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“Strengthening Flyway Conservation in a Changing World”

**Conservation Brief for the AEWA International
Single Species Action Plan for the Conservation of the
Maccoa Duck**

Oxyura maccoa

Agreement on the Conservation of
African-Eurasian Migratory Waterbirds (AEWA)

**Conservation Brief for the AEWA International
Single Species Action Plan for the Conservation of the
Maccoa Duck**

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(To be used in conjunction with the ISSAP published in April 2007 – please access [here](#))

May 2022

**Produced by the AEWA Technical Committee
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OVERVIEW AND SUMMARY

The AEWA International Single Species Action Plan (ISSAP) for the conservation of the Maccoa Duck was published in April 2007. The 7th session of the Meeting of the Parties to AEWA in 2018 requested the AEWA Technical Committee to produce a shorter conservation brief for this ISSAP, since it was lacking an international coordination mechanism, in order to highlight any new scientific information and/or threats as well as to boost implementation and re-engage relevant range states. This Conservation Brief shall be used in conjunction with the full ISSAP.

Three populations of the Maccoa Duck *Oxyura maccoa* occur: the Eastern African population is focused on Tanzania and Kenya, while the Ethiopian population is treated distinctly and is not thought to migrate across national boundaries. The Southern African population has its stronghold in South Africa and Namibia but there are also populations in Botswana and Zimbabwe. This species was globally up listed to Vulnerable in 2017 and further to Endangered in 2021 as recent estimates suggest it may have undergone a very rapid population decline. Data suggests a c. 78% decline in Southern Africa between 2008 and 2017 (S. Nagy *in litt.* 2017; Nagy & Langendoen *in prep*) although the population in Botswana and Namibia may be stable. The population in Eastern Africa has undergone a severe long-term fall and is possibly on the verge of extinction with records from only a few sites in Tanzania and just three birds reported in a recent count in Kenya. (N. Baker, D. Turner *in litt.*). There is little recent information from Ethiopia, but a similar decline is considered probable.

Unfortunately, there is little evidence that much targeted conservation work has occurred since the production of the International Action Plan in 2007. In East Africa there are few recent records, and it is not clear what has caused the decline or what could halt it. In Southern Africa the species seems not yet to be a high enough priority for urgent action and the African Gamebird Research Education and Development Trust (AGRED) who were to lead on the plan have closed. Some generic wetland conservation, management and restoration will benefit this species, but this seems not to be stemming the declines. However, at the site level there are often apparent causes of decline and tackling these should not await a wider population understanding.

The status of the species warrants urgent actions, focused on Southern Africa and the few sites in East Africa where the population is still viable. Immediate priorities are to identify and protect the most important remaining sites and ensure their good management especially of water levels and quality. Research is urgently needed to answer some of the outstanding uncertainties about its conservation needs (especially re: impacts of pollution, alien species, fishing and disturbance). These potential threats and their solutions will need to be assessed and prioritised at each key remaining site. Awareness raising is needed amongst key statutory bodies and communities living around sites with Maccoa Duck.

The use of concise National Action Plans may be a quick cost-effective way of agreeing and communicating the priority actions in each country. Key sites identified will need rapid assessment of individual threats and a comprehensive site-specific approach. This species is a high priority for immediate establishment and operation of an International Species Working Group (ISWG). This formal network should include full participation of Government representatives to help ensure meaningful conservation measures are taken and to encourage and share good practice. There is already some limited NGO action for the species and from these one or more champions may be identified to help facilitate the ISWG.

1. INTRODUCTION & BASIC DATA

- Conservation Brief for the AEWA International Single Species Action Plan for the Conservation of the Maccoa Duck (*Oxyura maccoa*). Full Action plan at [International Single Species Action Plan for the Conservation of the Maccoa Duck \(TS No. 14\) | AEWA \(unep-aewa.org\)](#)
- Compiled by Paul Buckley. Additional experts contributing: Neil Baker (Tanzania), Aldo Berruti and Doug Harebottle (South Africa), Chris Brewster and Stephanie Tyler (Botswana), Don Turner and Peter Njoroge (Kenya), Colin Baker and Julia Pierini (Zimbabwe), Holger Kolberg (Namibia), Michael Mills (Angola).
- **Technical Committee adoption:** *Adopted by the AEWA Technical Committee in May 2022.*
- **Introduction:** The original International Species Action Plan was published in 2007 and adopted at MOP4 in 2008. It was originally published with timelines for implementation through to 2010 but actions were considered to be current beyond that date. It was further extended through agreement of Resolution 7.5 at MOP7 through the period from 2019 to 2028. Recommendations were to consider the production of this Conservation Brief, and to re-establish efforts to organise international coordination of implementation which was proposed at the time of the ISSAP publication but never put into place.

