


Flock
The Annual Gathering of Members of BirdLife South Africa
to the Wilderness 2023

FEATURING
LAB
LEARN ABOUT BIRDS



6th Biennial Learn About Birds (LAB) Conference
Science LAB Speaker Booklet
24 – 26 May 2023



Cape Robin chat (Photo credit: Marietjie Froneman)

LAB

LEARN ABOUT BIRDS

*An interactive series of lectures, presentations and discussions
co-hosted by BirdLife South Africa and
the FitzPatrick Institute of African Ornithology*



Thank you for participating in the 6th Biennial Learn About Birds (LAB) Conference. The LAB Conference is co-hosted by BirdLife South Africa and the FitzPatrick Institute.

Please remember that registered LAB delegates who paid for the full conference package can attend both the Science and Layman's LAB talks throughout the event.

We are grateful to the following sponsors who have contributed towards this year's event:



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We would like to thank the following committees for their support in preparing this year's event:

The LAB Organizing Committee:

Dr Melissa Whitecross (Chair); Clare Neall, Dr Hanneline Smit-Robinson, Linda van Den Heever, Carina Pienaar, Dr Giselle Murison, Dr Kyle Lloyd, Dr Christiaan Brink, Christie Wooding, Abigail Ramudzuli & Valery Phakoago.

The Scientific Committee:

Dr Melissa Whitecross, Dr Robert Thomson, Dr Hanneline Smit-Robinson, Dr Christiaan Brink, Dr Kyle Lloyd, Linda van den Heever, Dr Alistair McInnes, and Dr Tegan Carpenter-Kling.



SCIENCE LAB PROGRAMME

Wednesday, 24 May 2023

Time	Venue	Detail	Speaker
7:00 – 18:00	Hotel lobby	Registration	
14:00 – 16:00	Protea	WORKSHOP: Forest Birding	Mike Bridgeford & Cassie Carstens
17:00 – 18:30	Protea	Cape Bird Club 75th Anniversary Lecture	Mike Buckham
19:00 – 21:00	Girls on the Square	ICE-BREAKER QUIZ NIGHT	

Thursday, 25 May 2023

Time	Venue	Detail	Speaker
07:00 – 18:00	Palm lobby	Registration/ Networking/ Refreshments	
08:00 – 08:10	Palm	Welcome and conference rules	Dr Melissa Whitecross
08:10 – 08:25	Palm	Welcome address	Mark D. Anderson
08:25 – 09:25	Palm	Science LAB Plenary Lecture: The Science behind a Mouse-Free Marion	Dr Anton Wolfaardt
SESSION: Responses to Changing Environments Session Chair: Linda van den Heever			
09:30 – 09:45	Palm	There is a Luxury Effect on ecosystem service provision by birds in a developing world city.	Dr Chevonne Reynolds
09:45 - 10:00	Palm	The State of South Africa's Birds: An assessment of the viability of SABAP2 for the creation of indices across South Africa	Christopher Shortland
10:00 – 10:15	Palm	Who benefits from the rich? Differential responses of avian functional guilds to socioeconomic of urban areas in a developing country.	Miqkayla Stofberg
10:15 – 10:30	Palm	The short-term response of coastal thicket bird communities to fire in the south eastern Cape, South Africa.	Tiaan Strydom
10:30 – 11:00	Morning Tea		
SESSION: Seabird Research, Rehabilitation and Conservation Session Chair: Dr Alistair McInnes			
11:00 – 11:15	Palm	Numbers, Movement and Conservation of Damara Terns (<i>Sternula balaenarum</i>) in South Africa	Paul Martin

11:15 – 11:30	Palm	High adult mortality at two mainland African penguin (<i>Spheniscus demersus</i>) colonies and how the rehabilitation and release of penguins may be helping to bolster these colonies	Albert Snyman
11:30 – 11:45	Palm	Artificial incubation and hand rearing of African Penguin chicks to bolster wild population	Melissa Cadman
11:45 – 12:00	Palm	Age and sex-specific foraging movements and energetics in an endangered monomorphic seabird	Zanri Strydom
12:00 – 12:15	Palm	The influence of diet on Brown Skua breeding success at Marion Island	Tegan Walker
12:15- 12:30	Palm	Questions Session	
12:30 – 13:30	Lunch (Loerie Restaurant)		
SESSION: Populations, Life History Strategies and Citizen Science Session Chair: Alan Lee			
13:30 - 13:45	Palm	An improved conservation status of Southern Bald Ibis (<i>Geronticus calvus</i>) as informed by a diversity of citizen science projects suggests positive impacts of conservation attention	Carina Pienaar
13:45 – 14:00	Palm	In pursuit of an enigmatic species – what it takes to conserve the Blue Swallow	Steve McKean
14:00 – 14:15	Palm	Habitat type influence on the structure of vocalisation Case for Sabota Lark, <i>Calendula sabota</i> (Alaudidae)	Mogaletloa Madiseng
SESSION: Thermal Physiology and Behaviour of Birds Session Chair: Dr Kyle Lloyd			
14:15 – 14:30	Palm	Hot and cold: new extremes of avian thermal physiology	Prof Andrew McKechnie
14:30 – 14:45	Palm	The promise of biophysical models for understanding desert birds' thermal vulnerabilities	Dr Shannon Conradie
14:45 – 15:00	Palm	Do birds compensate for missed foraging opportunities at high temperature, by increasing foraging when it's cool?	Benjamin Murphy
15:00 – 15:15	Palm	Evolution of avian heat tolerance: the role of atmospheric humidity	Dr Marc Freeman
15:15 – 15:30	Palm	Elevated humidity increases the likelihood of avian lethal hyperthermia during extreme heat events	Nazley Liddle
15:30 – 15:45	Palm	Heat tolerance and evaporative cooling capacity in a large forest bird, the Trumpeter Hornbill: interacting effects of temperature and humidity	Bianca Coulson
15:45 – 16:00	Palm	Respirometry protocols for birds: stepped and steady-state profiles yield similar results at high air temperatures	James Short
16:00 – 16:30	Afternoon Tea		
LAB SPEED TALK SESSION Session Chair: Ernst Retief			
16:30 – 16:35	Palm	Re-establishing an African Penguin colony at the De Hoop Nature Reserve, South Africa	Christina Hagen
16:35 – 16:40	Palm	Do Verreaux's Eagles fly at Night? Implications for Future Wind Farm Developments.	Dr Chris Vennum

16:40 – 16:45	Palm	Assessing the persistence of Blacksmith and Crowned Lapwings in urban areas of Pietermaritzburg, KwaZulu-Natal	Feziwe Phoswa
16:45 – 16:50	Palm	Rescue response and stabilisation of seabirds and in particular, a Rockhopper penguin, in Plettenberg Bay	Chanel Visser
16:50 – 16:55	Palm	Circadian usage patterns of avian foraging guilds associated with an abandoned granite-quarry urban refuse site of South-Western Nigeria	Rachel Akinola
16:55 – 17:00	Palm	A comparative study of the biometrics and sub species status of the Rufous-eared Warbler (<i>Malcorus pectoralis</i>) in the Free State and adjacent areas	Dr Dawie De Swardt
17:00 – 17:05	Palm	Exploring the possibility of 3D printed alternatives to traditional copper black bulbs	Mia Momberg
17:05 – 17:10	Palm	Hot birds and an iconic African raptor	Wesley Gush
17:10 – 17:30	Palm	Questions for Speed Talks	
17:30 – 18:00	Comfort break		
18:00 – 19:00	Palm	LAB Special Session: Bird Name IQ / Qi	Prof Ian Glenn
19:00 – 20:30	Hotel Pool Area	LAB COCKTAIL FUNCTION	

Friday, 26 May 2023

Time	Venue	Detail	
09:00 – 09:10	Palm	Welcome and housekeeping	Dr Melissa Whitecross
09:10 – 09:30	Palm	Conserving birds in a complex world	Dr Hanneline Smit-Robinson
09:30 – 10:30	Palm	Science LAB Plenary Lecture: Pollinators	Dr Anina Coetsee
10:30 – 10:40	CONFERENCE PHOTOGRAPH in front of hotel entrance		
10:40 – 11:00	Morning Tea		
SESSION: Birds of Prey and Threats They Face Session Chair: Dr Hanneline Smit-Robinson			
11:00 – 11:15	Palm	Lead Poisoning in South Africa's Gyps Vultures: Source and Sub-lethal Impacts	Linda van den Heever
11:15 – 11:30	Palm	Worldwide trends of DDT levels in raptors using historic measures	Kailen Padayachee
11:30 – 11:45	Palm	Public perceptions of African crowned eagles in the urban-rural mosaic landscape of Durban, eThekweni Municipality, KwaZulu-Natal, South Africa	Mfundo Maseko
11:45 – 12:00	Palm	Does the Karoo Population of Martial Eagles (<i>Polemaetus bellicosus</i>) have the potential to buffer the species's national decline?	Jane Doherty
12:00- 12:15	Palm	Using GPS tracking of Martial Eagles to Inform Future Wind Farm Development	Chris Vennum
12:15 – 12:30	Palm	Lessons from a decade of tackling wind power	Samantha Ralston-Paton

