

### Final Project Evaluation Report

Your Details							
Full Name	Dominic K. Chesire						
Project Title	Bird Diversity, Threats, Habitat Assessment and Outreach Campaign in Perkerra Irrigation Scheme- Kenya						
Application ID	25986-1						
Grant Amount	£5000						
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Date of this Report	02/10/2019						



1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Avian Species				were used to evaluate the avian
				species of Perkerra Irrigation Scheme. The congregation and diversification of the avian community on a landscape are always highly dictated by a climate of an area, a condition that facilitates and link intra- and inter-species interactions together with the immediate environment. An intensive bird survey was conducted in Perkerra Irrigation Scheme-Marigat, using previously anticipated methods. Over 300 species of birds were observed and recorded, some showing preference to specific landscapes within the study area such as; certain crop plantations, water channels open land fields and farm edges. The variation in farmed crops and different habitats gave the perfect encounter of birds. A visit to bordering IBAs however, was made to have an idea of bird diversity and species commonness similarity with that of the Perkerra scheme during some seasons. The threats to birds were the heavy use of farm inputs (inorganic product), physical killing (use of catapults) and invasive <i>P.</i> <i>juliflora</i> in the farms, and in the IBAs other than the invasive plant were developments, water hyacinth, and pollution (Lake Baringo), and pollution (littering) and rising water level (Lake
				Bogoria).
Chemical Application on Birds				heavy use of pesticides, insecticides, herbicides, fungicides, and fertilisers was indeed at its optimism. The expenses of farming, food insecurity, poverty, and climatic aspects were



		the main reasons for farmers using
		chomicals in an offert to maximise
		chemicals in an enort to maximise
		crop production. In addition, we find
		out that, none has been done to
		sensitise the farmers on conservation
		agriculture, which includes
		exploitation of ecosystem services
		from birds and other wildlife
		Sustainable use of oce farm inputs
		and evaluiting econystem convices
		and exploiting ecosystem services
		such as making use of important
		organisms to control problematic
		organisms, insectivores,
		birds/bats/invertebrates and raptors
		have significant values in controlling
		nests that are destructive to crops
		Our birds and their threats survey
		finaling ware shared with former
		lindings were snared with larmers
		during the awareness and sensitising
		workshops. Farmers learned a lot
		about the importance of knowing the
		safety of farm inputs to the
		environment and biodiversity before
		using any
Improved Awaroposs to		The future of safe farming and
Children en Investeres		The future of sale faithing and
Children on importance		conservation of biodiversity remains
of Bird Conservation		with the young generation. Our
		determinations approach towards
		sensitising them was unique, sharing
		experiences on birds trapping,
		identification and appreciating them
		using mist nets. Punils and teachers
		find it very thought provoking and
		they conferr they have never had
		they contess, they have never had
		such an experience in their lives.
		Headteachers ask if we could
		continue with the same after the
		project ends, something we welcome
		and working on how to make it
		happen. The boys we met with killed
		birds at the village find it different and
		educative after we thought them
		how to use a pair of hippoulars and
		how to use a pair of binoculars and
		how to use a pair of binoculars and given them a chance to read and
		how to use a pair of binoculars and given them a chance to read and use bird guidebooks. We educate
		how to use a pair of binoculars and given them a chance to read and use bird guidebooks. We educate them on the values of birds that they
		how to use a pair of binoculars and given them a chance to read and use bird guidebooks. We educate them on the values of birds that they can exploit in the future i.e.



### 2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

Farming systems and elastic programmes: Perkerra Irrigation Scheme as varying farm programmes and that gave different crops and farming techniques spreading throughout the year. This situation dictates bird populations and diversity in the study area that keep changing drastically; when they start planting Kenya seeds (maize and rice), which occupies almost half of the land on utilisation. That part becomes semi-aquatic because water stand on the furrows/channels for the crops to utilise and because crops are young, the land appears like wetland and attracts aquatic birds. We continue monitoring the birds throughout the project period to ensure we capture all the species utilising the farm at different times of the year, and possible threats facing them. Some species show abundance when crops are still young, others when crops are at its growing mid-stage and others when crops are mature.

