wetlands and grasslands. It is an African endemic species currently listed as Endangered on the IUCN Red List of Threatened Species (BirdLife International, 2016), on Appendix II of CITES (CITES-UNEP, 2017), and Appendix I Category 3(c) of the African-Eurasian Waterbird Agreement (AEWA) (Wetlands International, 2005) due to a continued population decline across its range, mainly arising from illegal trade in their eggs and wild caught cranes, alongside a precipitous loss of wetlands and grassland habitats (BirdLife International, 2016).

In the recent past, there has been advances in cranes research and conservation in Kenya. Muigai (2016), through a support from The Nature and Biodiversity Conservation Union (NABU, BirdLife Germany) has been monitoring threats facing cranes population at Lake Ol' Bolossat since 2015. The results of a proactive awareness campaign are quite remarkable; some of the achievements being a great reduction in poaching of adult cranes, collection of eggs and chicks, and increased awareness among the local community. This has seen an increase in number of fledged chicks from 1 in 2016-2017 to over 25 in 2017-2018 breeding seasons.

Waweru (*In prep.*) recently concluded an MSc thesis on the Lake Ol' Bolossat cranes population looking at some aspects of its conservation biology. Further, a PhD-level research on the status of Lake Ol' Bolossat's cranes population and factors affecting their

conservation and survival is proposed to start in March 2018.

Other than the AfWC programme that started in Kenya in 1991 (Nasirwa & Bennun, 2000), there has been no other way of monitoring the Grey Crowned Crane population in Kenya. In Kenya, local cranes counts were organised in the late 1980s, but have not been conducted on a regular basis since 1990 (Hill, 1988). The Kenyan crane population has been reported as declining over the years. For example, Urban *et al.* (1986) estimated a population of 35,000 individuals; Gichuki (1993) reported 22,000 to 27,000, while Morrison (2015) gives an even lower figure of between 10,000 to 12,500 cranes. These estimates indicate a continuously declining population whose status is currently unknown. This paucity of knowledge on the Kenyan cranes' population hence necessitated the need for the current survey.

It is apparent that a national-level survey is needed especially now that different institutions are coming together to draw a National Single Species Action Plan for the Grey Crowned Crane and establish cranes conservation programmes that includes research. Such action plans require a more recent estimate of the species' population including its distribution. This survey aimed at conducting a ground count of cranes in sites where the species has been reported in the past or is expected based on habitat suitability. In fact, BirdLife International (2018) has proposed several conservation actions including conducting of standardised and coordinated surveys, raising awareness and population monitoring of this species.

Survey objectives

The objectives of this survey were:

- i. Identify sites where the Grey Crowned Cranes are currently found in Kenya including assessment of habitat status, threats and an estimate of the species' population.
- ii. Use the findings to inform and provide guidance towards development of a National Single Species Action Plan for the Grey Crowned Crane, and use the data for other reasons
- iii. Embrace lessons on what is needed to plan and execute comprehensive surveys in the future to yield reliable and regular estimates of the Grey Crowned Crane's population and its status in Kenya.

Methods and Materials

Grey Crowned Cranes (hereafter may be referred to as cranes) in general occupy mixed wetland-grassland habitats with a preference for short to medium height open grasslands adjacent to wetlands where they forage (Meine & Archibald, 1996). They also occupy agricultural land such as cultivated croplands, fallow and irrigated fields. We therefore targeted making observations in such habitats. Prior to the survey, the Kenya Bird Map Project (<http://kenyabirdmap.adu.org.za/>) was consulted for recent sightings of Grey Crowned Cranes in Kenya as well as referring to past distribution records and team's personal experiences. A few individuals reached out to assist with counting cranes in areas where the teams were not able to reach!

Materials: The following were used during the census: telescope, 8-10x42 binoculars, notebooks, camera and a datasheet. The following data was recorded: date, observers, name of site/locality, GPS coordinates, habitat type, number of cranes in each age class (chick, juvenile, immature/sub-adult, adult), group type (single, pair, family, flock), number and species of wildlife and waterbirds in proximity of cranes, number of humans and activities near sighting, types and number of livestock within

500m radius, prevailing weather conditions and other observations. Interviews were conducted to source information from the local communities such as how many cranes they usually see around their homes and whether they are aware of any poaching and trapping of cranes.

