A Survey of Wattled Crane (*Bugeranus carunculatus*) on the Nyika Plateau, Malawi

By

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**ABSTRACT**

In Malawi, Nyika plateau is one of the areas Wattled Crane was reported to occur and breed. Considering that the species is listed as “Vulnerable” by BirdLife International, (2018), a survey was conducted on the Nyika plateau from 2018 to 2019 with the aim of assessing its current status. Ground surveys were conducted along dambo valleys within 500 km² grid of the central plateau and it was done in three phases (i.e. in wet season, cool dry season, & hot dry season. From the field results, no Wattled Crane sighting was made and this made it difficult to identify active habitats wherein to do the assessment (only potential habitats i.e. inundated dambo valleys with sedge-based vegetation could be spotted in the process). Although the intended habitat assessment was impossible, observations as regards to what could be the Wattled Crane threats were still made, and fires together with invasive plant species colonization were concluded to be the main threats so far. Consequently, further studies should be focused on mapping and assessing the viability of the potential Wattled Crane habitats, whilst monitoring any sign of Wattled Crane. Also, management should find ways of controlling the observed threats as this will curb their effects while conserving other bird’s species.
ACKNOWLEDGEMENTS
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Table of Contents
ABSTRACT................................................................................................................................. i
ACKNOWLEDGEMENTS ........................................................................................................... ii
LIST OF FIGURES .................................................................................................................. iv
ABBREVIATIONS AND ACRONYMS .................................................................................. v
1.0 INTRODUCTION .................................................................................................................. 1
  1.1 Background of the Study ................................................................................................. 1
  1.2 Problem Statement ......................................................................................................... 1
  1.3 Objectives ...................................................................................................................... 2
    1.3.1 General Objective .................................................................................................... 2
    1.3.2 Specific Objectives ................................................................................................. 2
  1.4 Significance of the Study ............................................................................................... 2
2.0 METHODOLOGY ................................................................................................................ 3
  2.1 Study Site and Setting .................................................................................................... 3
  2.2 Survey Design and Sampling ....................................................................................... 3
  2.3 Data Collection ............................................................................................................. 4
3.0 RESULTS AND DISCUSSION ........................................................................................... 5
  3.1 Population Status of Wattled Crane on the Nyika Plateau ............................................ 5
  3.2 Habitat Assessment ....................................................................................................... 6
4.0 CONCLUSION AND RECOMMENDATIONS .................................................................. 6
  4.1 Conclusion .................................................................................................................... 8
  4.2 Recommendation(s) ..................................................................................................... 8
5.0 REFERENCES .................................................................................................................... 9
6.0 APPENDICES ..................................................................................................................... 11
  6.1 Appendix 1: Sketch Maps of Wattled Crane habitats on the Nyika Plateau ............... 11
LIST OF TABLES AND FIGURES

Table 1: Phase, dates of the survey, and the number of Crane recorded

Figure 1: A pair of Wattled Crane Bugeranus carunculatus © NVT Website

Figure 2: Map of the Study Area

Figure 3: Population estimate of Nyika Wattled Crane since 1985

Figure 4: A Denham's Bastard Neotis denhami

Figure 5: Lake Kaulime (previous Wattled Crane territory on the Nyika plateau)
ABBREVIATIONS AND ACRONYMS
ACB : African Bird Club
CAWS : Central African Wilderness Safaris
DNPW : Department of National Parks and Wildlife
et al. : et alii, and others
GPS : Global Positioning System
GoM : Government of Malawi
ICF : International Crane Foundation
Km : Kilometer
NVT : Nyika - Vwaza Trust
WESM : Wildlife Society of Malawi
1.0 INTRODUCTION
1.1 Background of the Study
Wattled Crane (*Bugeranus carunculatus*), “the largest and rarest of the Africa’s Cranes, and the only member of the genus *Bugeranus* (Jones et al. 2006; Beilfuss et al., 2003; McCann et al, 2001; Meine & Archibald, 1996)”, is among the world’s most threatened bird species and is currently listed as “Vulnerable” by BirdLife International, (2018). Due to this, the species has globally attracted much attention from different conservation agencies such as the Department of National Parks and Wildlife (DNPW), the African Bird Club (ABC) and the International Crane Foundation (ICF) which are trying hard to find ways of safeguarding the remaining population. Its distribution ranges from Ethiopia to South Africa, with highest concentrations being found in south-central Africa (Meine & Archibald, 1996; Jones et al. 2006; Motsumi et al. 2007).