Catchment destruction and climate change: Farming at the scheme majorly depends on irrigation, using water from River Perkerra, which means they depend on rains from the catchment (Mau Forest). The forest is presently facing a myriad pressure from anthropogenic destruction; clearing and cultivation of the catchment forest, affecting the rains and water retention that in turn with climate change distresses the flow of water downstream. Rains also have not been good, there was a delay and main planting season delays too. We adjusted our plans to fit the prevailing situation and make things happen as earlier planned, during water shortages we focus on activities that were not directly related to farming like school outreach and visiting farmer for awareness and knowledge on the use of pesticides and inorganic fertilisers. The work of the farmers' association was to make orders, which includes controlling farming when water is less and not enough for farming to avoid conflicts (Inter-community rivalry between; Tugen and Njemps who are the majority and natives). At some point in February 2019, farmers were almost complete stopped from farming, to let little available water be utilised for livestock and domestic, our close work with them enables us, handles every situation as it comes with success.

#### 3. Briefly describe the three most important outcomes of your project.

A. The evaluation of avian species, determination of their significance and threats in Perkerra Irrigation Scheme:

We successfully survey birds in and out of the scheme recording all the species utilising the area in various ways and the threats they face, apart from the granivores whose distribution were mostly at farms and settlements, the rest of the avifauna seem to fairly inhibit the area indiscriminately. After the main bird survey, we kept adding species observed during other activities not during the survey to help build up the checklist. The surveys strongly indicate the need to sensitize the farmers and community to understand better on the conservation of the grey crowned crane that was observed having a reasonable population within the Perkerra Irrigation scheme, we also reach out for previous observation of birds and add to the checklist.



#### B. Farmer's sensitisation on the chemical application on birds:

Though our study did not find intentional/direct bird poisoning happening, nonetheless that happens in periodic terms and will be a problem in the near future since they are exposed to various chemicals from pesticides, herbicides, and fertilizers. According to RSBP research report no. 28 '...pesticide, herbicides, insecticides, fungicides, and molluscicides are considered to have had the most widespread effects on farmland birds...' in UK. We find out that farmers are heavily using them in crop production, in an effort to maximise the outputs. That may jeopardise the lives of birds and another biodiversity of perkerra. We met farmers and stakeholder at the start of the project, where we introduce the project and the details; we did the same towards the end to share the findings. We comment positively for not taking wrong measures to solve problems they encounter with grey crowned crane (an endangered bird species), many complaints arise accusing the bird of unearthing the planted maize seeds before it germinate. They learned about the benefits of birds/ecosystem services, as crop pollinators, seed dispersal to reseed the natural environment, pest control from insects/rodents feeding on and destroy their crops. They agree to be mindful of birds/wildlife through the adoption of organic farming and non-chemical techniques in their farming activities, and the use of biological means to control birds' i.e. planting of sorghum/maize/sunflower on the periphery of the crops to destruct birds from feeding on the main crops grown.

C. Primary schools and perkerra villages' visit for awareness and conservation of birds to children:

We reach out to pupils at their schools to demonstrate mist netting, show them pictures of the birds of perkerra, and engage them with discussion on birds. They show little familiarity with birds and our visit added more flavor to that, they were happy to learn some of the interesting behaviours of birds like feeding/hunting, changing plumages during breeding, and how they benefit from them indirectly (ecosystem services, sources of revenue through tourism and bio-indicators). Furthermore, we meet children at their villages for birds and wildlife conservation education; we briefly interview them and engage to understand what they know about birds. Interesting encounter was meeting a group of boys and as usual we started the chat, little did we know they were ahead of us, Ooops!, they surprise us with kills of assorted bird species they had in their pockets. We had to be wise to handle that scenario, we talk to them nicely showing them guidebook plates and lending them pairs of binoculars to view birds through it and eventually they show interest in our work and wanted to join us in the near future to safeguard the birds.

### 4. Briefly describe the involvement of local communities and how they have benefitted from the project.

We engage the locals from initial stage of our work to the end; from the first activity, bird survey, they were part of the team and play a crucial role in leading the rest through transects, explaining to the locals what we were doing and helping with inquiries of some cryptic species like owls. They were very good at spotting birds and they show us all the sites where birds congregate. They describe for us birds alleged to be bad and good by the locals, and that helped us use the appropriate approach to execute our bird survey plans. To traverse project area entirely, we had to hire motorbikes from the locals, we used and service for them as an appreciation



and to spawn good relationship that induces conservation mindset, thorny trees dominate the area (Perkerra Irrigation Scheme) and its environment and high temperatures, which contributes to motorbike wear and tear. We recruited locals who generously gave motorbikes to facilitate our movement also benefited from fuel and service. The stationary, printings and photocopying were done locally, the decision made intentionally by the team, and was meant to benefit the locals. In addition, they majorly help in interviewing farmers' and administration of questionnaires to the community and sensitisation, 15 youths benefited from the project.