SESSION: Conservation of Birds and Their Habitats Session Chair: Dr Giselle Murison			
12:30 - 12:45	Palm	Protected Areas - a key strategy to achieve the 30x30 target	Kevin McCann
12:45 – 13:00	Palm	The Southern African Bird Atlas Project 2: Progress, trends and use of data	Ernst Retief
13:00 – 14:00	Lunch (Loerie Restaurant)		
14:00 – 15:00	Palm	PANEL DISCUSSION: Opportunities in African Ornithology – research, citizen science and cross-boundary collaborations	Chair: Chevonne Reynolds Panel: Susie Cunningham, Alan Lee, Martina Scacco, Kamran Safi, Res Altwegg, and Shamiso Banda
SESSION: Forest Conservation and Research Session Chair: Dr Melissa Whitecross			
Time	Venue	Topic	Speaker
15:00 –15:20	Palm	Keynote: What can be done about range declines in South Africa’s forest-dependent birds?	Prof Michael Cherry
15:20 – 15:35	Palm	A quarter of a century of annual Cape Parrot (<i>Poicephalus robustus censuses</i>): Present population trends and conservation contributions	Prof Colleen Downs
15:35 - 15:50	Palm	Cape Parrot (<i>Poicephalus robustus</i>) diet in a nutshell: use of indigenous and exotic plants in the Eastern Cape province, South Africa	Dr Francis Brooke
15:50 – 16:05	Palm	Evaluating habitat connectivity based on the requirements of a most sedentary forest- specialised bird species (<i>Aplopelia larvata</i>) in focal Southern Mistbelt Forests within human- altered landscapes in KwaZulu-Natal and Eastern Cape, South Africa	Samukelisiwe Ncgobo
16:05 – 16:20	Palm	Using acoustic recording units to investigate the effects of logging of indigenous trees in the Amathole forests, South Africa on Cape Parrot breeding, and the presence of three primary cavity excavating bird species.	Cassie Carstens
16:20 – 16:35	Palm	The impact of timber harvesting on nest site availability for the Cape Parrot (<i>Poicephalus robustus</i>) in native southern mistbelt forests of the Eastern Cape, South Africa	Dr Jessica Leaver
16:35 – 16:45	Palm	Birding shows the way to Equity and Restoration	Sibongile Mtungwa
16:45 – 17:00	Session Close		
17:00 – 17:30	Afternoon Tea		
17:30 – 18:30	Sundowners and Networking		Upper Lounge
19:00 – 21:00	LAB GALA DINNER		Hotel Restaurant
End of LAB 2023			

Please note the timings above may change due to unforeseen circumstances but these will be communicated to you on the day.









Canon

Photography Workshop
with Richard Flack

28 May 2023
R350 per person



Visit <https://www.birdlife.org.za/support-us/events/flock-to-wilderness-2023/> to find out more.

REGISTRATIONS FOR THE CANON PHOTOGRAPHY WORKSHOP WILL CLOSE ON 27 MAY 2023 at 13:00 (SAST) Visit the LAB Website to find the link to register and pay or visit the info desk during the Flock to the Wilderness event.



Science LAB Plenary Speakers



Dr Anton Wolfaardt has worked for close to 30 years in the field of seabird and marine conservation, a journey which started on Marion Island in 1994, where he spent a year working as a seabird field researcher. Anton subsequently spent five years on Dassen Island, off the west coast of South Africa, working initially as a contract researcher and later as the

conservation manager of the island. After leaving Dassen Island, Anton worked as a Regional Ecologist for CapeNature, the conservation authority for the Western Cape Province of South Africa. In 2008, Anton headed to the Falkland Islands to take up the newly created position of ACAP (Agreement on the Conservation of Albatross and Petrels) Coordinator for the United Kingdom (UK) South Atlantic Overseas Territories, including the Falkland Islands, South Georgia and the South Sandwich Islands, Tristan da Cunha (including Gough Island) and the UK's interest in Antarctica. After returning to South Africa in late 2013, Anton continued to serve as the Co-convenor of ACAP's Seabird Bycatch Working Group and worked as an environmental consultant focusing on seabird and marine issues, as well as a lecturer and guide on expedition ships visiting the Antarctic and sub-Antarctic regions. In February 2021 Anton was appointed to take up the position of Mouse-Free Marion Project Manager.

Venue: Palm

Date: 25-May-2023

Time: 08:25-09:25

Abstract

Title: The Mouse-Free Marion Project-making the transition from knowing to doing.

Sub-Antarctic Marion Island is an important breeding island for 28 seabird species, including globally significant populations of several threatened species. It is South Africa's only declared Special Nature Reserve; the strictest level of protection afforded under South African legislation. It is recognised by BirdLife International as an Important Bird and Biodiversity Area and has been declared a Wetland of International Importance under the Ramsar Convention. There is a long history of ecological research at Marion Island. Consequently, we have a good understanding of the island's biodiversity and ecological processes as well as the factors that threaten them. Amongst the greatest threats to the ecology and conservation of Marion Island is the impacts of invasive House Mice. Ongoing increases in mouse densities, linked to the warmer, drier climate have depleted their main invertebrate prey, driving mice to attack albatross and petrel eggs and chicks, and even adult birds. The impacts of mice on Marion Island are widespread, pervasive, extreme and highly deleterious. These impacts are not limited to seabirds. The native invertebrate fauna has been particularly hard hit, with one species of flightless moth apparently extirpated, and other species reduced to tiny proportions of their pre-mouse populations, altering nutrient cycling and other key ecological processes. Mice also impact vegetation, greatly reducing seed production and seriously damaging the keystone cushion plant (*Azorella selago*). The substantial biodiversity and ecological benefits of removing invasive rodents from islands are well recognized, and eradication interventions are now being attempted on increasingly large and more complex islands. The Mouse-Free Marion Project aims to eradicate mice from Marion Island and thereby facilitate the ecological restoration of this globally important site. Marion Island will be the largest island on which the eradication of mice has been attempted in a single operation, and where mice are the only introduced predator. The project is underpinned by research conducted at Marion Island, and elsewhere. In addition to the research, planning for the project must address a wide range of requirements, including financial, logistical, political and legal preparations and stakeholder communications, all of which are vital to create enabling conditions for a successful eradication. In this presentation, Anton will provide an overview of the planning for the project that is aimed at enabling the transition from knowing to doing.



Wandering Albatross (Photo: Bronwyn Maree)



Dr Anina Coetzee is a lecturer in Nature Conservation at Nelson Mandela University's George Campus. She completed her PhD in Botany at Stellenbosch University. Thereafter, she conducted a Postdoctoral Research Fellowship at the FitzPatrick Institute of African Ornithology at the University of Cape Town. Her research uses bird-pollination systems to explore evolutionary ecology and conservation questions. Her research interests include Fynbos and Forest conservation biology, plant-animal mutualisms, community ecology, and urban ecology.

Venue: Palm

Date: 26-May-2023

Time: 09:30-10:30

Abstract

Title: Pollinators

Urbanisation causes habitat loss & fragmentation, but also creates novel habitats for birds. Gardens contain natural and artificial food sources for birds, which may alleviate the negative effects that species experience. One such resource is sugar water feeders provided for nectarivorous birds. The effect of feeders on birds, and their mutualistic partners, is little known. The responses of nectarivorous birds in the Cape Floristic Region are particularly important. This region, which broadly spans the Western Cape and east to Gqeberha, contains approximately 300 plant species that depend on sunbirds and sugarbirds for their pollination. Using questionnaires, I determined the prevalence and quality of feeders in this region. I also evaluated the value of feeders in birds' adjustment to urban areas. We applied an experiment on the Cape Peninsula to test the effect of feeders on bird abundances and bird-pollinated plants' pollination. Better understanding of the consequences of artificial feeders will be vital for conservation.



Malachite Sunbird (Photo: Melissa Whitecross)



SCIENCE LAB PANEL DISCUSSIONS: Opportunities in African Ornithology-research, citizen science and cross-boundary collaborations

Chevonne Reynolds is currently a Senior Lecturer at the University of the Witwatersrand. Her research typically focusses on how changing landscapes effect biological communities, and birds usually take centre stage as an excellent tool for understanding these effects. More recently she has begun studying birds and bees in the urban landscapes of Johannesburg to unpack how people in cities interact with and experience biodiversity. As a research group we have a strong focus on using open access and citizen science data to ask questions at broad scales. Chevonne is also a keen birder and all-round nature enthusiast. Chevonne will chair the LAB Panel Discussion.

Martina Scacco is a postdoc in the Animal-Environment Interactions lab at the Max-Planck Institute of Animal Behavior. She is particularly interested in how, and to what extent, the environment affects the movement patterns of different species and their cost of transport through the landscape. Through studying large-scale movements of soaring birds who are dependent on the support of atmospheric uplifts, she can compare the interplay of flight behavior, energy expenditure and environment across different species, to evaluate to what extent different morphologies can define their degree of dependence on the landscape and potentially their differential sensitivity to changes in the environment.

Kamran Safi is a group leader at the Max Planck Institute for Animal Behavior. His research interests lie in understanding the causes and consequences of biological patterns at various scales and from different perspectives, as well as movement ecology, macro-ecology and macro-evolution. In movement ecology. Kami is interested in relating individual animals to the environmental conditions they operate under to learn the causes and consequences of environmental fluctuation on animal movement across scales. Methodologically he combines and fuses data from the wild, using a wide range of sensors deployed on animals, with remote sensing and other sources of information at large spatial and temporal scales.

Res Altwegg is a statistical ecologist at the University of Cape Town where he heads up the centre for Statistics in Ecology, Environment and Conservation. His research interests are in population ecology, wildlife demography and species distributions. He uses statistical models to address questions in conservation, global change and basic ecology. A lot of my work features birds. And while most of my days are spent in front of the computer, I enjoy being outside and watching birds.

Shamiso Banda is an improvement driven individual who has been involved in African Ornithology through either research or conservation for almost 5 years. She is co-authoring an article on Advancing African Ornithology alongside several African and international ornithologists – which covers the topics of this panel discussion. As such, she'll be contributing insights which represent personal perspectives from experience, as well as the synthesised thoughts of numerous ornithologists across Africa and the wider world. She is a big proponent of increasing the exposure of African ornithology through enhanced communication with society. You are likely to hear her say “We should make a movie.”

