

**Intra-African Bird Migration Project:
ecology and conservation
(Eastern and Southern Africa, 2017)**



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Donor Report:



African Bird Club
Working for birds and conservation in Africa

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Photos, clockwise from top left: Woodland Kingfisher with metal and colour rings, Woodland Kingfisher with geolocator, Didric Cuckoo in hand, examining Didric Cuckoo for brood patch, scoring Didric Cuckoo primary feathers, African Pygmy Kingfisher in hand.

Summary

This project started in 2015 and is presently being conducted largely as a postdoctoral research at the FitzPatrick Institute of African Ornithology under the supervision of Prof. Ryan and Dr. Barnard. We are implementing a broad-scale spatial approach to questions of connectivity, movement, variation and speciation in focal intra-African migrant birds that have seasonal breeding ranges across western, eastern and southern Africa. Our study sites are in Nigeria and Ghana for western, Uganda for eastern and South Africa for southern Africa. Fieldwork is conducted during the sub-regional breeding seasons of target species, which include Woodland Kingfisher, African Pygmy Kingfisher, Didric Cuckoo and Klaas' Cuckoo. To address connectivity, we are using single nucleotide polymorphisms (SNPs) and mitochondrial DNA sequence analysis to explore genetic differentiation across the range. To investigate movement patterns, we are relying on ringing data, stable isotope analysis of the oldest primary feather and telemetry data from geolocators deployed on suitable species. Phenotypic variation is being explored as differences in the body mass index (BMI) and vocalisation characteristics across the range and between genetically distinct populations. Analyses of these datasets with environmental data will facilitate statistical models to more accurately direct conservation action and possibly indicate anthropogenic-drivers of speciation.

A key collaborator is Dr. Dalton (National Zoological Gardens) directing the laboratory analyses of this project. Essential support has come from BirdLife Africa Partnership Secretariat, International Foundation for Science, A.P. Leventis Ornithological Research Institute, Ghana Wildlife Society, Ugandan Wildlife Education Centre, Swiss Ornithological Institute, and most recently from the African Bird Club in the form of the Expedition Award to finance the 2017 eastern and southern African field seasons. This report to the African Bird Club details achievements thus far, focusing on activities during this period of the Expedition Award funding.

Contents

Summary	i
Contents.....	1
Introduction	2
Field report.....	3
Eastern African field season.....	3
Southern African field season	3
Impacts and outputs	4
Conferences	5
Next steps	5
Acknowledgement	5
Financial report.....	6
References	7

Introduction

There is less known about the migratory routes, timings, drivers, connectivity and environmental prescriptions of intra-continental migrant birds in comparison to inter-continental migrants (Riede 2005), e.g. intra-African versus Palearctic migrants (Vickery et al. 2014). This knowledge gap was apparent during the development of the UNEP/CMS African-Eurasian Migratory Landbirds Action Plan (AEMLAP; AEML-WG 2014). This project was developed to address these knowledge, conservation and policy gaps (Osinubi et al. 2016). The primary goal is to provide information about the movement of migratory landbirds like the solitary and nocturnally migrating kingfishers and cuckoos, using myriad techniques (Hobson and Ryan Norris 2008). The insectivorous foraging habits of our target species also provide a platform for cross-taxa studies through which the annual sub-regional cycle, timing and movement of invertebrate prey species could be investigated. Our ultimate goal is to create a viable research network that links research institutions across Africa, providing a near-regional operating base for other students and researchers to utilize in answering diverse questions concerning intra-African migrant birds. This network also serves to support the objectives of the Migrant Landbird Study Group (MLSG; <http://migrantlandbirds.org/>) of facilitating an independent and international network of professionals and amateurs involved in the research, monitoring and conservation of migratory landbird species.