Primary school sensitisation and awareness visit, farmers workshop, and awareness; it was interesting for the team to realise that this project was very unique to both the pupils and the farmers, for they have not heard of anyone studying birds or they have never experience within their locality. They were very happy to have us working closely with them and they admit they are finding it realistic and promise to practice sustainable farming through scrutiny of the pesticide for safety of birds and other wildlife before they use. In addition, to report destructive birds to the management (government) for further action where need be if biological measures are not working, like planting sorghum around the crops.

#### 5. Are there any plans to continue this work?

Yes, the study indicated Perkerra irrigation scheme holds a significant number of grey crowned crane, and besides that, there were lots of complains from the farmers that the species is notorious in crop destruction (unearthing maize seeds when planted). Considering the species IUCN status, there is still more work needed to safeguard the species from the farmers through sensitizing them and campaigning for the species conservation. There was also heavy use of herbicides to control weeds; its "cost-effective" to the farmers in a short term perspective, but poses threat to biodiversity and not only for Perkerra but also to the aqua systems of the Perkerra river and Lake Baringo, for it get back to the river sometimes when the farms floods. However, the invasive *Prosopis juliflora* (Mathenge) threatens farming, biodiversity, and human health. It encroaches farming paddocks, chocking water channels, covering grazing fields and blocking birds like grey crowned crane from accessing wetlands within Perkerra where they use for breeding and refuge when flushed from farms.

#### 6. How do you plan to share the results of your work with others?

We share some of the findings during primary schools education and outreach, and some of the work events on social media. A detailed report will be compiled and shared with stakeholders Nature Kenya, Kenya forestry research institute-Marigat Station, National Irrigation Board-Marigat Station, County Government of Baringo and a copy at Ornithology Section Library. Further, plans to publish articles on the same in Komba Magazine (Wildlife Clubs of Kenya Magazine) and in Nature net and Kenya Birding, a Nature Kenya newsletter and Magazine respectively, also on biodiversity observation an online semi-scientific journal of South Africa.



## 7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

The project grant was used from the beginning of the project to its completion; however, the plan as per the proposal indicated the start of the project activities in August 2018, but this was not the case as the project review took a pit little longer than expected. Therefore, the project started in September 2018, that was immediately after its approval and disbursement of funds which happens the first week of September 2018, and it ends mid-September 2019

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Local running during project execution (hire of motorbikes, fuelling and servicing)	£500	£485	-£15	Motorbikes were economical in terms of fuel consumption which oblige us to service the bikes after use from the same budget for fuel
Project administration: report production, result dissemination, article compilation etc.	£300	£300		
Food and light refreshments for the team members during project implementations.	£370	£370		
Accommodations: it gathers for all the stays made by the project team members at Marigat during field works.	£370	£370		
Awareness creation materials: T-shirt printing, banner designing and printing, publicity posters and leaflets	£300	£350	+£50	There was a slight increase in the printing of banners due to adjustment of size for better visibility
Stakeholders workshop: share of experiences and findings	£400	£365	-£35	
Children outreach and	E340	E340		



mist netting: a regular bird monitoring and sensitization at selected primary schools				
Subsistence and stipends for local guides gathers for allowances and food during fieldworks to local guides and motorbike riders	£460	£540	+£80	We kept accommodating interested locals other than the recruited ones during our activities, therefore, adjusting the budgeted expenses.
Communication: purchase of airtime to enable calls for planning and getting in touch with project crew and stakeholders, internet bundles for emails and internet services	£240	£260	+£20	
Research permit: Cost cover permit fee and expenses used during the process.	£190	£190		
Transport expense: one (1) reconnaissance travel several travels (public), to Marigat for project implementation throughout the project.	£500	£565	+£65	Unstable fuel prices in the country kept rising; that pushed the fare expenses high (public services) therefore increased the transport cost. cos
First aid box (equipped)and Insurance (personal insurances for team members, equipment insurance cover against theft)	£220	£200	-£20	Some of the pieces of equipment we had were already covered
Two field guidebooks, printing papers for questionnaires and other project printable material. Data collection materials; such as notebooks, biro pens,pencils, sharpeners and erasers.	£290	£200	-£90	We got a discount on the purchase of Guidebooks and save -£90
Fieldwork scientific equipment's: Purchase of 2 digital Cameras, hire G.P.S and hire of Mist nets	£470	£415	-£55	Kenya Bird Map project gives free G.P.S to Citizen scientist, most of the team members from Nairobi who participated including myself are (SC), therefore, we didn't spend on