Alan Lee is a conservation biologist and data scientist with a strong background in ornithology. He is currently the Science and Innovation Programme Manager at BirdLife South Africa and has also served as the Editor-in-Chief of the Ostrich journal of African Ornithology. He has a strong association with the FitzPatrick Institute at the University of Cape Town, where he conducted postdoctoral research on Fynbos birds and the impact of climate change. He has a notable publication record and has utilized citizen science as an important tool in his research. His contributions to ornithology are recognized through an Honorary Research Associate position at the University of KwaZulu-Natal. He has extensive experience in conducting research on birds, including surveys in the Karoo Biome and the Fynbos Biome in South Africa. His research commenced with his PhD conducted in the Peruvian Amazon. He is a member of the Lee Family Trust, which runs the Blue Hill Nature Reserve, a CapeNature Stewardship reserve, and supports various research projects, including Cape Rockjumper and Leopard research. Lee has completed several notable projects, including obtaining density estimates for Blue-headed Macaw and other parrot species, conducting a biome-wide survey of the endemic birds of the fynbos, and obtaining density estimates, population sizes, and ecological parameters determining the distribution of the Fynbos Buttonquail, an endangered fynbos endemic. These accomplishments have earned him the label of "extreme biologist", albeit his time is mostly behind a computer these days and he describes himself now as “an extremely old biologist”. His primary task for BirdLife South Africa is undertaking the IUCN guided Regional Red Listing process for the birds of South Africa, Lesotho and Eswatini.



Knysna Turaco (Photo: Melissa Whitecross)



SCIENCE LAB ABSTRACTS

Abstracts are ordered alphabetically according to surname.

CAPE PARROT (*POICEPHALUS ROBUSTUS*) DIET IN A NUTSHELL: USE OF INDIGENOUS AND EXOTIC PLANTS IN THE EASTERN CAPE PROVINCE, SOUTH AFRICA

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²Applied Microbial and Health Biotechnology Institute, Cape Peninsula University of Technology

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ABSTRACT

The success of conservation action for a threatened species can be improved by knowledge of its feeding and breeding requirements. The Cape Parrot (*Poicephalus robustus*) is a threatened endemic restricted to Mistbelt forest patches in South Africa. Cape Parrots are considered dietary specialists, preferring the kernels of yellowwood *Podocarpus*/*Afrocarpus* species, and consuming other species when these are not available. We investigated the diet composition of Cape Parrots in the Amathole region of the Eastern Cape through targeted and opportunistic observations from 2016 to 2021. We monitored the availability of indigenous and exotic fruit over this timeframe and determined whether between and within season differences were significant. We also monitored Cape Parrot presence and diet weekly at a Pecan Nut orchard and collected Pecan Nuts for compositional analyses. Additionally, we investigated whether Cape Parrots tracked this exotic feeding resource relative to local indigenous fruit abundance and changes in pecan composition. Cape Parrots were observed feeding on 36 tree species during this study, of which 61% were exotic. We recorded 24 new feeding tree species, mostly exotics, that have not been recorded to have been eaten previously. However, most feeding records were of parrots eating indigenous rather than exotic species, excluding the targeted observations of them eating at Pecan Nut orchards. Cape Parrots fed on pecans each season despite the relatively high availability of indigenous forest fruits. Although not significant, Cape Parrots appeared to track changes in pecan composition during each season, gathering in the largest numbers when pecan fat levels were highest. Cape Parrots appeared to be adapting to human-modified habitat based on the observations of annual visits to exotic

pecan orchards and the high number of exotic species in their diet. The impact of exotic feeding resources on their health remains to be determined.

POPULATION VIABILITY ASSESSMENT OF THE CAPE VULTURE CONSIDERING THE EMERGING WIND ENERGY INFRASTRUCTURE DEVELOPMENT IN SOUTH AFRICA

F.R. Brooke¹, C. Bessa-Gomes², O. Duriez³, F. Sarrazin⁴, J.B. Mihoub⁴, M.B Pfeiffer⁵, C.T Downs⁶ & J.A Venter¹

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³Centre of Evolutionary and Functional Ecology, Univ Montpellier, CNRS

⁴Centre d'Écologie et des Sciences de la Conservation (CESCO), Muséum National d'Histoire Naturelle, Centre National de la Recherche Scientifique, Sorbonne Université

⁵U.S Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, National Wildlife Research Centre

⁶Centre for Functional Biodiversity, School of Life Sciences, University of KwaZulu-Natal.

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ABSTRACT

Vultures are the most threatened avian guild worldwide as they are susceptible to anthropogenic pressures. African vultures have declined dramatically in the past few years due to consumption of poisoned carcasses, fatal interactions with electrical infrastructure, the illegal trade of body parts and, recently, wind energy infrastructure. The southern African endemic Cape Vulture (*Gyps coprotheres*) is considered at risk to wind turbine collisions given its overlap with proposed and developed wind farms and its international ranked conservation status as “Vulnerable”. Therefore, using a population viability modelling approach, our study examined how the present threats impact the Cape Vulture population and how the population will respond to potentially increased mortality rates from wind farm development at “worst-case scenarios”. Model simulations indicated that wind energy development will cause a decline in stochastic population growth in a portion of the population that overlaps with wind farms and should large numbers of adult birds be killed in a “worst-case scenario”, the global population will begin to decline. Present population figures for breeding colonies are not available for the portion of Cape Vultures likely to be impacted by wind farms and obtaining clear population figures must be prioritised to ensure future effective management decisions. Measures to limit the impacts of wind turbines on Cape Vultures are imperative whilst South Africa is still in the early stages of renewable energy development. Appropriate locational planning for future proposed wind farms need to take

priority, whilst mitigation measures at operational wind farms should be explored to ensure the species long term survival.

ARTIFICIAL INCUBATION AND HAND REARING OF AFRICAN PENGUIN CHICKS TO BOLSTER THE WILD POPULATION

M. Cadman^{1*}, R. Klusener¹ & K. Ludynia^{1,2}

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ABSTRACT

The African penguin (*Spheniscus demersus*) population is estimated at 14 000 breeding pairs, approximately 1.4% of the population at the start of the 20th century, and the species is currently classified as Endangered. Since 2006, SANCCOB has employed techniques to incubate African penguin eggs and hand-rear African penguin chicks that were abandoned by their parents due to severe weather events, onset of moult, low food availability, or nests being in unsafe locations. Artificial incubation and hand-rearing have become a valuable conservation tool to reduce the mortality of eggs and chicks in the wild and to bolster the wild population. From 2012 to 2021, a total of 2134 eggs and 9311 chicks were received by SANCCOB's Chick Rearing Unit. It was estimated that up to 50% of the eggs were not viable for incubation while 72% of the viable eggs hatched after being artificially incubated and an overall release rate of 84% for hand-reared African penguins was achieved. These rates are comparable to or even higher than currently observed breeding success rates in the wild. Rescuing and hand-rearing eggs and chicks could be a valuable conservation tool for other threatened species as it has proven to be successful in African Penguins, with hand-reared birds being seen to successfully breed in the wild. Artificial incubation and hand-rearing could be a valuable conservation measure to be used for other population recovery plans, seeing the increase in disastrous population impacts due to disease outbreaks, extreme weather events, oil spills, and other catastrophes.

USING ACOUSTIC RECORDING UNITS TO INVESTIGATE THE EFFECTS OF LOGGING OF INDIGENOUS TREES IN THE AMATHOLE FORESTS, SOUTH AFRICA ON CAPE PARROT BREEDING, AND THE PRESENCE OF THREE PRIMARY CAVITY EXCAVATING BIRD SPECIES

J.C. Carstens¹, M. Rea², J. Elliot², J. Leaver³, K.F. Carstens³, K. Wimberger³ & M.I. Cherry²

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ABSTRACT

The Amathole forest complex, covering the Amathole Mountains of the Eastern Cape Province, is the breeding stronghold of the endemic and regionally Endangered and globally Vulnerable Cape Parrot (*Poicephalus robustus*), and is also one of only two forest complexes in South Africa formally harvested for timber. The aim of this study was to determine if formal harvesting of indigenous trees, primarily the two yellowwood species (*Afrocarpus falcatus*) and (*Podocarpus latifolius*), in nine of 16 Amathole forests has had any effect on the presence of Cape Parrots and three primary nest excavating species; as well as on parrot breeding. The study used logging data from the past 25 years (1997-2021) as well as data collected by acoustic recording units over two breeding seasons from 2019 to 2021. Cape Parrots were present in 15 of 16 forests, but breeding calls were identified in only seven forests: five in logged and two in unlogged forests. Fourteen of the forests harboured all three primary excavators: Knysna Woodpecker (*Campethera notata*), Olive Woodpecker (*Dendropicos griseocephalus*) and Red-fronted Tinkerbird (*Pogoniulus pusillus*). The last two species were absent from the adjacent Mount Thomas and Kologha forests, respectively, in which parrots were present, but no breeding calls were recorded. Logging of yellowwoods was not found to affect parrot breeding. However, due to the overlap between preferred parrot breeding sites and preferred trees for harvesting, we recommend that harvesting in the five harvested forest blocks where parrot breeding occurs be limited to tree falls, with no standing dead, dying or damaged trees harvested, to ensure that potential nesting trees remain available.

WHAT CAN BE DONE ABOUT RANGE DECLINES IN SOUTH AFRICA'S FOREST-DEPENDENT BIRDS?

M. Cherry^{1*}, T.J.G. Cooper¹ & J. Leaver²

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ABSTRACT

Over half of South Africa's forest-dependent birds have suffered range declines over the past thirty years. These declines have been concentrated in the Eastern Cape Province, despite an 18% increase in forest cover there over the same period. We suspect that the cause of local forest bird extinctions may be habitat degradation arising from informal harvesting of forest products. Natural products comprise 10-14% of household income in rural villages in the former Ciskei and Transkei areas of the province, so

we investigated the impact of informal harvesting of bark, poles and timber on avian functional diversity. Bark and timber harvesting resulted in canopy gaps, negatively affecting bird species which forage in the understory or on the forest floor. Moreover, much bark harvesting appears to be driven by commercial demand, and 29% of trees harvested for bark in the province die from ringbarking. By contrast, pole harvesting is of less concern as it appears to be on the decline owing to reduced demand, is occurring at sustainable levels and is mostly for household use. The Forest Act of 1998 provides for sustainable harvesting through Participatory Forest Management (PFM), but in practice it has not been implemented. Based on our results, I will suggest improved methods of monitoring and control.