Migratory landbirds move along a wide spatial spectrum, traversing and utilizing a great diversity of terrestrial habitats (Bairlein 2011). Studying the intra-African migrant group of birds potentially expands the protected area network, taking conservation actions beyond national parks and Important Bird Areas (IBAs). This supports the 'green spaces in grey areas' concept of conservation actions in urban centers, thus benefitting many other species that pass through or are residents in our towns and cities. The different migration strategies employed within the tropics are still being understood (Ryan Norris and Marra 2007). So also is the level of connectivity between populations of migrant birds that have their global range exclusively on the African continent. These species have not been as well studied as their Palearctic congeners. This fact was highlighted in this project's start-off funding that was received under the 'neglected and under-utilized species' theme of the International Foundation for Science (IFS) Collaborative Research Grant. The focus that this project brings to intra-African migration supports existing initiatives like the South African and East African Ringing Schemes, as well as the various atlasing programmes on the continent. We encourage citizen science use of BirdLasser, as the data enables the study of phenological changes, i.e. arrival and departure dates, across the sub-regions. Our engagement for the project has not been restricted to Africa, because the discovery and application of research information is global, and greater insight into intra-African bird migration does have a bearing on wintering movements of palearctic migrant birds. At present, we have received and deployed light archival geolocators donated by the Swiss Ornithological Institute (Vogelwarte) – for the Woodland Kingfisher.

The highly collaborative nature of this project allows us tackle a wide range of questions, making optimum use of every field season to gather as much information and collect numerous samples from target species. This expands our expected output of research information beyond what a single researcher is capable of producing. The fieldwork component of this project forms the basis for all the other aspects of the project, and is deemed essential. We have used this fieldwork component to support the field training of young African ornithologists, increasing their exposure to new techniques and equipment, as well as travel to parts of Africa hitherto unknown to them. Since the start of this

project in 2015, we have already contributed to the direct field training of at least eight young African ornithologists from Nigeria, Ghana and South Africa. Our intention is to offer this opportunity to a greater number of young Africans, as well as make a call for willing and able volunteers, all in a bid to increase our level of interaction with the professional and amateur ornithological community.

Field report

Eastern African field season

Logistics:

Fieldwork was conducted from 10th July until 4th August, 2017 and our main base of operations was the Ugandan Wildlife Education Centre (UWEC) in Entebbe. Field sites visited included UWEC, Entebbe Botanical Gardens, Mabamba Important Bird Area (IBA) and Ramsar site, Jinja Golf Club grounds, Hairy Lemon Island and Elegu in northern Uganda.

Activities:

Focal species sampled included three *Halcyon senegalensis senegalensis* Woodland Kingfisher, four African Pygmy-kingfisher *Ispidina picta* and three Diederik Cuckoos *Chrysococcyx caprius*. A two-day reconnaissance visit was made to Elegu in northern Uganda to explore areas of overlap between the *H. s. senegalensis* and *H. s. cyanoleuca*. While unsuccessful in finding the Woodland Kingfisher of either sub-species, this visit has expanded the possibility of exploring other sites in northern Uganda.

Network:

Under the ABC Expedition Award, Dr. Lisa Nupen, a research affiliate of the FitzPatrick Institute of African Ornithology, joined the field trip to Uganda, lending her field expertise to the Intra-African Bird Migration project. Dr. Dieter Oschadleus, the Coordinator of the South African Bird Ringing Scheme (SAFRING), also joined the eastern African field season with self-financing. Immense value was gained by having both of these seasoned researchers contribute their time, effort, finance and insight to the project.

Southern African field season

Logistics:

Fieldwork in the Limpopo Province was conducted from 18th November until 28th December, 2017, with an additional weekend field visit within the Western Cape from 2nd until 4th February, 2018. Sites visited in the Limpopo Province included the National Zoological Gardens of South Africa in Mokopane, Faure Research Camp in Venetia, and Mogalakwena

Research Centre. In the Western Cape, we visited Swellendam to explore the south-western range of the Diederik Cuckoo in South Africa.