Table 1. Review of Basic Data

Populations covered by the Plan:	Eastern Africa and Ethiopia populations	Southern Africa population
AEWA Table 1 category, also indicating possible change since ISSAP adoption (Y/N – if yes, indicate new versus old listing)	AEWA Column A 1b 1c (<10,000 individuals) No change	AEWA Column A 1b 1c (less than 10,000 individuals) No change
Change in global, regional and/or sub-regional Red List status (Y/N - if yes, indicate new versus old listing)	Global status is Endangered as of 2021 (it was Least Concern (LC) at the time of the ISSAP, up listed to Near Threatened (NT) in 2007 and Vulnerable in 2017)	Global status is Endangered as of 2021 (it was Least Concern (LC) at the time of the ISSAP, up listed to Near Threatened (NT) in 2007 and Vulnerable in 2017)
Change in Principal Range States, i.e. countries regularly hosting over 1% of the biogeographic population (Y/N). If yes list changes per population.	Total population estimated at 2,000 to 3,500 in 2005 primarily in Kenya (1,000), Ethiopia (500-2,000), Tanzania (500), Eritrea (5). However, since then a sharp decline has occurred with population possibly below 300 in total (<100 in Tanzania and <50 in Kenya) Previously in Uganda and Rwanda – now probably extinct. Recorded from a new site north of known range in Ethiopia but otherwise little information.	Total population estimated at 7,000 to 8,250 in 2005 primarily in South Africa (4,500 to 5,500), Namibia (2,000), Botswana (300), Zimbabwe (100-300), Angola (50). No clear evidence since but IWC and Southern African Bird Atlas data gives evidence of further decline which is also suggested from Zimbabwe where recent records from only two sites. Maybe stable in Botswana and Namibia. Probably no longer present in Angola.

2. ACTION FRAMEWORK REVIEW

- **Adopted International Action Plan Goal and Purpose:**

Goal: to stabilise or increase natural populations of Maccoa Duck as indicators of sustainable wetland management for the benefit of people in Africa by 2010;

Project purpose: To define the threats and take mitigating action based on improved knowledge based on cooperative partnerships (No indicators at Aim or Purpose level).

The Table below is adapted from the original Action Plan action framework showing the **objectives**, associated **problems**, **results** and **actions** into the new action framework template adopted at MOP4 (shown below). Changes in the prioritization of actions based on the revised threat assessment and additional recommendations for action are shown **in red font**.

Table 2. Review of Action Framework

<i>Objective 1: Protect breeding habitats and enhance their suitability and management for Maccoa Duck</i>						
Problem	Result	Action	Priority (Revised)	Time scale (Revised)	Organisations responsible	Implementation status and recommendations
Unnaturally low breeding success						
Drainage and loss of wetlands	Result 1.1 Stop wetland loss in key Maccoa Duck (MD) areas (Assigned as a priority for all states but especially Kenya and South Africa)	1.1.1/3. Compile a comprehensive list of MD areas and identify key sites where conversion is a problem	Not given Revise to Essential	2023	Govts, NGOs National research Foundation (NRF-SA)	Some sites are known but no inventory. Some additional sites on newer waterbodies e.g. in Botswana Lake Ashenge in Ethiopia is a range extension but little other data from the country (Alemayehu et al 2017). Seek to promote unprotected sites for stronger protection. Create an inventory of known and potential sites as a first step.
		1.1.2. Understand MD movement between breeding and non-breeding sites	Not given Revise to Medium	2025		No recent studies known