THE PROMISE OF BIOPHYSICAL MODELS FOR UNDERSTANDING DESERT BIRDS' THERMAL VULNERABILITIES

S.R. Conradie^{1*}, M.R. Kearney², B.O. Wolf³, S.J. Cunningham¹, M.T. Freeman^{4,5}, R. Kemp^{4,5} & A.E. McKechnie^{4,5}

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ABSTRACT

To survive, animals must successfully balance energy and water exchange with their environment, avoiding lethal deficits and maximising gains for growth and reproduction. This is a particularly challenging process for animals inhabiting hot, arid environments where they operate close to their thermal limits. At high environmental temperatures, birds maintain body temperature (T_b) below lethal limits via physiological and behavioural processes. Accurate models of the processes involved in avoiding lethal deficits are crucial for predicting the effects of climate variability on animals. Here, we evaluated the performance of a biophysical model (NicheMapR) for predicting evaporative water loss, body temperature and resting metabolic rate in desert birds. Thereafter, we combined this biophysical model with empirical data on desert birds' behavioural decisions to provide a day-by-day assessment of lethal dehydration and hyperthermia risk under natural, free-ranging conditions. Finally, these biophysical model predictions were combined with climate change projections to predict desert birds'

thermal vulnerabilities and the associated physiological costs through space and time in the arid zones of southern Africa. We demonstrated that biophysical models can accurately predict birds' thermoregulation across a wide range of air temperatures. Further, our model revealed an increased risk of lethal dehydration under future climate change scenarios for desert birds when extended to natural conditions through space and time. Overall, our analysis revealed that these models can provide insight into desert birds' thermal vulnerabilities under climate change and the risk of population collapse in coming decades. Thus, we suggest that biophysical modelling approaches can aid in conservation and management of species vulnerable to climate change.

HEAT TOLERANCE AND EVAPORATIVE COOLING CAPACITY IN A LARGE FOREST BIRD, THE TRUMPETER HORNBILL: INTERACTING EFFECTS OF TEMPERATURE AND HUMIDITY

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ABSTRACT

The capacity of birds to tolerate hot weather is well-understood among arid-zone species. However, the ways in which humidity constrains evaporative cooling capacity and heat tolerance remains understudied, particularly for larger species. Here, we assessed the thermoregulatory performance of Trumpeter Hornbills (*Bycanistes buccinator*), a humid lowland associated species, by quantifying relationships between body temperature (T_b), metabolic heat production and evaporative water loss at high air temperatures at three humidity levels (6, 13 and 25 g H₂O m⁻³). We found that maximum rates of evaporative water loss and evaporative cooling efficiency decreased significantly (77.2% and 81.4%, respectively) at a humidity of 25 g H₂O m⁻³ compared to the lowest humidity we used. The maximum air temperature hornbills tolerated decreased from 51.07 ± 1.23 °C under low conditions to 43.10 ± 1.30 °C under the high humid treatment. Maximum T_b and the slope of T_b (i.e., rate of body temperature change) were significantly higher at high humidity, supporting the idea of reduced thermoregulatory control under hot humid conditions and reiterating the constraints imposed by humidity on evaporative cooling. Our findings raise concern for species associated with humid climates and emphasise that the availability of cool microrefugia to escape such conditions may be imperative for their future persistence.

DOES THE KAROO POPULATION OF MARTIAL EAGLES (*POLEMAETUS BELLICOSUS*) HAVE THE POTENTIAL TO BUFFER THE SPECIES' NATIONAL DECLINE?

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ABSTRACT

Martial Eagle numbers have declined rapidly across Sub-Saharan Africa and the species is now classified as Globally Endangered. In South Africa, the species has shown a uniform decline in its reporting rates of approximately 60% across the region, including in traditional strongholds such as the Kruger National Park. In recent decades, the breeding range of Martial Eagles has expanded into the Karoo region of South Africa, a mainly treeless, semi-arid biome. This expansion was largely facilitated by electricity infrastructure, specifically large pylons, which provide nesting platforms for this tree-nesting raptor. We present a population viability analysis of the Karoo sub-population. Our analyses are based on two longitudinal datasets: three years (2019-2021) of breeding data from 47 territories (representing 137 observations), collected through aerial surveys and on-the-ground monitoring; and satellite tracking data from 19 birds (representing almost 10,000 tracking days). We present estimates of current breeding performance (breeding attempt, breeding success and productivity rates) as well as adult and non-adult mortality rates for the Karoo sub-population. Using these, we model the population growth rate in Vortex and present population projections for the next two decades under four different scenarios. We discuss the implications of our findings for Martial Eagle conservation in South Africa and reflect on the conservation challenges posed by an apex predator colonising a new habitat.

A QUARTER OF A CENTURY OF ANNUAL CAPE PARROT (*POICEPHALUS ROBUSTUS CENSUSES*): PRESENT POPULATION TRENDS AND CONSERVATION CONTRIBUTIONS

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ABSTRACT

The Cape Parrot (*Poicephalus robustus*) is endemic to South Africa, and numbers have declined since the early 1900s. It is a forest specialist and food nomadic, moving between forest patches depending on fruit availability. This makes it difficult to estimate population numbers accurately and determine their

distribution range. The annual Cape Parrot Big Birding Day was initiated in 1998 as a national census to determine a yearly population estimate. Volunteers assist in monitoring and counting the Cape Parrot in the Eastern Cape, KwaZulu-Natal and Limpopo provinces in indigenous forests as well as at sites where the parrots are known to feed outside of forests. A summary of 25 years of census data and population trends is presented here. The value of public participation in monitoring an Endangered species, and the need to conserve the forests where these parrots occur because of their nomadic feeding behaviour, are highlighted.

EVOLUTION OF AVIAN HEAT TOLERANCE: THE ROLE OF ATMOSPHERIC HUMIDITY

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ABSTRACT

Raised atmospheric water vapour content (i.e., humidity) is known to affect the thermoregulatory performance of endotherms by impeding evaporative cooling capacity. However, little attention has been directed towards understanding how humidity affects the evolution of heat tolerance and thermoregulatory performance, or whether adaptive thermoregulation is evident among endotherms occupying habitats varying in average humidity. We hypothesized that birds from hot, humid habitats have evolved physiological mechanisms to reduce the impact of humidity-impeded evaporative heat dissipation compared to species occupying dryer habitats. To test this hypothesis, We quantified changes in heat tolerance limit (HTL), maximum body temperatures (T_{bmax}) and associated variables in response to humid (19.21 ± 1.20 g H₂O m⁻³) versus dry (1.07 ± 0.84 g H₂O m⁻³) air among 30 southern African bird species occurring at three climatically distinct sites (hot arid, mesic montane and humid lowlands). Making use of a phylogenetically informed comparative framework, We found that raised humidity decreased evaporative water loss and resting metabolic rate by 27 - 38% and 21 - 27%, respectively, and did not differ significantly between sites. However, changes in HTL associated with humid air were significantly larger among arid (mean \pm SD = -3.13 ± 1.12 °C) and montane species (-2.44 ± 1.0 °C) compared to lowland species (-1.23 ± 1.34 °C). We also found that, under humid conditions, T_{bmax} among lowland (46.26 ± 0.48 °C) birds was significantly higher than among species at my arid (45.23 ± 0.24 °C) study site. A significant positive relationship for HTL \sim T_{bmax} under humid conditions highlights the functional importance of hyperthermia tolerance for overcoming the humidity-related

constraints placed on evaporative cooling and, subsequently, heat tolerance. The macro-physiological patterns report here, support the concept of a continuum from thermal specialization to thermal generalization among endotherms, with adaptive variation correlated with prevailing climatic conditions.

THE IMPACT OF TIMBER HARVESTING ON NEST SITE AVAILABILITY FOR THE CAPE PARROT (*POICEPHALUS ROBUSTUS*) IN NATIVE SOUTHERN MISTBELT FORESTS OF THE EASTERN CAPE, SOUTH AFRICA

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ABSTRACT

The Amathole mistbelt forests in the Eastern Cape, South Africa harbour the largest remnant population of the nationally endangered endemic Cape Parrot (*Poicephalus robustus*), a secondary cavity nester whose persistence is limited by suitable nest sites. These are also the only forests within Cape Parrot range in which selective timber harvesting remains permitted, but the impact of harvesting on the availability of parrot nest sites has not been investigated. This study aimed to determine the degree to which current harvest selection criteria stand to impact nest site availability. Results showed that Cape Parrots have specific nest tree requirements; and that there is overlap in the species and condition of trees selected for nesting and harvesting. The two yellowwood species found in the region, (*Afrocarpus falcatus*) and (*Podocarpus latifolius*), represented the majority of both harvested trees (78%), and Cape Parrot nest trees (79%). Moreover, both Cape Parrot and harvest selection criteria require large (≥ 50 cm diameter at breast height; ≥ 12 m high), old, dead, dying, or crown-damaged yellowwoods, such that 32% of trees considered potential nest trees were also candidates for harvesting. Current selection criteria need to be revised to ensure that timber use is compatible with biodiversity conservation in the Amathole forests. We suggest that all harvesting of dead standing yellowwoods be discontinued; and that the harvesting of live trees with crown damage, which are frequently used by parrots for nesting, be limited by a species-specific maximum harvestable diameter.

ELEVATED HUMIDITY INCREASES THE LIKELIHOOD OF AVIAN LETHAL HYPERTHERMIA DURING EXTREME HEAT EVENTS

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ABSTRACT

A recent bird and bat mortality event in KwaZulu-Natal (KZN), South Africa, involving maximum air temperature (T_{max}) of 45 °C and humidity of 12.4 g H₂O m⁻³, caused the deaths of ~47 birds, of which nearly 50% were Blue Waxbills (*Uraeginthus angolensis*). It is well known that avian physiological performance declines with increasing body temperature (T_b), but little is known about the effects of humidity on avian thermal tolerance during very hot weather. The prominence of blue waxbill mortalities during the KZN heat event identifies them as an appropriate model to understand how environmental temperature and humidity interact to influence avian upper thermal tolerance limits. We used flow-through respirometry to quantify waxbill T_b, resting metabolic rate and evaporative water loss at air temperatures approaching and exceeding normothermic T_b under conditions of either dry (1.12 ± 0.85 g H₂O m⁻³) or humid (21.28 ± 0.41 g H₂O m⁻³) air. Our results indicate that humidity significantly constrains birds' capacity to maintain T_b below lethal limits during acute heat exposure on account of reduced evaporative water loss and cooling efficiency. Consequently, the T_{max} waxbills could safely tolerate, known as the heat tolerance limit, decreased from 47.9 °C in dry air to 45.7 °C under humid conditions. These findings suggest lethal hyperthermia, rather than dehydration, was the proximate cause of mortalities during the KZN heat event. As anthropogenic climate change continues to increase the risk of future heat and mortality events, more research is needed on the effects of humidity on avian thermal tolerance in hot and humid environments.