Counting cranes: Three teams comprising of 3 or more members, and sometimes accompanied by a local guide, drove at a speed of c.20-30 km/hr along the roads and designated tracks in conservation or public areas. Due to their large size and white patches on the wings, cranes' presence was easily detected from 20m to 1.5 km without the help of a pair of binoculars or telescope, although these were then used to improve on observations and in counting. In open and vegetated areas, the teams walked out of the car or used the roof to scan for cranes. In national parks and areas with dangerous wildlife, armed rangers accompanied the team. Vantage points were also used to scan for cranes. The knowledge of local guides was invaluable. At Lake Naivasha, a motor boat was used. Vehicles were branded with two A2 crane posters, one on either side. The poster served the purposes of avoiding suspicion and identifying what

the teams were after, especially in public places without a local guide. It also attracted the curiosity of people who voluntarily provided information or started a conversation on our mission. In general individuals, government and non-governmental institutions responded very positive on the Grey Crowned Crane monitoring program. It can be assumed that a national crane monitoring/conservation in future will get a lot of public support, when properly advertised.



Figure 1: Part of the team participating in the 2017 partial Grey Crowned Crane survey in Kenya 2017 (Photo: Günter Nowald, CCG).

Coverage: Figure 2 is a map of Kenya showing areas where cranes were counted during this survey by the 3 teams.

Team 1, comprising of David Fox, Dominic Kimani and Bakari Ng'ang'a

counted in Kinangop, Lake Naivasha, parts of Lake Ol' Bolossat, Ol Pejeta, Lolldaiga hills, Naro Moru, Solio Ranch and Lewa.

Team 2 was first composed of Wanyoike Wamiti, Günter Nowald and Xavier Chauby with Eva Cherotich and Mary Waweru coming in. They counted in Subukia, Lake Nakuru NP, Amboseli NP, Thika Sewage, Mwea NR, Mwea rice paddies, Kenol, Northlands, Dandora Sewage and Nairobi National Park.

Team 3 initially had Werner Schröder, George Ndung'u, Mary Waweru and Maurice Wanjala and wound up with an addition of Maina Gichia. They counted in Eldoret, Kitale area (incl. Saiwa Swamp NP), Nandi County en route Kericho, Masai Mara NR, Narok, Mau Narok, Njoro, Molo, Kuresoi and Soysambu Conservancy.

Teams 2 and 3 counted in Mugie Wildlife Conservancy where they also tagged 3 chicks with GPS satellite transmitters to monitor their movements and dispersal. Cranes Conservation Volunteers (Kenya) counted at Lake Ol' Bolossat and most of its catchment.