		1.1.4 Form partnerships between IAPs to prevent wetland loss/conversion and rehabilitate degraded wetlands.	Medium Revise to Essential	2022	All	No systematic action focused on Maccoa Duck sites Recently occupied sites should be restored wherever possible e.g. overgrown ponds
		1.1.5 Implement/ enforce existing relevant legislation including EIAs.	High	Ongoing	Govt	Some work by NGOs to push this (not Maccoa specific) – mixed outcomes
		1.1.6 Monitor wetland loss and rehabilitation	High Revise to Essential	Ongoing	Govt, NGOs/NRF	Waterbird counts continue but do not always cover small bodies with Maccoa Undertake targeted surveys of known or suspected sites and assess both populations and ecological condition according to relevant criteria
Disturbance to breeding birds	Result 1.2 Reduce disturbance at key Maccoa Duck sites (All countries)	1.2.1. Assess level and forms of disturbance at critical MD sites	High	2023	Maccoa Duck Action Group (MDAG), NGOs	No evidence of implementation and MDAG is not active
		1.2.2 Formulate proper solution and mitigation measures.	High Revise to Essential	2023	MDAG, NGOs	No evidence of implementation. Disturbance by human users may be

						key in some sites (often resource related in East and recreation in Southern Africa). This will be one of the issues to assess at site level but focus first on sites where it is a known issue.
Lethal and sub-lethal impacts of water pollution	Result 1.3 To determine the effect of water pollution on the breeding and abundance of Maccoa Ducks and possible mitigation measures (Applicable to South Africa – prob elsewhere)	1.3.1 Desktop study of relevant pollution literature/unpublished data sources	Essential	2023	EWT, NW university Research Scientists	No information to suggest that this been done.
		1.3.2 Depending on outcome of desktop study. Conduct field work on specific pollution threats	Essential?	2023 onwards	EWT, NW university Research Scientists	Unknown if studies have been done – if so not implemented Propose 1.3.1 and 1.3.2 should be done initially at one/two sites in Southern Africa where threat is suspected
		1.3.3 Implement pollution mitigation measures where necessary, using national/provincial legislation.	Essential (if studies confirm it is a threat)	2024 onwards	Government agencies, private agencies	No known pollution mitigation activity relating to Maccoa. This will be one of the issues to assess later at site level
	Result 1.4 Eliminate alien	1.4.1 Identify key MD sites where alien plants are a problem.	High	2023	Govt, NGOs	Unknown if this has been done. This will

Invasion by alien vegetation	plants, restore natural vegetation in 10 key Maccoa Duck sites by 2010 (All countries but esp South Africa)					be one of the issues to assess at site level
		1.4.2 Form partnerships with key institutions & landowners & IAAPs in order to eliminate alien plants + restore natural vegetation in key MD sites.	Essential	2023	Govt, NGOs, landowners	Unknown if this has been done
		1.4.3 Implement relevant legislation concerning alien plant species where it exists.	High	2025	Govt	No known alien plant control activity relating to Maccoa
		1.4.4 Monitor alien plant control and rehabilitation of natural vegetations	Essential	2023 onwards	Govt, Universities	No known alien plant control activity relating to Maccoa
Changes and variation in water levels	Result 1.5 Manage water levels for optimum Maccoa Duck habitat in 5 sites by 2010 (all counties but esp Southern Africa, Kenya)	1.5.1 Identify key MD sites where water level fluctuations are a problem.	Medium Revise to High	2024	Wildlife NGOs	Unknown if this has been done. This will be one of the issues to assess at site level
		1.5.2/4 Form partnerships with key institutions and IAAPs in order to manage and monitor water levels	High	2025	NGOs, Govt, responsible bodies	Unknown if this has been done
		1.5.3 Implement relevant legislation with regard to water.	High	2025	Govt agencies	No known water management activity relating to MD
Changes to treatment of sewage water	Result 1.6 To mitigate negative	1.6.1 Compile a report on dependence of MD on settling ponds in existing sewage ponds	High	2024	NGOs and bird clubs	Unknown if this has been done, many