HABITAT TYPE INFLUENCE ON THE STRUCTURE OF VOCALIZATIONS: A CASE OF SABOTA LARK, (*CALENDULAUDA SABOTA*) (ALAUDIDAE)

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ABSTRACT

Research on avian vocalisations is beneficial, ranging from providing baseline data on populations and individuals through biodiversity surveys, to population monitoring and taxa delimitation. The evolution of vocal communication has seen different theories being proposed to explain why vocalisations of certain species have certain characteristics. The Acoustic Adaptation Hypothesis (AAH) proposes that habitat shapes species vocalisations for maximum transmission. We investigated the effect of habitat structure on the song structure of the southern African, territorial Sabota Lark across different vegetation types and structures. Songs of Sabota Larks were recorded in 7 sites defined by vegetation types that are units of the Savanna biome (n=6; Musina Mopane Bushveld, Tsende Mopaneveld, and Makhado Sweet Bushveld which have open vegetation structures, Mopane Basalt Shrubland-moderately open, Polokwane Plateau Bushveld and Roodeberg Bushveld-both moderately closed) and the Nama-Karoo biome (n=1; Bushmanland Basin Shrubland-open). Songs were analysed in Avisoft SASLab Pro to generate 878 song strophes. Frequency-based and temporal spectrogram parameters were analysed in R. One-way ANOVA and post-hoc tests of Games-Howell (for data with unequal variance) revealed significant differences ($p < 0.05$) in the mean of the minimum, maximum, peak frequencies (MiF, MaF, PF), element duration, number of elements (NoE) and inter-element interval (IEI) of the song strophes except in frequency bandwidth (FBW), relative to vegetation structures, viz moderately open, moderately closed, and open. Contrary to AAH, the mean of MiF, MaF and PFs were lower in open than in moderately closed and moderately open habitats. Despite the absence of significant difference in the means of FBW across the vegetation structures, FBW was in part consistent with the notion that songs from open habitats tend to have broader frequency ranges than songs from closed habitats (moderately closed in this study). However, the findings do not support AAH in terms of MiF, MaF and PFs in open habitats. The Linear discriminant analysis on the original 7 dimensions and on three principal components obtained from Principal component analysis revealed that strophes overlapped and did not group base on the vegetation types and structures. Failure by the two models to delineate the data among the vegetation types was confirmed by a relatively low overall predictive accuracy of <70%. These preliminary findings partly support the generality about the use of broad vs narrow frequency ranges. This study provides a basis for conspecific studies and future studies should include closed habitats for comparative purposes.

NUMBERS, MOVEMENT AND CONSERVATION OF DAMARA TERNS (*STERNULA BALAENARUM*) IN SOUTH AFRICA

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ABSTRACT

Damara Terns (*Sternula balaenarum*) breed between south Angola and Algoa Bay, Eastern Cape. In the late 1970s c.150 pairs of Damara Terns bred in South Africa, mostly in the Northern Cape. This reduced to an estimated minimum of 65 pairs in 2010 and 52 pairs in 2018-2021. Breeding has ceased at six of the species' 14 South African colonies and is now confined to c. 5 pairs in the Northern Cape, c. 4 pairs at Struis Bay and c. 43 pairs in Algoa Bay where breeding was first recorded in 1980. There are likely to be <200 mature individuals in South Africa with a maximum of 113-169 mature individuals counted in Algoa Bay. The Damara Tern is currently classified as Critically Endangered in South Africa and in 2021 it was downlisted to Least Concern globally. Generation length (G) for Damara Terns is 12.33 years, so the decreases in South Africa over the past 40 years and 10 years equate to a 60% decrease in 3G and 24.7% decrease in 1G. The South African Damara Tern population satisfied IUCN criteria for Regionally Endangered based on population reduction (Criterion A2), geographic range (Criterion B2(a)), small and declining population (Criteria C1 and C2) and very small population (Criterion D (1)). A main cause of the decrease in west South Africa was disturbance at and displacement from breeding localities. Sand mining and proposed industrial developments are threatening one of the four Algoa Bay colonies. Almost all Damara Terns were previously thought to migrate to coastal waters off West Africa during their non-breeding season. Since 2018 it is likely that most Damara Terns from the Eastern Cape overwinter at the San Sebastian Peninsula in Mozambique, where a chick banded in Algoa Bay in January 2022 was photographed in June 2022 and seen back in Algoa Bay in October 2022.

PUBLIC PERCEPTIONS OF AFRICAN CROWNED EAGLES IN THE URBAN-RURAL MOSAIC LANDSCAPE OF DURBAN, ETHEKWINI MUNICIPALITY, KWAZULU-NATAL, SOUTH AFRICA

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ABSTRACT

The increase in the human population has detrimental effects on natural landscapes through habitat transformations and degradation. Furthermore, with the increase in human population size and the presence of several wildlife species in human-dominated landscapes, interactions which could create

good or bad relations are inevitable. For instance, some communities perceive raptor species as a threat to domestic animals, thus creating human-raptor conflict and impacting the species and its management. The overall aim of the study was to investigate the public attitudes and perceptions of African crowned eagles (*Stephanoaetus coronatus*, hereafter crowned eagle) in the urban-rural mosaic landscape of Durban, eThekweni Municipality, KwaZulu-Natal, South Africa. We created a questionnaire survey and mainly conducted face-to-face interviews in rural areas and sent a link to the online survey to urban communities via neighbourhood watch groups and conservancies. We used generalised linear mixed models to explain better which variables influenced respondents (i) tolerance of crowned eagles, (ii) feelings about crowned eagles, (iii) importance of crowned eagles and (iv) perceiving crowned eagles as a threat to domestic animals. Our results showed that feelings toward crowned eagles, the importance of crowned eagles and spending time in the forest positively influenced tolerance of crowned eagles. Our results further showed that feelings toward crowned eagles and education level negatively influenced whether crowned eagles were perceived as a threat to domestic animals or not. Overall, crowned eagles were 'loved' by community members of eThekweni Municipality. However, we recommend that community members are educated about crowned eagles' ecology through community and school presentations so that we can reduce some of the negative attitudes and perceptions.

PROTECTED AREAS – A KEY STRATEGY TO ACHIEVE THE 30 X 30 TARGET

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ABSTRACT

Protected areas are some of the most important areas on the planet, securing our natural ecological infrastructure (the system of habitats, species, and their associated processes and services), which serves as the foundation of our socio-economic viability. This has been acknowledged worldwide where ecosystem goods (such as food) and services (such as flood attenuation, waste assimilation, pollination, to name but a few) represent the benefits human populations derive, directly or indirectly, from ecosystem functions. Most of our serious risks to the human population are as a result of our impact on our natural ecosystems, while strong evidence suggests that protected areas are one of the most effective tools for slowing the rate of biodiversity loss and many species continue to survive only because of protected areas. Securing new protected areas is not about pure ethical biodiversity value, its essentially about human wellbeing. In the light of significant development needs in South Africa, limited resources are being made available for securing new protected areas. The Biodiversity

Stewardship process provides the opportunity to engage with private and communal landowners to assist in securing new protected areas on their land, providing an efficient and effective mechanism to secure ecological infrastructure. Biodiversity Stewardship, as a protected area expansion mechanism, has resulted in more than 2,9 million hectares of land being secured, this being approximately 26% of the protected area estate. We have entered a critical point in our conservation efforts, as we have the opportunity to influence the way conservation is rolled out in a context of a mosaic of development needs, with the backdrop of the South African government having agreed to the 30x30 targets (securing 30% of the land and seascape by 2030). We cannot therefore continue with “business as usual” and need to continue to explore innovative ways of mainstreaming biodiversity conservation and secure our natural assets. This presentation will explore how BLSA can contribute to securing critical avifaunal diversity through this mechanism.

IN PURSUIT OF AN ENIGMATIC SPECIES – WHAT IT TAKES TO CONSERVE THE BLUE SWALLOW

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ABSTRACT

Blue swallows (*Hirundo atrocaerulea*) are a vulnerable species internationally and evaluated as critically endangered in South Africa. This species is threatened by destruction, degradation and fragmentation of its grassland and wetland habitats in both its breeding (southern Africa) and non-breeding (East Africa) grounds. In KZN, this species has a narrow habitat preference for moist Mistbelt Grasslands. Grassland extent is declining at 6% annually through land-use change. While contributing to protected area expansion goals and supporting private and communal landholders to conserve areas essential for threatened bird species, the BirdLife SA-Conservation Outcomes partnership, with Ezemvelo KZN Wildlife, is coordinating blue swallow monitoring and conservation in KZN. This presentation discusses monitoring results and trends in blue swallow population status since the early 2000s. Blue swallow populations in KZN have declined at about 3.3% annually since 2000. Our presentation covers possible reasons for the observed trends and outlines actions taken contributing to conservation targets for this species e.g. securing habitat through the KZN Biodiversity Stewardship programme.