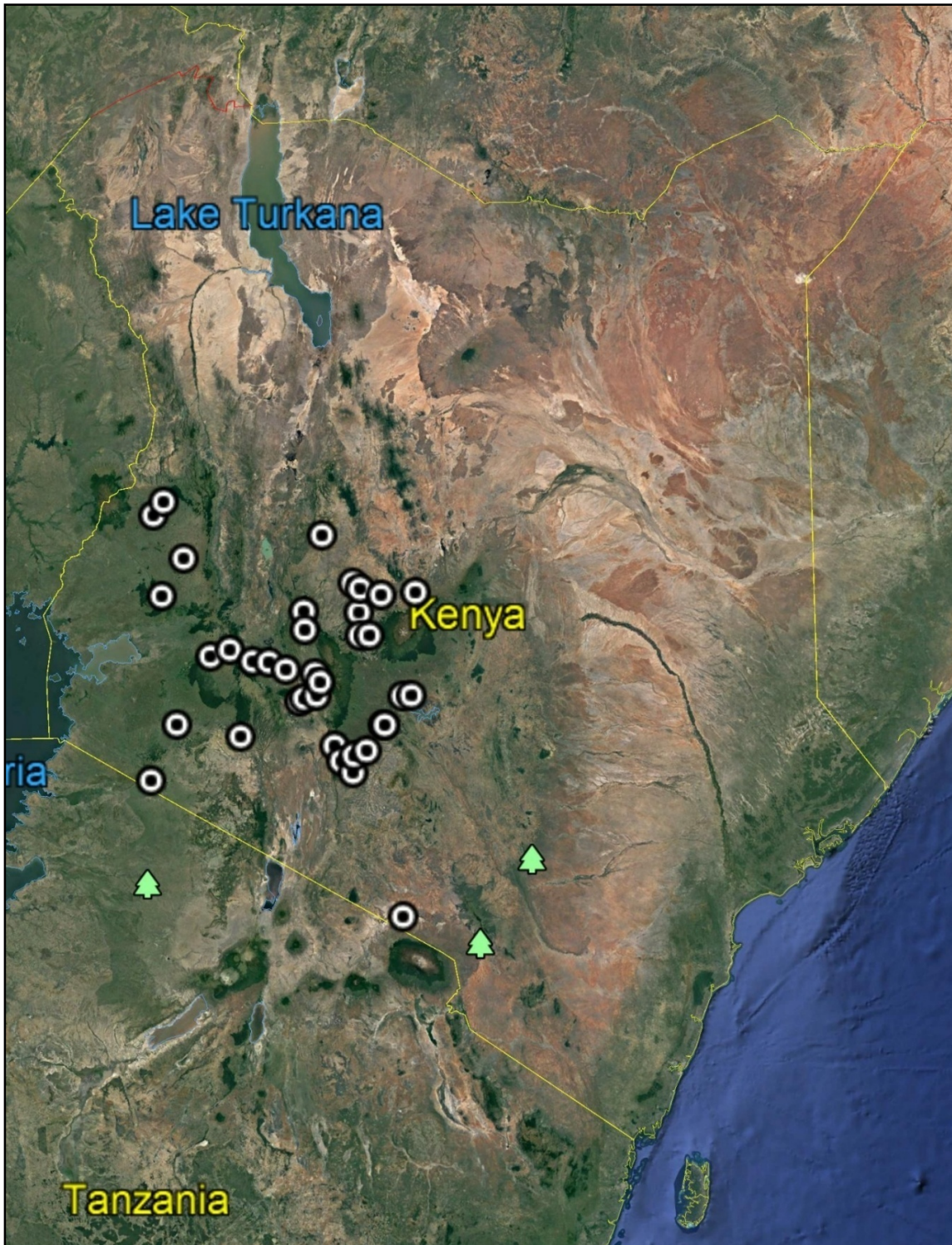


Figure 2: A map of Kenya showing where Grey Crowned Cranes were counted during the 2017 partial survey. (Map developed in Google Earth).

Results and Discussion

Total Grey Crowned Cranes

A total of **1,234** cranes were counted during this survey. Table 1 below shows the number of cranes that were counted in each of the 15 Counties that the teams visited. Nyandarua and Uasin Gishu had the highest number of cranes with 302 and 198 individuals respectively. Murang'a County had the least cranes recorded

Table 1: Number of Cranes and areas in the 15 Counties that were surveyed.

County	No. of sites surveyed	No. of Cranes
Bomet	2	10
Kajiado	1	115
Kiambu	3	174
Kirinyaga	2	20
Laikipia	5	49
Meru	1	32
Murang'a	1	4
Nairobi City	4	18
Nakuru	7	150
Nandi	1	45
Narok	2	35
Nyandarua	2	302
Nyeri	2	53
Uasin Gishu	2	198
Trans-Nzoia	8	29
Total	43	1,234



Figure 3: An adult Grey Crowned Crane recorded as a pair near the GK Prisons, Mwea, Kirinyaga County (Photo: Eva Cherotich).

Cranes numbers in major areas

Table 2 is a summary of the major areas with total number of cranes counted. Lake Ol' Bolossat and Eldoret had the most cranes. Unlike these two areas that comprised several sites within, Northlands in Ruiru was the only single site with the largest population at 172 cranes, with 124 of them in a flock feeding in fallow maize stubble field.

Table 2: Sites that recorded more than 20 cranes (plus all other sites) during the partial 2017 survey.

County	Sites	No. of Cranes
Nyandarua	Lake Ol' Bolossat	286
Uasin Gishu	Eldoret	198
Kiambu	Northlands, Ruiru	172
Kajiado	Amboseli National Park	115
Nakuru	Lake Naivasha	88
Nyeri	Solio Ranch	49
Nandi	Emgon	45
Uasin Gishu	Kitale	36
Meru	Lewa Wildlife Conservancy	32
Narok	Masai Mara/Mara Triangle	27
Nakuru	Molo	24
Laikipia	Mugie Wildlife Conservancy	23
Kirinyaga	Mwea Rice Scheme	20
	All other sites (combined)	119
Total		1,234

Cranes group sizes

There were 141 locality sightings during this survey. The minimum group size was one crane (14 occasions or 10.07%) while the maximum group/flock size was 124. There were 106 sightings of between 1 and 5 cranes as the dominant grouping category (see figure 5). Pairs were the most common of all group types accounting for 47.5%. The mean group size was 8.9 cranes per group.