	impact on Maccoa Duck habitat due to upgrading of sewage plants (Southern Africa)		Revise to Medium			sites have already been re-modernised
		1.6.2/3 Encourage provision of suitable habitat for MD in modern sewage works through better EIA	Low/High Revise to Medium	Ongoing	Provincial and local Govt, NGOs, consultants	Unknown if this has been done This remains important in any further upgrades. Alternative is to create or restore habitats nearby in compensation.
		1.6.4 Encourage catchment fora to become aware of MD habitat	Medium Revise to High	Ongoing	NGOs	Fora will vary across countries. Unknown if they have taken action for Maccoa. Where these exist, could be a key player
Competition for benthic inverts from alien fish species	Result 1.7 Reduce Competition with alien benthic feeding fish (All countries potentially)	1.7.1 Identify key MD sites where exotic benthic-feeding fish occur	Not given Revise to Medium	2024	Universities	Unknown if this has been done
		1.7.2/3 Conduct and publish desktop study on literature and unpublished data on the impact of alien fish on MD food sources	Not given Revise to Medium	2024	Universities	Unknown if this has been done.
		1.7.4 Based on study, undertake further appropriate action if necessary	Pending study	2024 onwards	?	Unknown if this has been done.

	Result 1.8 Re-introduction of birds in suitable sites in southern highlands of Tanzania (Tanzania if selected as the best site)	1.8.1-3 Identify suitable sites, understand reasons for extirpation and ensure threats no longer exist	Medium Revise to High (if good sites exist and as a pilot)	2024 on Timing will depend upon viability	Tanzania Atlas Project and others – would require a project partnership including Govt and private sector.	This action has not been done. Actors need to evaluate best sites across range and methods prior to any introduction effort. Suitable sites are believed still to exist in Southern Highlands which are in good ecological condition and undisturbed.
		1.8.4 Identify sources of eggs/adults of same genetic stock				
		1.8.5 Desktop study of previous techniques				
		1.8,6/7 Collaboration with suitable partners and Reintroduction				

Objective 2: To understand and prevent causes of excessive mortality of Maccoa Ducks

Problem	Result	Action	Priority	Time scale	Organisations responsible	Implementation status
Unnaturally high adult mortality						
Accidental drowning in gill nets	Result 2.1 To reduce the use of gill nets in critical sites through legislation and education (All esp East Africa)	2.1.1-3 Assess existing legislation on gill nets and seek amendments through Govts	Not given High	2023	Govt, NGOs	Unknown if this has been done. Likely still to be important. Reassess progress and urgency
		2.1.4-6 Identify key sites and implement action plans in discussion with stakeholders	Not given High	2023 Pending review	Govt, NGOs Communities	As so few sites left in East Africa, this will be one of the issues to assess in each remaining site.
		2.1.7 Monitor use of gill nets and Duck populations	Not given High	Ongoing	Govt NGOs, communities	

Negative impacts of sport hunting	Result 2.2 Prevent any negative impacts of sport hunting (Tanzania, Southern Africa)	2.2.1/2. Contact all hunting companies to seek details of MD mortality and raise awareness of status	Medium	2023	NGOs, Shooting companies	Unknown if this has been done. Protected in South Africa and not now known to be a major threat. Seek formal protection throughout its range and raise awareness about all threats to the species
		2.2.3 Alerts Govt to status and threats and identify critical sites not to be hunted	High	2023	NGOs	
Negative impact of local hunting/poaching	Result 2.3 Minimise the impact of poaching on Maccoa (East Africa)	2.3.1/2 Implement village-based site-specific awareness programmes and monitor their effectiveness	Medium	2023	NGOs, Govt	Unknown if this has been done. As so few sites left in East Africa, this will be one of the issues to assess in each remaining site.
Mortality through botulism	Result 2.4 Reduce occurrence and impact of botulism (All)	2.4.1 Get specialist veterinary input on impact and mitigation of botulism in wetlands	Low	2025	NGOs, consultants	Unknown if this has been done. Small numbers have been affected in incidents in South Africa (Govender et al 2019)
Dangers of hybridisation with other <i>Oxyura</i> species	Result 2.5 Prevent hybridisation in wild populations of Maccoa Duck (esp South Africa)	2.5.1/2 Identify any captive populations and alert authorities to ensure legal compliance	Medium	2025	Conservation agencies/NGOs	Unknown if this has been done or if threat still serious
		2.5.3 Alert birdwatchers to report sightings of ruddy duck	Medium	2025	Conservation agencies/NGOs	
		2.5.4/5 Create awareness of dangers of hybridisation and get other <i>Oxyura</i> species listed as invasive	Medium	2025	Conservation agencies/NGOs	