In Malawi, Wattled Crane has been reported to breed on the marshes of the Nyika plateau (Dowsett Lamire & Dowsett, 2006; Dyer, 1992) among other areas. In spite of this, Wattled Crane numbers have been greatly declined to the extent that only 2-3 pairs are now suggested to remain on the plateau (Dowsett Lamire & Dowsett, 2006). This decline, obviously, is an indication that the species is experiencing breeding difficulties on the plateau. In view of this, the current study aimed at assessing the current status of Nyika Wattled Crane as well as its habitat so as to generate fresh data which can be used in developing relevant conservation measures for the species.

Figure 1: A pair of Wattled Crane *Bugeranus carunculatus* © Nyika - Vwaza Trust (NVT) Website

1.2 Problem Statement
Although Wattled Crane has been observed to be declining on the Nyika plateau, there is lack of information regarding its current status especially in terms of its number, current habitat range and
threats. Lack of such information is a major setback in developing successful and pragmatic conservation measures for the species.

1.3 Objectives

1.3.1 General Objective
The core objective of this survey was to assess the current status of Wattled Crane on the Nyika plateau.

1.3.2 Specific Objectives
- To determine the population of Wattled Crane on the Nyika plateau
- To assess habitat conditions of Wattled Crane on the Nyika plateau

1.4 Significance of the Study
The results from this research will not only shed light on the current status and habitat conditions of the Nyika Wattled Crane, but also assist park authorities and all other stakeholders in developing relevant conservation action plan(s) for the species, whilst also providing a platform for further research.
2.0 METHODOLOGY
2.1 Study Site and Setting
The survey was carried out on the Nyika Plateau in Nyika National Park (Figure X –map) during the year 2018/19. The plateau is one the most beautiful montane plateaux found in Central Africa and is mainly characterized with beautiful rolling grasslands that are interspersed with small streams and valleys that harbor patches of tropical montane evergreen forests (see cover photo). A more detailed description of the Nyika plateau is given by Burrows and Willis, (2005).

![Figure 2: Map of Showing the Study Area](image)

2.2 Survey Design and Sampling
Ground surveys were conducted along valleys (which were considered transects) within 500 km² grid of the central Nyika plateau, a historical grid of Wattled Crane occurrence (Banda, 1996). Sites previously marked as Crane territories were given much more attention (maps provided in section 6.1). These surveys were done in three phases following the three seasons that characterize annual weather patterns of Malawi i.e. hot dry season, cool dry season, and wet season (Table 1).
2.3 Data Collection and Analysis
Data was collected in form of observations made in the field. Descriptive data of the valley’s flora, apparent Wattled Crane threats and other familiar birds’ species seen were noted, recorded and analyzed visually.
3.0 RESULTS AND DISCUSSION

3.1 Population Status of Wattled Crane on the Nyika Plateau.
From 2-3 pairs of Wattled Crane suggested to remain on the Nyika plateau (Dowsett Lamire & Dowsett, 2006), the current study has recorded zero in all its surveys done (Table 1). The results however did not come as a surprise, as the species were observed to have been ever declining over the past years (Figure 3). Results also confirmed speculations by local birders, especially from CAWS and DNPW that it is difficult to spot Wattled Crane on the Nyika plateau these days. Possible causes of this decline have been discussed in the next section.

Table 1: Phase, dates of the survey and the number of Crane recorded

<table>
<thead>
<tr>
<th>Survey phase</th>
<th>Dates of the survey</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet season (Dec - March) phase</td>
<td>Dec 17, 2018 to Jan 15, 2019</td>
<td>0</td>
</tr>
<tr>
<td>Cool dry season (April - July) phase</td>
<td>June 6 - 24, 2019</td>
<td>0</td>
</tr>
<tr>
<td>Hot dry season (Aug - Nov) phase</td>
<td>October 14 - 31, 2019</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 3: Population estimates of Nyika Wattled Crane since 1985

Other familiar birds’ species observed included; Denham’s Bustard (*Neotis denhami*), Blue Swallow (*Hirundo atrocaerulea*), Lappet-faced Vultures (*Torgos tracheliotis*), Grass Owl (*Tyto capensis*), Pallid Harrier (*Circus macrourus*), Mountain Marsh Whydah (*Euplectes psammocromius*), African Marsh Harrier (*Circus ranivorus*) and many others. From the field observation, Denham’s Bustard (*Neotis denhami*) (Figure 4) was often confused with Wattled
Crane (Figure 1) especially when seen from a far. Thus, it is imperative to always include experts in a team whenever such field data is collected so as to avoid misidentifications.