Figure 5 below also shows that the majority of cranes counted were single

individuals, pairs and small flocks of fewer than 20 cranes. There were only 3 sightings of groups of more than 80-100 cranes, and only 2 with over 100.

Breeding records



Figure 4: A Grey Crowned Crane in the nest, Ol' Pejeta Conservancy, Laikipia County. (Photo: D. Kimani)

weeks old) were observed during the survey. A total of 40 offspring (3.24% juveniles) were recorded. Eleven (11) more pairs were incubating. At Mugie Wildlife Conservancy, 2 pairs (with 1 and 3 chicks) had fledged by 3rd Dec. 2017 when the survey teams arrived there.

In early February, about 32 chicks had been confirmed at Lake Ol' Bolossat with 14 (44%) of them having fledged, while 2 pairs were reported with small chicks in Solio ranch and a pair in Nairobi National Park. These records points to an extended breeding season lasting from as early as July until March-April. The timing is however dependent on the onset of the rains and availability of suitable cover as has been observed at Lake Ol' Bolossat.

Adults incubating and feeding dependent, flightless chicks of various ages (1 to 12

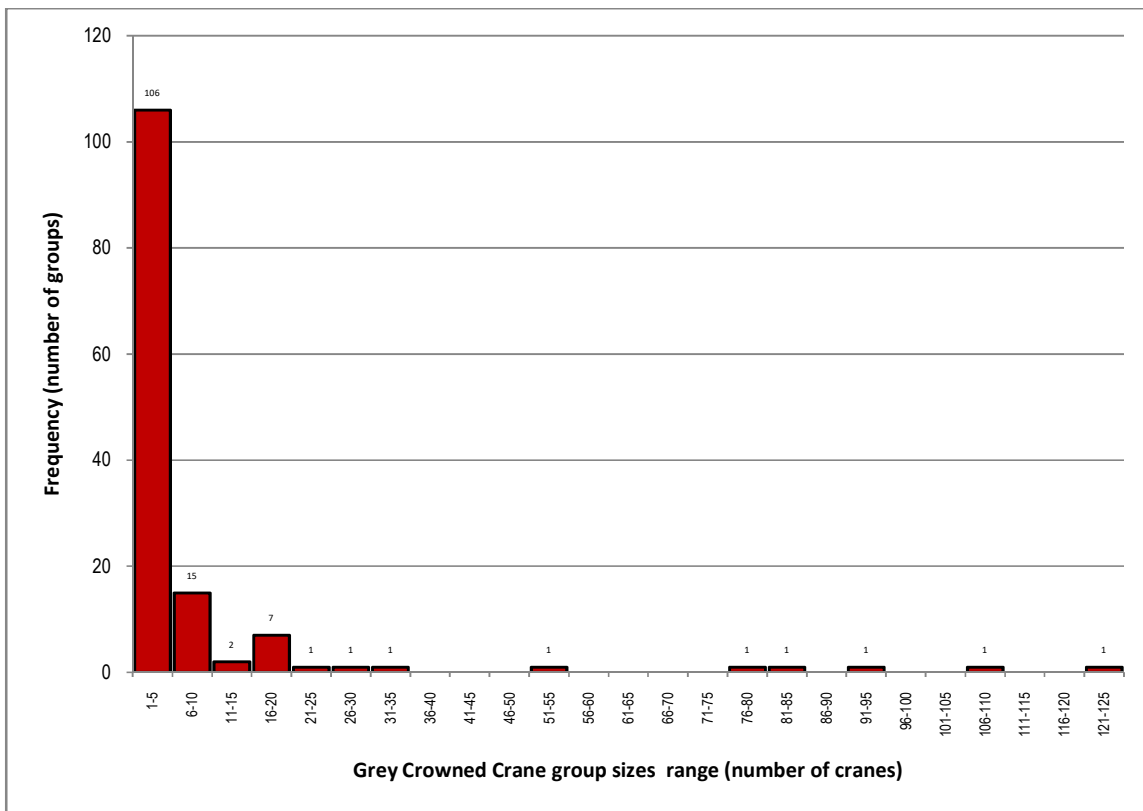


Figure 5: A graph showing the frequency of various group sizes of Grey Crowned Cranes group sizes observed during the 2017 partial survey.