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			the gadget (only batteries)
TOTAL	£5000	£5000	Notes: Exchange rate £1= Ksh. 126

#### 9. Looking ahead, what do you feel are the important next steps?

Of all the four species of birds of conservation concern, which was in the spotlight in this project, grey crowned crane had good representation and did show wide use of the heavily farmed landscape. About 90% of the farmers complained of the species accusing of being a nuisance to their crops (mostly maize) as explained in number five of this document. The next step is to structure project targeting to safeguard the species conservation and of its habitat, using the local community perspective approach as the implementing agent and seek stakeholder support. As a matter of urgency, something needs to be done soonest possible to focus on the protection and conservation of the species in Perkerra farmlands; this is through monitoring and raising awareness with the aim to restore veracity of the species to the hangry farmers.

# 10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes, we used the logo widely on fliers, t-shirts, and banners. Indeed, the foundation received publicity, the number of pupils reached out during our school visit for education and outreach awareness on birds of Perkerra master the foundation logo. Also, during farmers' sensitisation on the effects of heavy use of inorganic fertilisers and pesticides on birds and wildlife that are part of the area's biodiversity. The banners were sizeable enough to facilitate visibility even from distance away for public passing by and master the foundation from its unique logo (they were referring to it as the Leopard). We further plan to continue using the logo on articles' that are underway.

## 11. Please provide a full list of all the members of your team and briefly what was their role in the project.

**Mr. Kennedy Sikenykeny**: Kennedy was new to bird's conservation when we initiate the project, and because of his interest he learned quickly and spend most of his time entirely surveying birds and educating the local farmers on sustainable use of pesticide to safeguard birds from poisoning in Perkerra Irigatiogation Scheme. He is now well knowledgeable in birds' survey, monitoring, conservation, and now planning to begin his Masters.

**Mr. Frank Juma**: a dedicated project member who took part in all the project activities, he is passionate about birds' conservation and children's education in the same. He transforms small boys found killing birds at Perkerra to future scientists, toward the end of the project, Frank left for the USA to further his education (MSc).

Mr. Mike Chelugo: a young and energetic farmer at Perkerra Irrigation scheme who participated in the project from inception to the end, he was so dedicated such

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that he could give most of his time to the project activities. He promises to keep educating farmers and kids on birds' conservation and protection of the environmental resources by letting them know the values and significance of conservation.

**Miss Edna Kulola**: Miss Kulola worked passionately with full commitment at the start of the project, she participated in bird survey and help out with most of the planning, with her hard-working and passionate in birds' conservation, she secures a job with Nature Kenya. She started her first assignment in Taita hills and later moved to Kajiado by the same organization tasking her with Vulture awareness aiming to sensitize the locals to stop using poison to mitigate livestock predation.

John Wanyoike: a former Gateway hotel Naturalist, former tour guide at Cisticola tours and passionate birder, he played a crucial role in bird survey and monitoring. At the same time, he was a project photographer who worked tirelessly to ensure the project went on well.

**Miss Naomi Korir**: a local farmer at Perkerra Irrigation Scheme, she has a background in social work and community development. She is also a Tutor at Bartek Institute-Marigat campus; she played huge role in leading local participants in interviewing farmers, together with them help to fill out questionnaires and was in charge of planning local logistics.

The team also recognizes the following for their overwhelming support throughout the project: **Mr. Edwin Njuguna** and **Mr. Edson Mlamba** our chief advisors, were to participate in project activities but due to their tight schedules, they could not be able to participate, and to **Mr. Wilson Tiren**, a great friend, enthusiastic birder and a local guide based at Lake Baringo. Mr. Tiren love's birds and he requested me to join the team, and be one of the volunteers, just to have his experience and knowledge shared with the locals of Perkerra, and to safeguard future of birds and biodiversity.

### 12. Other comments

My heartfelt gratitude to the Rufford Foundation for their kind financial support, which saw this noble project implemented to the latter. My special appreciation to the Rufford team for their overwhelming engagements to me since that first time they receive my proposal by accepting, patiently waiting for the referees and later breaking the good news of acceptance after their thorough process of proposal review. I would also want to thank the Rufford administration for frequently getting in touch with us from letting us know of the approval of the project, safe funding disbursements to account and acknowledging receive of our report updates. Further gratitude goes to Dr Peter Njoroge of Ornithology section for providing an introductory letter to the local stakeholders Area Chiefs, Local institutions' (National irrigation Board, Kenya forestry research institute, Kenya Agricultural, and livestock research organization). I advance the same to the stakeholders for accepting our introductory letter and promising to support us. My Special thanks to Primary school heads' (Labos Primary and Perkerra Primary for their warm welcome and support) to the Perkerra Famer's for cooperating on various occasions we worked with and help share crucial information that could otherwise go undocumented. Finally, to all

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participants from the National Museums of Kenya and Perkerra local community who dedicated their time, skill and resources to make it a success.