Impact of bird trade and egg collection	Result 2.6 Control of trade of ducks and their eggs (all countries)	2.6.1 Determine extent of trade in Maccoa Duck	Medium	2024	Conservation agencies/NGOs	This covers both trade in Maccoa and risks of other <i>Oxyura</i> species Unclear if done or if threat still serious
		2.6.2/3 Write a policy document on trade and importation of <i>Oxyura</i> species and seek its adoption across range	Medium	2025		Unknown if this has been done. These species should not be traded in Africa. Species specialists should discuss best approach with CITES

Objective 3: Improve knowledge of and international cooperation for Maccoa Duck conservation

Problem	Result	Action	Priority	Time scale	Organisations responsible	Implementation status
Inadequate knowledge and protection						
Lack of knowledge of Maccoa Duck population and ecology	Result 3.1 Obtain improved population estimates and distribution (all countries)	3.1.1-3. Identify all key breeding and non-breeding sites and expand coordinated counts to cover them	Not given Revise to Essential	2023	NGOs, conservation agencies, Volunteers	Some IWC and CWAC counts but not covering all sites. This is a key activity for each national champion/actor
		3.1.4 List all sites where Maccoa used to occur and seek to understand why they have been lost	Not given. Revise to High	2024	Universities/consultants	Unknown if this has been done. This most urgent where close to remaining populations. If funds available, a range wide remote data and mapping

						assessment combined with targeted survey to examine causes of decline at population level would be invaluable.
		3.1.5 Determine movement patterns	Not given Revise to Medium	2025	Universities/consultants	Unknown if this has been done. Recommendation to seek funds for understanding of movements and any genetic differences between populations.
		3.1.6 studies to determine genetics of captive and wild birds	Not given Revise to Low	2026	Universities/consultants	Unknown if this has been done
Threat status and conservation effort needs to be upgraded	Result 3.2 Upgrade population status of Maccoa Duck and effort on conservation (all countries)	3.2.1 Contact BLI and provide information on numbers and need for status up-listing	High		NGOs	This was achieved and status now EN. Did not lead to significant conservation efforts
		3.2.2 Re-establish network of those interested in Maccoa conservation and share information	High	2023	NGOs, Government agencies, Universities	This did not happen as existing champion NGO closed and no new leaders emerged. Establish and provide support for ISWG

3. BIOLOGICAL ASSESSMENT

- The Maccoa Duck populations are generally subject to only local movements and there is still no clear evidence of mixing between Southern African, Eastern African or Ethiopian populations. We treat these three populations as separate.
- No major changes have been recorded on the local movements of populations of which there is limited knowledge.
- No major changes have been reported on habitat requirements, survival or productivity. As a benthic feeder, Maccoa Duck breeds in a range of different freshwater lakes and there are subtle differences in the threats faced in each lake type.

Table 3. Population size and trend by country

Country *Eritrea and Angola in ISAP but not here as small populations and no new data	Breeding numbers (first row at time of ISSAP, 2 nd row most recent data)	Quality of data	Year(s) of the estimate	Breeding population trend in the last 10 years (or 3 generations)	Quality of data	Maximum size of migrating or non-breeding populations in the last 10 years (or 3 generations)	Quality of data	Year(s) of the estimate
<i>Kenya</i>	<1000 ¹	Good (est)	2001	Decline	Poor			
	<50 ²	Poor	2016	Decline >50%	Poor			
<i>Tanzania</i>	500 ¹	Good	2005	Decline 50%	Good			
	<100 ³	Poor	2016	Decline >50%	Poor			
<i>Ethiopia</i>	500-2000 ¹	Estimate	2005	Unknown				
				Unknown				
<i>South Africa</i>	4,500-5,500 ¹	Good	2005	Est 10,000 for Southern Africa? Possibly increase then decline				
	?	Poor	2017	Suggested 78% decline based on some waterbird counts.	Poor			

Country *Eritrea and Angola in ISAP but not here as small populations and no new data	Breeding numbers (first row at time of ISSAP, 2 nd row most recent data)	Quality of data	Year(s) of the estimate	Breeding population trend in the last 10 years (or 3 generations)	Quality of data	Maximum size of migrating or non-breeding populations in the last 10 years (or 3 generations)	Quality of data	Year(s) of the estimate
				Projected 15% decline per annum 2005-2009 SABAP2 atlas shows decline. ⁴				
<i>Namibia</i>	2,000 ¹	Estimate	2005	Unknown				
		Poor	2016	Believed stable				
<i>Botswana</i>	300 ¹	Estimate	2001	Unknown				
	Good numbers reported on dams ⁵	Poor	2020	Believed stable				
<i>Zimbabwe</i>	100-300 ¹	Estimate	2005	Unknown				
	Highest recent count at key site 27 ⁶	Poor coverage beyond this site which is no longer thought suitable	2018	Declining?				