Survey Sites Account

In this section, brief notes for each major site where cranes were observed in each of the 15 Counties are presented. The number (population) of cranes in each County and major sites (in cases where more than one site was surveyed) are shown in parenthesis.

BOMET COUNTY (10)

This county has potential sites especially the Kipkelok area which needs to be explored in our future surveys. Sightings of cranes were at Kipkelok and daraja sita areas that had 4 and 1 pairs of cranes respectively. The flock at Kipkelok were seen flying on 24-12-2017 early in the morning at 0724hrs while the pair at daraja sita was feeding in a wetland on 31-12-2017.

KAJIADO COUNTY (115)

Counting was only done in Amboseli National Park that was visited on the evening of 8th and morning of 9th December 2017. A total of 31 pairs were recorded plus an incubating individual. A visit in the park on 23rd Dec. 2017 recorded a total of 115 cranes, 70 of them in a flock.

KIAMBU COUNTY (174)

Cranes were observed from only two sites, a pair near Limuru town on 21-12-2017 and the rest (172) in Northlands (in Ruiru) on 14-12-2017. Thika sewage ponds didn't have any cranes. Northlands had the largest single flock of 124 cranes recorded in the entire survey that was feeding in a fallow maize stubble field. Three pairs were suspected to be nesting, with one nest confirmed as incubating. Eight cranes were observed feeding from a livestock feeding trough in the morning and later on within the cow sheds, an observation of cranes co-existence with livestock. The entire farm has swamps suitable as breeding and extensive foraging grassland

fields, and would be a suitable study area for cranes-livestock interaction.

KIRINYAGA COUNTY (20)

Two sites were surveyed, Mwea National Reserve on the morning of 12-12-2017 and Mwea rice paddies on 12th and 13th Dec. 2017. There were no cranes in the reserve although the shores and swamps of Kamburu hydro-electricity reservoir could offer a suitable habitat. The 20 cranes were recorded in the rice paddies, 2 at GK Prisons and 18 flying over Karima village/research at 7.00am on 13th. Efforts to trace this flock within the rice paddies were in vain and were thought to have flown towards Embu for feeding. Mutunga & Mitau (2017) conducted a survey of cranes in this area and recorded 40 adult cranes, the majority of them at the GK Prisons. Although they reported from the local community that finding a trapped or dead crane was rare, our survey established that crane poaching is a happening alongside poisoning of waterbirds, especially ducks and geese. The poison used on ducks and geese is said to have severe side effects on people who consume the carcasses, such as stomach pains, diarrhoea and nausea.

LAIKIPIA COUNTY (49)

Lolldaiga Hills Ranch (6)

This ranch, located at the eastern end of Laikipia County, was visited on 11-12-2017 where 6 cranes were recorded in pairs at Fisi, Valley and Samaki dams. The management earlier on reported cranes breeding without low breeding success owing to drying out of dams that

exposes the unfledged chicks to predation. The avifauna of this part of Laikipia that is being proposed for designation as an Important Bird Area is well known.

Mogwooni Farm (2)

Two cranes were reported on this farm on the 21st Dec. 2017. The farm has extensive *Acacia drepanolobium* woodlands and a few glades.

Mpala Ranch (4)

This ranch has some man-made wetlands and wooded to open grasslands suitable for cranes foraging. The four cranes were recorded on 21st Dec. 2017. The neighbouring properties such as Segera Ranch could also hold cranes and should be considered in future surveys.

Mugie Wildlife Conservancy (23)

The survey team spent two days, 4th and 5th Dec. 2017, in this conservancy not only counting cranes but also tagging and marking cranes' chicks with GPS satellites transmitters. Six pairs were recorded breeding (incubating and with fledged or unfledged chicks). The breeding sites (swamps and springs) face a threat from the Rumuruti-Mararal highway construction, but efforts are being made to divert the highway.

Ol' Pejeta Conservancy (14)

Two visits were made on 8 and 9 Dec. 2017 covering the entire conservancy. One pair was confirmed breeding (incubating), and the first author has previously recorded a pair breeding at the marshes each year since September 2011, mostly with one chick besides recording flocks of 10 to 30 cranes in the wheat fields. Another pair was seen mating at Ol' Pejeta dam while a third was thought to be breeding at the marshes.