### Appendix: Events and pictures, taken while implementing the project throughout the anticipated time scale

![](_page_10_Picture_3.jpeg)

Figure 1: The endangered Grey Crowned Cranes (*Balearica regulorum*) observed utilizing opened farm spaces created after farmers harvested their maize and cut/burn the stalks.

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**Figure 2:** The Grey Crowned Cranes (*Balearica regulorum*) flying above the farmlands either being flush out of the crop fields by farmers or are on their normal transits between farm blocks in search of food and safety.

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![](_page_11_Picture_1.jpeg)

**Figure 3:** Some of the birds observed and recorded at perkerra irrigated lands and nearby river perkerra stalking fish, frogs and other aquatic organism for food, to the left Pied Kingfisher (*Ceryle rudis*) and to the right Little Egret (*Egretta garzetta*).

![](_page_11_Picture_3.jpeg)

**Figure 4:** some of the Birds that were recorded commonly utilizing maize fields immediately after the farmers harvest their maize. When farmers harvest their crops, they expose invertebrates and rodents that have been hiding under the crops, that offers an easy catch to birds for food, to **the left** Lilac-breasted Roller (*Coracias caudatus*) and **to the right** Silverbird (*Melaenornis semipartitus*).

![](_page_11_Figure_5.jpeg)

Figure 5: some of the birds that were found nuisance to farmers at the farms to the left are Red-billed Quelea (*Quelea quelea*) when crops were almost harvested, and to the right African Mourning Dove (*Streptopelia decipiens*) making up the majorityamong other doves during the post-harvesting handling process, at the drying facilities.

![](_page_12_Picture_0.jpeg)

![](_page_12_Picture_1.jpeg)

**Figure 6:** the above six photos are of different crops grown in perkerra farmland, clockwise from top right Rice, Red-onions, Pawpaw, Sunflower, Mango, Bananas, and Maize. Perennial crops like Mangos, Bananas, and Pawpaw occupy a small portion of the entire crop fields, while annual crops like Maize, Beans, Rice, Tomatoes, Onions, and Sunflower are mostly grown; Maize is the commonest of all the annuals varieties.

![](_page_13_Picture_0.jpeg)

![](_page_13_Picture_1.jpeg)

![](_page_14_Picture_0.jpeg)

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Figure 7: the above 12 photos reflect some of the events which took place during project implementation with Famers, pupils with their teacher at the study area, it involved training, awareness creation, publicizing the Foundation through use of the name, which is also the logo. From top, the first four pictures were at Perkerra primary school, six photos after top four at Labos primary school and tow at the bottom was an event with famers' right at the farm area.

![](_page_15_Picture_0.jpeg)

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**Figure 8:** the above pictures show the significance of the farm and surrounding environment to birds for breeding. Clockwise from top right: male Masai Ostrich (*Struthio camelus massaicus*) sitting on eggs, Raptor nest (not in use when picture was taken), Pin-tailed Whydah (*Vidua macroura*) male in breeding plumage, young Green-wood Hoopoe (*Phoeniculus purpureus*) alongside the Adult, a male Northern Red Bishop (*Euplectes franciscanus*) in complete breeding plumage and Whiteheaded Barbet (*Lybius leucocephalus*) next to the nest.

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**Figure 9:** a remnant of a chemical container pictured at the crop field, an indication of chemical use in the production of farm products at perkerra irrigation scheme, and right is one of other Wildlife recorded at the scheme Flap-necked Chameleon (*Chamaeleo dilepis*).

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**Figure 10:** the study area is located at the floor of the rift valley, a critical route for a number of Palearctic migrants (PM) on their way to and from the south during their annual migration cycles, above are pictured migrant raptor, Booted Eagle (Aquila pennata) flying over farmlands.

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![](_page_17_Picture_1.jpeg)

**Figure 11:** the team and volunteers conducting bird surveys and monitoring at the study site; it includes farmland transects, access roads transects and surrounding environment, which includes riparian woodlands.