HOT AND COLD: NEW EXTREMES OF AVIAN THERMAL PHYSIOLOGY

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ABSTRACT

Birds, like mammals, are endothermic homeotherms and defend normothermic body temperatures (T_b) between approximately 38 C and 41 C, often despite large fluctuations in environmental temperature. However, avian T_b can depart far beyond this range, with values as low as < 5 C during deep torpor and > 45 C during regulated hyperthermia. Here, we report two recent studies that extend both the lower and upper limits of known avian T_b. During a comparative study of heat tolerance and evaporative cooling capacity, Red-billed Queleas (*Quelea quelea*) unexpectedly exhibited hyperthermic T_b as high as 49.1 C without any apparent ill-effect, a value several degrees above previously reported upper T_b limits. We hypothesise that extreme heat tolerance evolved in the queleas on account of their flocking behaviour and the likely consequences for individual water balance. At the lower end of the avian T_b range, a study of torpor in cave-roosting hummingbirds at a study site 3,800 m a.s.l. in the Peruvian Andes revealed a minimum T_b of 3.3 C in one species, the Black Metaltail (*Metallura phoebe*). This T_b value is ~1 C lower than the lowest T_b documented in hibernating Common Poorwills (*Phalaenoptilus nuttallii*) and ~2 C lower than the previous minimum for hummingbirds. Our findings highlight the physiological diversity that exists among Earth's 10,000 species of birds.

BIRDING SHOWS THE WAY TO EQUITY AND RESTORATION

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ABSTRACT

In South Africa, there are two birding communities, that of the previously advantaged and that of the previously disadvantaged. Both these communities are not natural but were socially engineered over decades and centuries. When people, practitioners and communities look into this subject objectively, they will agree that the advantaged had opportunities over many decades to do very well in birding, by building scientific knowledge and skills across boundaries and within institutions, as well as a sense of community and entrepreneurship. Looking at the thriving ornithologists and birding businesses, one cannot deny the wealth developed. On the other hand, there is the community in rural communal areas (former "homelands"). This community for a long time has been connected to nature as its source of livelihood, spirituality and development, but it is regarded by many, including city dwellers, as being uncivilised, uneducated and not capable of achieving anything better. This community is often blamed

for biodiversity loss. The tragedy is that the community has internalised that blame and believes that they have killed biodiversity. The situation is changing, very slowly, with small numbers of young people in rural communal areas showing an interest in nature and the soil, and most excitingly, birding and habitat preservation. Restoration has four principles: One is “engage society” and another is “long term sustainability” (Suding et al., 2015). This presentation will posit how equity in birding is the key to the restoration of habitat and species, citing Indigenous Knowledge related to specific species that occur in the communal areas. Women’s Leadership and Training Programme (WLTP) will share experiences on how the two communities can, and do work, for gender, intergenerational and racial equity in birding and restoration. It will also explain the lessons of what is thought to be missing based on experience and practice.

DO BIRDS COMPENSATE FOR MISSED FORAGING OPPORTUNITIES AT HIGH TEMPERATURE, BY INCREASING FORAGING WHEN ITS COOL?

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ABSTRACT

Breeding success in arid zone birds is often reduced at high temperatures due to thermal constraints on parental care. Parents may compensate for reduced provisioning rates during the heat of the day on hot days by increasing provisioning effort on cooler days or at cooler times of day. Fork-tailed drongo (*Dicrurus adsimilis*) offspring show consistent mass at fledging even if they experience hot weather in the nest, despite reduced foraging and provisioning behaviour by drongo parents at high air temperatures. We used feeding experiments to explore potential compensation by parent drongos, assessing whether they adjust foraging and provisioning at different times of day in anticipation of high maximum daily temperatures. Drongos increased provisioning rates but not foraging effort as mornings got hotter. No increase in foraging and provisioning was detected as evenings got hotter. Increased provisioning during hot mornings may therefore buffer against reduced activity during midday on hot days. However, the lack of compensatory provisioning on hot evenings could become concerning under climate change if extra provisions in the morning become insufficient to tide nestlings through physiologically challenging conditions during the day.

EVALUATING HABITAT CONNECTIVITY BASED ON THE REQUIREMENTS OF A MOST SEDENTARY FOREST- SPECIALISED BIRD SPECIES (*APLOPELIA LARVATA*) IN FOCAL SOUTHERN MISTBELT FORESTS WITHIN HUMAN- ALTERED LANDSCAPES IN KWAZULU-NATAL AND EASTERN CAPE, SOUTH AFRICA

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ABSTRACT

Species persistence in fragmented forest systems, intensified by increasing anthropogenic practices surrounding forest remnants in human-altered landscapes, pose threats of local extinctions when habitat fragments become further isolated and species movement becomes impeded. However, sufficient forest cover in the landscape can favour habitat connectivity, promoting biodiversity by facilitating species' ecological movements among habitat patches across the fragmented landscape, thus mitigating the negative effects of fragmentation. Therefore, the naturally fragmented Southern Mistbelt Forest, confined within the increasingly anthropogenic land-use matrix, provides an opportunity to assess potential ecological connectivity. Thus, we mapped the connectivity of core Southern Mistbelt Forest patches provisioning the highest avian functional and phylogenetic diversity ($\geq 50\%$) to identify landscape features that promote or impede habitat connectivity in southern KwaZulu-Natal and northern Eastern Cape, South Africa. We based our connectivity approach on a least-cost pathway and ecological circuit theory hybrid, modelling habitat suitability guided by a surrogate forest-specialised and dispersal-limited bird species (Lemon Dove - *Aplopelia larvata*) to assess features that improve habitat connectivity and allow biodiversity persistence in the fragmented Southern Mistbelt Forest mosaic landscape. Our findings highlight that Southern Mistbelt Forest fragments are connected in areas with indigenous forest cover (i.e. low resistance/permeable habitat) and have low connectivity in regions of other habitat types with higher resistance (exotic timber plantations, grassland, agriculture, and residential land cover). Thus, we reveal the importance of indigenous forest cover in the landscape for promoting habitat connectivity among core forest patches of fragmented Southern Mistbelt Forest in southern KwaZulu-Natal and northern Eastern Cape. Therefore, we recommend conserving indigenous forest as it provides high-quality habitat for maintaining forest biodiversity in the fragmented mosaic landscape. However, since indigenous forest cover in South Africa is less than one percent, we recommend the conservation of thicket/dense bush (regenerating forest), which is more abundant, shares similar tree species composition (~77 %) and occurs in close proximity to indigenous forest.

Therefore, conserving this vegetation type will improve habitat connectivity among fragmented forest remnants. In areas with low connectivity, we suggest improving matrix quality surrounding habitat patches by increasing vegetation (tree) cover to decrease matrix contrast, thereby encouraging the use of the matrix by forest species and thus ensuring the long-term survival of forest species in these fragmented mosaic landscapes.

WORLDWIDE TRENDS OF DDT LEVELS IN RAPTORS USING HISTORIC MEASURES

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ABSTRACT

DDT is a toxic organochlorine pesticide that is resistant to environmental degradation and can persist in the environment for decades. DDT bioaccumulates in wildlife and biomagnifies up the food chain, having a detrimental impact on species occupying higher trophic guilds, particularly in predatory bird species, such as raptors. Because of environmental damage, DDT was banned globally between the 1970s - 1990s. However, despite extensive monitoring, changes in DDT levels in raptors following these bans has never been analysed on a global scale. In this study, we test if DDT levels have declined in raptor populations post ban. We specifically tested whether declines in DDT levels differed between continents with complete bans and those allowing restricted use, and how these declines differed between tropical and temperate regions. Furthermore, we tested how declines in DDT levels differed between raptors from terrestrial and aquatic dietary guilds. We analysed DDT levels in raptors reported from 15,008 egg, liver, and plasma samples. Sampling was heavily biased geographically to the global north, with 97% of samples collected from Europe and North America. There was an overall significant decline in DDT levels in raptor populations following bans or restrictions. DDT levels varied across continents with Asia displaying significantly lower DDT levels than North America. Raptors with an aquatic diet exhibited higher DDT levels, which declined at a slower rate than raptors with a terrestrial diet. However, biases in DDT monitoring may have influenced some of these results. For example, raptors with an aquatic diet were dominated by Bald Eagles, which made up 52% of these species, and was the second most sampled species globally, representing only North America. Therefore, while we were able to definitely demonstrate a decline in DDT levels post-ban, these trends are heavily biased towards the global north. DDT continues to be used in the global south with limited data on concentrations from raptors inhabiting this region, highlighting an urgent need for monitoring of DDT in the global south region.

AN IMPROVED CONSERVATION STATUS OF SOUTHERN BALD IBIS (*GERONTICUS CALVUS*) AS INFORMED BY A DIVERSITY OF CITIZEN SCIENCE PROJECTS SUGGESTS POSITIVE IMPACTS OF CONSERVATION ATTENTION

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ABSTRACT

The Southern Bald Ibis is endemic to South Africa, Lesotho and Eswatini, occurring across high and mid-altitude mesic grasslands and has been of conservation concern in the seventies, resulting in a range of monitoring, research and conservation actions. We examine a range of data sources to determine the conservation status of this species, employing a variety of statistical and analysis pathways. We compare trends in reporting rates from Southern African Bird Atlas Projects (SABAP), examine trends in numbers of nests reported through colony monitoring, and explore contributions made to the 'Threatened species cause' from the BirdLasser mobile app. Using the BirdLasser data, we find the species is widely reported across the range outside of sites with known colonies and roosts, suggesting a large proportion of the population is not available for counting during the breeding season. Using insights from the SABAP data and occupancy modelling, combined with group counts from BirdLasser data, we suggest the population is likely >10 000 individuals. None of the trend analysis statistics we used revealed a decrease in population size for the period 1987 - 2021. We note that certain colonies are still being abandoned, but this is now at a lower rate (<10% of colonies). After dramatic declines from the early part of the last century, this suggests the declines are now being curtailed, and there is some evidence the species may be recolonizing lost range. However, we note that this species is being negatively impacted by loss of grasslands to alien vegetation and will likely be negatively impacted by climate change and other developments. While it is difficult to infer causality with conservation attention, the reversal in the fortunes of the species is encouraging for those involved. Continued monitoring of this charismatic

species is required in addition to ongoing habitat management to ensure declines are conclusively reversed.