Country *Eritrea and Angola in ISAP but not here as small populations and no new data	Breeding numbers (first row at time of ISSAP, 2 nd row most recent data)	Quality of data	Year(s) of the estimate	Breeding population trend in the last 10 years (or 3 generations)	Quality of data	Maximum size of migrating or non-breeding populations in the last 10 years (or 3 generations)	Quality of data	Year(s) of the estimate
Overall	East Africa	2000-3500 100-150⁷	2005 2017	Decline 50%-90%⁷	Reasonable Expert opinion			2006-15
	Southern Africa	7000-8,250 3-4,000⁷	2005 2018	Decline 42-52%⁷	Reasonable Expert opinion			2008-17

1 – Data from original ISSAP 2007 – original data sources will vary

2 – Don Turner, Peter Njoroge in litt.

3 – Neil Baker in litt.

4 – Barshep et al 2017, Underhill and Brooks 2016

5 – Chris Brewster, Stephanie Tyler in litt.

6 – BirdLife Zimbabwe in litt.

7 – Wetlands International 2018

4. PROBLEM ANALYSIS

This section reviews threats identified in the original problem analysis based on possible new information and following the IUCN Red List Threat Classification Scheme¹, also noting threats no longer considered relevant for survival etc.

Table 4. Threat review

Threat identified in 2005 Action Plan (corresponding IUCN Code)	Identified for which population	Action Plan threat score (IUCN estimated score)	Revised threat assessment based on new evidence, if available
Accidental drowning in gill nets (5.4.3)	East African population	High impact esp. Tanzania (Medium 6)	Threat still not fully assessed
Drainage and loss of wetlands (2.1/2.3/7.3)	Kenya and South Africa	High impact – mainly smaller lakes (High 8)	Pollution and disturbance by local communities in East Africa and requires sensitive approaches
Lethal and sub-lethal impacts of water pollution (9.2.3/9.3.1)	All populations	Rated as a high impact although importance yet to be determined (Medium 7)	Threat still not fully assessed. Kungu and Njoroge (2016) cite a large number of previously suitable wetlands subject to eutrophication, turbidity and silting. Poisoning from lead ammunition is a further potential threat
Invasion by alien vegetation (8.1.1)	Kenya and South Africa	Medium to High impact in affected areas (Medium 7)	In some areas may be vegetation succession including native species
Changes and variation in water levels (7.2.3/9.5)	Kenya and Southern African population	Medium to High (Medium 6)	Threat still not fully assessed
Disturbance to breeding birds (6.3)	Kenya (local community impacts) and South Africa (Recreational)	Medium (Medium 7)	Kungu and Njoroge (2016) suggest current absence on Lake Naivasha maybe due to high levels of fishing and recreational boating Also boating on Tanzania's key site.
Changes to treatment of sewage water (9.1.1)	South Africa	Low to Medium (Low 4)	Threat still not fully assessed
Nest predation and poaching (5.1.1)	Kenya	Low to Medium in small wetlands (Low 4)	Threat still not fully assessed

¹ <https://www.iucnredlist.org/resources/threat-classification-scheme>

Competition for benthic invertebrates from alien fish species (8.1.2)	All populations	Unknown – considered a potential threat (Medium 5)	Threat still not fully assessed
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Not included - sport hunting, bird trade, botulism or hybridisation which are considered in the action plan but as minimal threats. The continuing level of these threats needs to be reassessed. The original Plan identified a number of areas where more information was needed. It did not cite this lack of knowledge as a threat per se, but conservation efforts are hindered by a lack of information on population status across its range, on the extent of population movements and on the impact of a number of threats including pollution and the impact of introduced species.

5. CONTACTS & REFERENCES

5.1. Contacts

Kenya. Peter Njoroge, National Museums of Kenya pnjoroge@museums.or.ke
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Zimbabwe. Colin Baker and Julia Pierini, BirdLife Zimbabwe juliapierini@birdlifezimbabwe.org

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