3.2 Habitat Assessment of Wattled Crane on the Nyika plateau.
In terms of habitat assessment, the aim was to identify and map the active Wattled Crane habitats/sites wherein to assess threats. But this proved futile as the study did not find any Wattled Crane (Table 1). Alternatively, observations as regard apparent threats and/or possible causes of the decline were made, and included the following:

1) Fires (Probably, the major threat and cause of the decline)
In fact, fires are very common on the Nyika plateau during the dry season (May-Dec), which is also a period of egg-laying for Wattled Crane (Dowsett Lamire & Dowsett, 2006). Certainly, these fires have been/are injurious to Wattled Crane mainly through burning nesting/or breeding sites resulting in possible loss of both eggs and unfledged chicks. Also, frequent fires are somehow responsible for habitat alterations as they influence the structure of plant communities as well as facilitate alien invasive plant species (Alba et al., 2015; Brooks et al., 2008), which can result in the loss of viable habitat. Elsewhere also, the effect of fires resulting in the decline of species has also been well observed for a number of other bird species as well across the global (Gipin, Gall & Woodruff, 1992; Diaz, Gonzalez, MuñozPulido & Naveso, 1996; Pienkowski et al., 1996).

2) Invasive plant species colonization
Apparently, Nyika plateau is threatened with multiple invasive plant species such as Mexican pine (*Pinus patula*), Black wattle (*Acacia mearnsii*), Himalayan raspberry (*Rubus ellipticus*), as well as Bracken fern (*Pteridium aquilinum*) (Nxumayo, 2013; GoM, 2015; Kanzunguze, 2017). Being invasive species, they have the ability to alter sites they colonize making them unfavorable to many natural species. In the field, most of these species were observed to be dominating many sites and this obviously poses a huge threat to species’ habitats including that of Wattled Crane, as the invasive plants can entirely transform many sites making them inhospitable, especially if left unchecked. Already from the field evidence, the grassland near Lake Kaulime, a previous Wattled Crane territory (Dowsett Lamire & Dowsett 2006), is now being colonized by self-sown Pines (up to 4m) and Bracken fern together with other woody shrubs (Figure 5), making it incompatible with Wattled Cranes to date.

Despite the decline and observed threats, dominance of the sedges and tussock grasses along the inundated dambo valleys is an indication that Nyika plateau still has the potential to support Wattled Crane, as the species is reported to mostly prefer habitats with such vegetation i.e. sedge-based vegetation (Meine & Archibald, 1996).

*Figure 5: Lake Kaulime (one of the previous Wattled Crane territory on the Nyika plateau) – GPS location 10°34’S 33°45’E.*
4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion
In conclusion, the survey did not find any Wattled Crane on the Nyika plateau even though the place was once reported a paradise for the species. From the field observation, frequent fires that occur on the plateau are suspected to have played a bigger role in the decline of Wattled Crane numbers whilst invasive plant species appeared to have altered some sites, a thing that will likely make them inhospitable. Despite this, the plateau still seem to have potential valleys/wetlands (i.e. inundated dambo valleys with sedge-based vegetation) that can support Wattled Crane.

4.2 Recommendations
Based on the findings of this study, further should focus on mapping the potential Wattled Crane habitats, whilst monitoring any sign of Wattled Crane so as to have a more conclusive picture before asserting its complete disappearance. Also, management should try as much as possible to lessen/ or control the observed threats as this will help in restoration of the affected habitats, whilst conserving other species in the process that are also affected by the same threats.
5.0 REFERENCES


6.0 APPENDICES

6.1 Appendix 1: Sketch Maps of Wattled Crane habitats on the Nyika Plateau.

*Figure 6: Distribution of Wattled Crane territories on the Nyika Plateua, Malawi, Feb, 1985 - March, 1987 (from Dyer, 1987); Extracted from Banda, (1996)*
Figure 7: Distribution of Wattled Crane territories on the Nyika plateau, Malawi, January 1990 - December 1991. Also, extracted from Banda, (1996)