Other sites in Laikipia

Six cranes were reported by Paul Benson (Lolldaiga Hills) from a flower farm near Timau. There are also reports of cranes in Suyian and Loisaba Conservancies. Wilson Ndiritu (Mpala Ranch) reported 3 flocks of 106, 45 and 3 cranes at Mtoka Mbali, Rumuruti on 27-01-2018 while Kuki Gallmann had cranes in and around Ol Al Nyiro Conservancy. Taken together, Laikipia County is suitable for cranes and should be considered for a comprehensive coverage in future surveys.

MERU COUNTY (32)

The only site surveyed in this County was **Lewa Wildlife Conservancy** on 13-12-2017 where 32 cranes were recorded, 16 each at Lewa headquarters swamp and Subuiga plains in mixed group types. The conservancy reported having counted up to 60 cranes in the past, some with chicks. Lewa has suitable habitats for crane's breeding, foraging and roosting. Future surveys should consider reaching to Meru National Park where cranes have been seen before.

MURANG'A COUNTY (4)

The four cranes recorded in Murang'a County were a pair each in two dams at Kenol, Githanji and Mukaba where cattle, dogs and humans are potential sources of disturbance to breeding and foraging cranes. However, a discussion with the County Government could lead to a control on access and utilisation of resources. There are also several other sites such as Kakuzi Limited and swamps in river valleys that should be visited in the future.

NAIROBI CITY COUNTY (18)

Although Nairobi City County has several potential though small sites for cranes, we only surveyed Nairobi National Park on 15-12-2017. The other two sightings from the road were at Kabete and Garden Estate along the Eastern by-pass.

Nairobi National Park (16)

Cranes were recorded in the following areas inside the park: Nagolomon dam (10), Hyena dam (2), Eland hollow dam (2, incubating and reported with a chick in mid January 2018) and Olomanyi near junction 22 (2). At Nagolomon dam, a shared roost was observed.

Garden Estate (1)

This was a sighting of a single individual on 23-12-2017 in a run-off water pan at the Eastern by-pass roundabout to Garden Estate. Right opposite the pan is a marsh suitable for cranes.

Kabete (1)

An individual was spotted feeding in a field next to a wetland in Upper Kabete Campus of the University of Nairobi on 31-12-2017. The site has a potential for nesting.

NAKURU COUNTY (150)

Kuresoi (7)

Two sightings were recorded at Kenyatta dam (5 cranes) and near Kuresoi town (2 cranes) on 14-12-2017.

Naivasha (88)

Two pairs were recorded along the northern shores of Lake Naivasha on 5-12-2017, and a flock of 84 at Morendat farm on 21-12-2017 feeding in recently harvested pasture field. A high degree of disturbance emanating from uncontrolled

fishing activities along the lake edges was observed. Marula Estates has reports of cranes nesting in their restored swamps.

Lake Nakuru National Park (6)

The park was surveyed on 7th Dec. 2017. Flamingo hill camp had a pair while two pairs were at Muya's causeway (with a nesting recorded observed on 2nd Aug. 2016).

Molo (24)

Molo area was surveyed on 13th and 14th Dec. 2017 where 3 sightings were made at Seti (22) and Baringo village (2).

Njoro (2)

A pair was recorded at Gachohi village on 13th Dec. 2017. Egerton University has huge wheat fields together with the neighbourhood that could attract cranes at harvest or planting, and hence needs surveying.

Soysambu Conservancy (5)

This conservancy is separated from Lake Nakuru National Park's eastern boundary by a public road. Five cranes were recorded on 15-12-2017 in 2 different locations; a pair had a chick along the Lake shores.

Subukia (18)

Two sightings on 6-12-2017 next to Kirethi farm (16) and Mihang'o dam (2), both groups were feeding in maize stubble fields. Local people at Mihang'o dam reported having seen cranes with chicks in the dam although (verification needed). Kirethi farm has swamps suitable for breeding and foraging fields.

NANDI COUNTY (45)

A flock of 45 cranes were counted at Emgon with reports from the local

community of more cranes feeding in the neighbouring farms. The flock was in a swamp that has high potential as a breeding site.

NAROK COUNTY (35)

Surveyed on 11/12th Dec. 2017 in two areas, Masai Mara National Reserve/Mara Triangle and Narok Township.