THE SOUTHERN AFRICAN BIRD ATLAS PROJECT 2: PROGRESS, TRENDS AND USE OF DATA

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ABSTRACT

The Southern African Bird Atlas Project 2 is the largest long-term bird monitoring project in Southern Africa. Since 2007 citizen scientists have submitted millions of records and atlas cards, following a standard protocol. Data are carefully vetted against various databases and with the help of Regional Atlas Committees. The result is an extensive database with accurate bird distribution data covering more than 15 years. During this talk, we will report on progress and identify some trends. We will also provide feedback about how BirdLife South Africa used the SABAP2 data to inform conservation planning and bird conservation in South Africa. During 2022 we did two surveys to obtain the view of atlasers and non-atlasers of the project, and we will share some of the results.

RESPIROMETRY PROTOCOLS FOR BIRDS: STEPPED AND STEADY-STATE PROFILES YIELD SIMILAR RESULTS AT HIGH AIR TEMPERATURES

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ABSTRACT

Understanding how birds defend a body temperature range through co-ordinated responses in metabolic rate and avenues of evaporation and how this differs between species or individuals at high air temperatures (T_{air}), is essential for understanding how birds persist in hot environments. The Relationships between T_{air} and a bird's body temperature (T_b), resting metabolic rate (RMR) and evaporative water loss (EWL) during heat exposure can be quantified through the method of respirometry, using several different approaches. One, referred to as the stepped protocol, involves exposing birds to a series of progressively increasing T_{air} setpoints for short periods (<20–30 min), whereas a second, referred to as the steady-state protocol, involves exposing birds to a single T_{air} for

longer periods (>1–2 h). To compare these two approaches, we measured Tb, RMR and EWL over an Tair range of between 28°C and 44°C in the dark-capped bulbul (*Pycnonotus tricolor*). The two protocols yielded indistinguishable values at most Tair setpoints, revealing that both are appropriate for quantifying a bird's thermal physiology during heat exposure over the range of Tair tested in this study. The stepped protocol, however, has several ethical and practical advantages.

THE STATE OF SOUTH AFRICA'S BIRDS: AN ASSESSMENT OF THE VIABILITY OF SABAP2 FOR THE CREATION OF INDICES ACROSS SOUTH AFRICA

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ABSTRACT

In a world defined by change, population monitoring tools have had to adapt to changes in technology and required scopes. Citizen science has been incredibly influential in the ornithological space for the purposes of creating indices of species to monitor population trends, environmental health, and ecosystem functioning. The Southern African Bird Atlas Project 2 is a front-runner for citizen science within Africa but has yet to be used for the creation of large-scale indices representing South Africa's avifauna. We aimed to create indices for South Africa's primary biomes (Forest, Fynbos, Grassland, Karoo, and Savanna) and habitats (Coastal and Wetland) to assess the changes in the reporting rates of species over a fourteen-year period from 2008 to 2014. Using generalized linear mixed effect models, it was found that on average 52% of the species included in the indices had reporting rates that were decreasing. The overall trends for each region changed minimally with only the savanna showing a significant increase. Through biennial trends, it was shown that the SABAP2 atlas data and large-scale indices within South Africa have the potential to pick up large-scale environmental disruptions that may affect ecosystem functioning and avifaunal populations. It was concluded that SABAP2 has incredible potential for use in conservation and population monitoring in the future, but methodologies used to represent changes need further assessment to be as accurate as possible to combat some of the pitfalls in atlas data.

HIGH ADULT MORTALITY AT TWO MAINLAND AFRICAN PENGUIN (*SPHENISCUS DEMERSUS*) COLONIES AND HOW THE REHABILITATION AND RELEASE OF PENGUINS MAY BE HELPING TO BOLSTER THESE COLONIES

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ABSTRACT

Population numbers of African penguins (*Spheniscus demersus*) have decreased by more than 95% since the start of the 20th century. The species is currently listed as Endangered, with a remaining global population of approximately 14 000 breeding pairs. Since the 1980s there have been a number of attempts by African penguins to establish new colonies on the mainland of South Africa. As a result, African penguins started colonizing Stony Point in 1982 and Simon's Town in 1985 and these colonies have remained relatively stable recently while most South African island colonies have declined. However, mortality events linked to mainland breeding colonies can result in significant seabird mortalities. Mortality events such as road kills, terrestrial predation and other mortalities seem to become more frequent in mainland colonies. Between 2015 - 2022 a total of 773 adult penguin deaths were recorded by The Southern African Foundation for Conservation of Coastal Birds (SANCCOB) at these two mainland colonies at an average of 96 adult birds per year from a range of different non-health related reasons including dog attacks (44), road kills (81), bee envenomation (63) as well as terrestrial predation (585). We predicted that with the high mortality rate of adult penguins recorded during this period there should be a greater decline in breeding numbers at these colonies. Although these colonies suffer from these mortality events they still appear to perform better when compared to other island colonies. Here we present the different mortality events affecting mainland colonies and the possible impact that these could have on African penguin populations. We also discuss how the rehabilitation and release of penguins can help bolster African penguin populations in mainland colonies.

WHO BENEFITS FROM THE RICH? DIFFERENTIAL RESPONSES OF AVIAN FUNCTIONAL GUILDS TO SOCIOECONOMICS OF URBAN AREAS IN A DEVELOPING COUNTRY

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ABSTRACT

Within urban areas there is considerable evidence that biodiversity measures correlate positively with increasing socioeconomic status, a pattern termed the 'luxury effect'. However, which types of species show the strongest responses to increasing socioeconomic status has rarely been investigated. Here using citizen science data from the Southern African Bird Atlas 2 (SABAP2), we explore how species with varying diets, habitat types, nest locations, clutch sizes, body mass, levels of territoriality, migration status, endemism, provenance, and conservation status respond to household income levels within urbanised areas across South Africa. With respect to diet and habitat type, we found that generalists, carnivores, and species associated with desert and rock habitats showed the strongest response to income. In relation to migration status, we found that both sedentary species and full migrants showed evidence of a luxury effect. We found evidence that the luxury effect was steeper for species endemic to South Africa and for species which were locally threatened. In contrast, species with differing nesting location, clutch size, body mass, provenance and territoriality responded similarly to income. Our results show support for increased availability of food resources including supplementary foods, resource stability in high-income areas as key drivers of the luxury effect, as well as the occurrence of wealthier neighbourhoods in areas with more tree cover and mountain slopes to act as refuge for locally endemic species and species of conservation concern. It will be revealing for future research to investigate whether the patterns identified here are found for other urbanised areas in different parts of the world and can contribute to our understanding of what drives the Luxury Effect within urban areas.

THE SHORT-TERM RESPONSE OF COASTAL THICKET BIRD COMMUNITIES TO FIRE IN THE SOUTHEASTERN CAPE, SOUTH AFRICA

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ABSTRACT

Fire ecological research within the Cape Floristic Region is largely restricted to fynbos vegetation and, amongst fauna, birds. Nothing is known about post-fire responses of birds in subtropical thicket, which burns on much longer cycles than fynbos. Extensive fires in subtropical thicket along the south eastern Cape coast (in the Knysna area during June 2017) presented the opportunity to assess the response of these birds to fire. We predicted that (1) fire reduces bird species diversity, richness and abundance in thicket during the first two years post-fire; and (2) fire changes feeding guild composition and results in the loss of frugivorous birds. Bird surveys (point counts) were undertaken between 12- and 21-months post-fire in burnt (n =7) and unburnt (n = 7) thicket sites to determine bird community structure and abundance. A total of 66 bird species and 2404 individuals were recorded of which 52 species and 1176 individuals were recorded in burnt thicket and 60 species and 1228 individuals in unburnt thicket. Ten species occurred only in burnt thicket and 13 species only in unburnt thicket. There was a 21% loss of bird species (mainly forest birds) after fire. The Sørensen similarity coefficient was 60% for bird species composition between burnt and unburnt thicket. The most common feeding guilds in terms of richness and abundance in both burnt and unburnt thicket were insectivores and generalists. Frugivores were most abundant in unburnt thicket, whereas granivores were most abundant in burnt thicket. Changes in thicket bird community composition following the fire were minor and are likely to be short-lived as thicket shrubs re-sprout vigorously after fire resulting in rapid recovery of vegetation and thus bird habitat structure.

AGE AND SEX-SPECIFIC FORAGING MOVEMENTS AND ENERGETICS IN AN ENDANGERED MONOMORPHIC SEABIRD

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ABSTRACT

Senescence is the irreversible decline of physiological functioning and survival with age. This phenomenon has been studied in a range of different taxa and species, including seabirds, although seldom between sexes of monomorphic species, and in a conservation context. Here we studied the effect of age and sex on the foraging effort and energetics of Endangered Cape gannets (*Morus capensis*). Between 2017 and 2020, to obtain data on foraging effort and energy expenditure, we deployed GPS recorders and miniaturised 3D accelerometers on 39 gannets of known sex and age, rearing chicks on Malgas Island, South Africa. There was no difference in foraging effort between neither sexes nor individuals of different ages. However, females rested significantly longer on the water than males during the foraging trip, and older birds of both sexes spent less time for resting. Older females also spent more time in flight than males. Using a (non-linear) polynomial regression we found no incidence of foraging senescence, yet females spent more energy per hour during a foraging trip than males, especially older birds. Our study demonstrates the influence of age on temporal and spatial foraging characteristics of Cape gannets as well as on their energy expenditure during foraging. We link these insights to the vulnerability of this endangered southern African endemic species in the face of environmental change. The age- and sexual differences in energy expenditure prevalent in our study might reflect niche and/or risk partitioning strategies to ensure adequate provisioning to the chick.