Activities:

Focal species sampled included 12 *H. s. cyanoleuca* Woodland Kingfishers¹, two African Pygmy-kingfishers, 15 Diederik Cuckoos and one Klaas's Cuckoo *Chrysococcyx klaas*. It was noticed that at least three of 12 nest boxes established at the Mogalakwena Research Centre site in 2015 were being explored and used by Woodland Kingfishers. During subsequent field seasons, this will expand the possibilities for closer observations and sampling of individuals of this species. With continued support from Vogelwarte (Swiss Ornithological Institute) in the form of a second donation of geolocators, eleven of these geolocators were successfully deployed on Woodland Kingfishers. These geolocators will gather information about movement patterns and locations for a year, and we will endeavour to retrap these same individuals during the next southern African field season to retrieve the geolocators and acquire the data.

Network:

Abigail Ramudzuli, an Honours graduate from the University of Limpopo was covered under the ABC Expedition Award to join the South African field season as a field assistant. Building on this, she has now enrolled as a MSc student at the FitzPatrick Institute of African Ornithology at the University of Cape Town, and she will be investigating feather moult patterns and stable isotopic variations in the Woodland Kingfisher.

Impacts and outputs

The implementation of this project supports the achievement of several actions under the UNEP/CMS African-Eurasian Migratory Landbirds Action Plan (AEMLAP) section 4.0 (Research and Monitoring), with additional support to international policies like the Convention on Biological Diversity (CBD) Aichi Target 19 and CMS Strategic Plan 15 Objective 1. We aim to provide accurate information that is crucial to effective conservation policies and management. Our collaborative and networking approach of linking individuals and institutions in countries already linked by the movement of these birds strengthens research capacity development in each country and collectively across Africa.

¹ Two of these Woodland Kingfishers were retrapped individuals on which light archival geolocators donated by Vogelwarte (Swiss Ornithological Institute) had been deployed during the 2016 southern African field season. The geolocators were retrieved and the data will be analysed later in the year.

Conferences

A talk was presented at the 11th conference of the European Ornithologists' Union (EOU) in Turku, Finland (August 2017), that outlined the objectives of the Intra-African Bird Migration project, and achievements made, as well as a request for more collaborations. Another presentation was made at the 8th annual research symposium of the National Zoological Gardens in Pretoria, South Africa (November 2017).

Next steps

We have been fortunate to secure the support of the British Ecological Society through the Ecologist in Africa grant, which will largely fund the 2018 western, eastern and southern African field seasons. However, further support and collaborations are being sought to establish this project as a multi-institutional engagement across Africa, and thus ensure the sustainability of the project objectives. An abstract has been submitted for a talk at the 27th International Ornithological Congress (IOC) in Vancouver, Canada (August, 2018). It is intended that this will garner yet more support for the project.

Acknowledgement

We hereby express our sincere appreciation for the trust and support of the African Bird Club in granting the Expedition Award to help finance our 2017 eastern and southern African field seasons. We are also grateful for the support of our other donors and look forward to continued involvement in facilitating research into the ecology of intra-African migrant birds and the enhancement of indigenous research capacity on the continent.

Financial report

Expedition Award = GBP 3,000.00 = ZAR 50,461.23 (as at 3rd July, 2017).

Item	Cost (ZAR)	Cost (GBP)*
Travel		
Flights	5,709.29	349.47
Local travel	7,230.92	442.60
Fuel	1,307.80	80.05
Parking	25.00	1.53
Accommodation and feeding		
Accommodation	11,337.37	693.96
Groceries	8,349.73	511.09
Documentation and licences		
Stationeries	222.9	13.64
Printing	77.5	4.74
Telecommunication		
Airtime	150	9.18
Expendable supplies		
Equipment	10,432.82	638.59
Laboratory supplies	4,677.88	286.33
Equipment repair	400	24.48
Extra manpower		
Field assistants	540.02	33.05
TOTAL	50461.23	3088.73

* Exchange rate = 0.06121

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