Masai Mara NR/Mara Triangle (27)

Most of the cranes recorded were outside the national reserve. Sightings were at Kichwa Tembo (2), Mara Triangle (12), Musiara gate (4), Ololoo gate (4) and Eden camp (5).

Narok Township (8)

Cranes were recorded at Enkorori Technical Training Institute (2), Enjotorasho (2) and near Narok town (2).

NYANDARUA COUNTY (302)

Two major areas were surveyed in Nyandarua County, Lake Ol' Bolossat basin and its catchment areas (18 sites) and Kinangop Plateau (6 sites).

Kinangop Plateau (16)

Although one crane was recorded at Magari Farm, large flocks had been observed in Sept. (74), October (98) and Nov. (52) - showing frequent movement of cranes. Other sites were: Semini's dam, Nyakio primary school, Tony's dam, community resource centre dam, KK's dam, Kingori's dam, Gachiri's dam, North Kinangop mission hospital and Mawingu.

Lake Ol' Bolossat (286)

This is one of Kenya's key sites for Grey Crowned Crane. Cranes were also observed in the catchment areas such as Gichaka, Githungucu and Kiandegge. A chick fledged in 2017 compared to c.30

expected to fledge by April 2018. Increased patrols by the local Kenya Wildlife Service and monitoring by the Cranes Conservation Volunteers (Kenya) alongside a vibrant scholarship programme are among the reasons for increased breeding records.

NYERI COUNTY (53)

Naro Moru (4)

Three dams were visited in Naro Moru on 7-12-2017. These are located in densely populated areas. The 2 pairs recorded were close to human settlements with intensive cultivation.

Solio Ranch (49)

Ten (10) pairs and 4 single sightings of the 49 cranes counted were within the ranch while the rest (a flock of 25) were outside near Kieni dairies. The team was informed that the cranes recorded outside normally roost in Solio. The ranch provides a potential and protected breeding habitat for the cranes. A driver guide in Solio continue to offer records of breeding as reported in mid January to the last author of two pairs with chicks.

UASIN GISHU COUNTY (198)

Uasin Gishu is known for maize and wheat farming fields as well grasslands and natural swamps, and has therefore been an important area for cranes. Survey was mainly done around Eldoret, one of the few areas where huge flocks were recorded. These were at Kamungut (90) and Koikoi (92). A group of cranes (40-50) is usually reported at Eldoret Airport although only 2 were observed during the survey as the team drove past the airport. University of Eldoret is a good roosting site with records of 80-100 individuals in 2015-2017.

TRANS-NZOIA (29)

Eight were surveyed in this County Kitale where cranes were in pairs or small flocks

of between 3 and 8 birds. These sites included Saiwa Swamp National Park and Kingwal swamp.

Observations and Recommendations

As a result of this survey, we would like to make the following observations and recommendations.

1. That the Kenyan Grey Crowned Crane population could be much lower than the most recent (2015) estimate of 10,000 to 12,500 individuals. A **repeat intensive survey coming at the end of the breeding season (mid March)** is highly recommended to verify our findings.
2. Such an activity would require **good planning and wider support** from the National and County Governments, Universities, Civil Society, volunteers and the local communities at large. Given their involvement with the coordination of the African Waterfowl Census since early 1990s, the National Museums of Kenya would be a suitable organisation to take lead.
3. **Poaching of cranes** (eggs, chicks and adults) is evident. This must be stamped out. The collecting of eggs in sites like Lake Ol' Bolossat and the trapping of adults in Mwea (and Rumuruti) are good starting points. At Lake Ol' Bolossat, the combined effort to raise awareness and stop poaching is already bearing fruit as a result of involving the local community at the front line in this battle and providing them with alternative livelihoods. Backup from the local Kenya Wildlife Service has also contributed to this success.
4. There are an unknown number of **cranes in captivity** across Kenya in private homes, hotels and animal orphanages, and could be one of the markets for the wild-caught chicks and adults. We therefore **recommended a ban on captive custody or rearing of ALL endangered species** except in special circumstances such as authorised care or breeding for release. A review or enforcement of the Wildlife Conservation and Management Act is hence deemed necessary with the **Kenya Wildlife Service taking lead**.
5. Should the foregoing be taken into account, **rehabilitation and rescue centre** must be established and funded to take care of surrendered and/or confiscated cranes for release.

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Appendix: Datasheet used in the survey

Counting Grey Crowned Cranes in Kenya

Datasheet No.

Please return this Datasheet to:
 Ornithology Section, National Museums of Kenya
 P.O. Box 40658-00100, Nairobi, Kenya.
wwamiti@gmail.com; dkk4.kimani@gmail.com
 Cell phones: +254 722 574 529 (Wamiti), +254 720 402 439 (Dominic)

Please use a pencil or indelible ink pen to fill this datasheet. Use the additional notes space at the bottom for data not captured in the form.

Date [dd-mm-yyyy]		Observer(s)		Start Time	
				Stop Time	
Locality Village, nearest town, County		Team No.		GPS	
Weather Conditions	TEMPERATURE	PRECIPITATION		WIND	PREVAILING WIND DIRECTION [direction the wind is coming from]
	<input type="radio"/> Cool <input type="radio"/> Cold <input type="radio"/> Fine <input type="radio"/> Hot	<input type="radio"/> None/Clear <input type="radio"/> Mist <input type="radio"/> Drizzle <input type="radio"/> Rain <input type="radio"/> Overcast <input type="radio"/> Hail <input type="radio"/> Thunderstorm		<input type="radio"/> No wind/Calm <input type="radio"/> Breeze (light wind) <input type="radio"/> Strong wind	
Major Habitat Type		Sub-habitat Type		Topographic Position [relative of where the cranes are]	
<input type="radio"/> Bare ground <input type="radio"/> Open water edge <input type="radio"/> Cropland <input type="radio"/> Fallow crop field <input type="radio"/> Grassland <input type="radio"/> Burnt grassland <input type="radio"/> Wetland <input type="radio"/> Burnt Wetland		<input type="radio"/> Short sedge wetland <input type="radio"/> Pan <input type="radio"/> Canola <input type="radio"/> Tall reed wetland <input type="radio"/> Barley <input type="radio"/> Wheat <input type="radio"/> Kikuyu grass <input type="radio"/> Degraded grassland <input type="radio"/> Pasture grass: _____		<input type="radio"/> Valley bottom <input type="radio"/> *Slope <input type="radio"/> Plateau *Slope: <input type="radio"/> Flat <input type="radio"/> Slight <input type="radio"/> Moderate <input type="radio"/> Steep	
Grey Crowned Crane Data	GROUP TYPE	CRANES DISTANCE FROM OBSERVER	CRANES ACTIVITY		CRANES NOS. IN EACH AGE CLASS
	<input type="radio"/> Single <input type="radio"/> Pair <input type="radio"/> Family <input type="radio"/> Flock	<input type="radio"/> 0 - 100 m <input type="radio"/> 100 - 500 m <input type="radio"/> 500 - 1,000 m <input type="radio"/> >1,000 m	<input type="radio"/> Breeding [provide add. notes] <input type="radio"/> Feeding <input type="radio"/> Resting <input type="radio"/> Flying <input type="radio"/> Displaying <input type="radio"/> Other: _____		No. Chicks: <input style="width: 30px;" type="text"/> No. Juv. <input style="width: 30px;" type="text"/> No. Imm/SAd: <input style="width: 30px;" type="text"/> No. Ads: <input style="width: 30px;" type="text"/>
Types & No. of Associates [Other bird species sharing habitat with cranes. Use additional sheet if necessary]	Bird species name		No.	Bird species name	
	1		8		
	2		9		
	3		10		
	4		11		
	5		12		
	6		13		
	7		14		
Assessment of Human Activities [In proximity of 500m radius of cranes]	No. of humans: <input style="width: 40px;" type="text"/>		TYPES OF LIVESTOCK & NO.		INFRASTRUCTURE/THREAT TYPES
	Human activities: _____ _____		<input type="radio"/> Cattle = _____ <input type="radio"/> Sheep = _____ <input type="radio"/> Goat = _____ <input type="radio"/> Donkey = _____ <input type="radio"/> Dog = _____ <input type="radio"/> Other = _____		<input type="radio"/> High human activity <input type="radio"/> Low human activity <input type="radio"/> Dam/Reservoir <input type="radio"/> Fire <input type="radio"/> Farm track <input type="radio"/> Flooding <input type="radio"/> Fences <input type="radio"/> Erosion <input type="radio"/> Power line <input type="radio"/> Wind turbines
Data on other wildlife species [In proximity of 500m radius]	Wildlife Species		No.	Wildlife Species	
	1		5		
	2		6		
	3		7		
	4		8		
Additional Notes			Additional Notes		