LEAD POISONING IN SOUTH AFRICA'S GYPS VULTURES: SOURCE AND SUB-LETHAL IMPACTS

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ABSTRACT

Lead poisoning poses a significant global risk to wildlife and has been widely demonstrated in scavenging raptors. A nationwide assessment of the levels of lead toxicosis in South Africa's birds indicated that a significant proportion of Cape (*Gyps coprotheres*) and White-backed (*G. africanus*) vultures are displaying elevated blood lead levels. Of particular concern are the high lead levels found in unfledged Cape and White-backed Vulture chicks. Using stable lead isotopic analyses we excluded several potential sources of lead poisoning in White-backed Vulture chicks from an important South African breeding colony, including water, soil, mining and legacy lead from fuel. The main source of lead poisoning in White-backed Vulture chicks were found to be fragments of ammunition imbedded in carrion fed to them by their parents. Furthermore, the haematological parameters Cape and White-backed Vulture chicks' with elevated blood lead levels are characterised by low packed cell volume (indicative of anaemia), with a significant negative correlation between blood lead level and delta-aminolaevulinic acid dehydratase activity, a major enzyme in the haem-synthesis pathway. Our research further suggests that elevated lead levels in White-backed Vulture chicks may be compromising their health and movement behaviour as newly-fledged juveniles, compounding their vulnerability during this critical time, when they already contend with a wide a range of other anthropogenic threats.

USING GPS TRACKING OF MARTIAL EAGLES TO INFORM FUTURE WIND FARM DEVELOPMENT

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ABSTRACT

The wind energy industry is growing rapidly worldwide in response to the need for more sustainable energy. Large soaring raptors are killed when they collide with wind turbines, and this presents a green-green dilemma. To reduce the likelihood of raptor collisions, turbines should be built at locations which are least used by sensitive species. Using data from 26 individual Martial Eagles (15 females, 11 males; *Polemaetus bellicosus*) ranging across South Africa, we show how GPS tracking data can be used to build collision risk models to provide robust guidance on wind turbine placement. By mapping collision risk rather than excluding development in circular buffers around nests, both raptor protection and the area of land made available for wind energy development can be increased; thereby creating a solution to a green-green dilemma. This work is purposely designed to help BirdLife South Africa's efforts on developing guidelines for impact assessments, monitoring, and mitigations.

THE INFLUENCE OF DIET ON BROWN SKUA BREEDING SUCCESS AT MARION ISLAND

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ABSTRACT

Marine predators are often used as sentinel species to detect ecosystem changes. At sub-Antarctic Marion Island, Brown Skuas (*Catharacta antarctica*) can potentially serve as sentinels as they depend heavily on the food, they find at the island throughout their breeding season. During this time they feed mainly on penguin chicks but also on burrowing birds that are difficult to monitor. Previous studies suggested a decline in Brown Skua numbers and breeding success between the 1980s up to at least 2011. To test whether their diet relates to breeding performance, diet samples (regurgitated prey items) and breeding parameters were collected and analysed for the 2021/22 and 2022/23 breeding seasons at Marion Island. The proximity of their nests to prey colonies was also considered. The overall pellet composition of breeding skuas showed an increase in burrowing bird remains (46% vs ~ 25% in the 1980s and 2010/11) and a decrease in penguin prey items (51% vs ~ 73% in the 1980s and 2010/11) over the last 40 years. Decreasing penguin populations and a slight increase in larger bodied burrowing birds may explain the temporal change in skua diet composition. Diet type, together with proximity to prey, significantly influenced the overall breeding success of Brown Skuas with nests localised closer to prey colonies exhibiting a significantly higher breeding success. These results provide critical baseline data prior to the planned eradication effort involving invasive House Mice (*Mus musculus*) on Marion Island in 2025. The results are furthermore likely to prove useful for post-eradication assessment of the recovery of seabirds.



SCIENCE LAB SPEED TALKS

Abstracts are ordered in appearance according to the programme.

RE-ESTABLISHING AN AFRICAN PENGUIN COLONY AT THE DE HOOP NATURE RESERVE, SOUTH AFRICA

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ABSTRACT

African Penguins (*Spheniscus demersus*) rely predominantly on sardine and anchovy as prey. In South Africa, a shift in the distribution of these fish stocks has resulted in a mismatch between existing breeding colonies, mainly on the west coast and areas of high fish abundance, mainly on the southern coast. A lack of suitable breeding islands along this stretch of coastline has meant that African Penguins have not been able to follow the changed distribution of fish. When they breed on the mainland, penguins are vulnerable to terrestrial, mammalian predators. Penguins attempted to breed in the De Hoop Nature Reserve, an area of high fish abundance on the southern cape coast of South Africa, in 2003 but the colony was abandoned by 2008 due to high levels of predation. Re-establishing extinct seabird colonies is an effective conservation tool that has been used to restore seabird populations globally. This technique has been used predominantly for flying seabirds, with little focus on penguins. Establishing new or re-establishing extinct African Penguin colonies was identified as a potential conservation intervention for the species in the Biodiversity Management Plan of 2013. In 2018, work

started to re-establish the African Penguin colony at the De Hoop Nature Reserve. A predator-proof fence was constructed, and predator monitoring is ongoing. Techniques from other seabird restoration projects have been used to attract penguins to the colony site, including decoys and call playback. Additionally, over 140 juvenile African Penguins have been translocated to the site to encourage them to return to breed once they have matured. We present progress towards re-establishing the colony, including the first record of breeding since 2008 and discuss the challenges of implementing a novel conservation intervention and plans for further work.

DO VERREAUX'S EAGLES FLY AT NIGHT? IMPLICATIONS FOR FUTURE WIND FARM DEVELOPMENTS

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ABSTRACT

To meet present and future energy demands, South Africa requires an increased and diversified portfolio of energy generation, including a rapidly growing wind energy sector. However, wind turbines have been shown to have detrimental effects on avian species, particularly large soaring raptors. Efforts are being made to understand the habitat use and movements of species particularly sensitive to wind energy generation to help inform development guidelines and mitigation measures. Verreaux's Eagle (*Aquila verreauxii*) is one species that is often impacted by wind developments in South Africa. One proposed mitigation measure for reducing eagle collisions is to curtail wind turbines during the day when they are located in close proximities to nests, and to only have them operational at night. Using GPS tracking data from 16 Verreaux's Eagle, collected between 2011-2022, we assess the potential efficacy of this proposed mitigation method and examine nocturnal movements at multiple time intervals. We found that there were relatively few nights where Verreaux's Eagle undertook movements. Movements > 1 km occurred on less than 1% of nights (between 0.80% to 0.92%, depending nocturnal hours examined), but smaller night movements (>250m) were more common, ranging from 3.2% to 3.75% (depending on night period used). Studies such as this have the potential to maintain raptor protection while increasing the land made available for wind energy development; thereby creating a solution to a green-green dilemma.

ASSESSING THE PERSISTENCE OF BLACKSMITH AND CROWNED LAPWINGS IN URBAN AREAS OF PIETERMARITZBURG, KWAZULU-NATAL ASSESSING THE PERSISTENCE OF BLACKSMITH AND CROWNED LAPWINGS IN URBAN AREAS OF PIETERMARITZBURG, KWAZULU-NATAL

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ABSTRACT

Urbanisation generally threatens biodiversity. Despite this, many species still persist in urban areas. Those species with broader tolerance generally show improved persistence. Little is documented on ground-nesting birds in urban areas. Lapwings are ground-nesting birds that appear to be persisting in urban landscape mosaics in South Africa. We assessed the persistence of Blacksmith (*Vanellus armatus*) and Crowned Lapwings (*V. coronatus*) in selected metropolitan areas of KwaZulu-Natal. We collected information about their occurrence, habitat use, distribution, and behaviour in urban mosaic landscapes by conducting monthly surveys and observations, and with citizen science feedback. During the breeding season, we determined the influence of anthropogenic activities and different land use on the nesting ecology of lapwings breeding in urban mosaic landscapes. We found that Blacksmith Lapwings' presence in the urban mosaic landscape depended on water availability, temperature, habitat type, resource availability, and grass height. Both lapwing species required short grasslands in urban mosaic landscapes and nested in pairs in open areas. At certain times of the year, they congregated in single species flocks in certain areas of the urban mosaic landscape, particularly open green spaces, for feeding and socialising. Despite all the anthropogenic factors affecting ground nesting birds in urban mosaic landscapes, lapwings show behavioural plasticity to use green spaces for their persistence here.

RESCUE RESPONSE AND STABILISATION OF SEABIRDS AND IN PARTICULAR, A ROCKHOPPER PENGUIN, IN PLETTENBERG BAY

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ABSTRACT

Often, marine animals need assistance when they are found ashore. To address this need in Plettenberg Bay, the Plett Stranding Network (PSN) was formed. The PSN is a team of volunteers working to respond to marine animals ashore in Plettenberg Bay and surrounds. Join Chanel, as she talks through response

to different seabirds that can be found ashore in the Garden Route and shares the results and a story of PSN's efforts since 2018. Chanel assists in seabird cases. Most birds require assistance when they are found alone, mostly due to illness, injury, entanglement, hypothermia, malnourishment, or moulting. In January 2023, a unique case began to unfold, as a report of a Rockhopper penguin ashore on Robberg Nature reserve was received. As the senior marine ranger on this reserve, Chanel knew that the bird was not in the safest place and that it would need to be assessed and it would need to be decided what option would be best for the bird, going forward. A major concern with these penguins, is that they are not native to South Africa, and occur on sub-Antarctic islands only. This fact puts them at major risk when they enter onto our shores in South Africa, as if they become exposed to human or animal related illnesses or diseases, they may acquire brand new illnesses that Rockhoppers have not yet been exposed to on their islands. The confirmed Northern rockhopper had come ashore to undergo its first moult. Once it had been found and assessed, permission was granted from necessary authorities, and it was decided to move it to a more remote area on the Robberg peninsular. The relocation was necessary for two reasons; firstly, that the bird was being disturbed by many tourists and later, bird twitchers hiking that section of the peninsula, and secondly, that it required a safer area, with more shelter from the elements and protection from predators. On assessment with an onsite, experienced vet nurse, Chanel and the vet nurse feared that the penguin may enter an arrested moult due to malnutrition. Luckily, this arrested moult was avoided. The relocation proved successful, and after twenty-three days of monitoring, supplementary feeding and care, the penguin successfully moulted and returned to sea on the twenty fourth day, making this a unique and successful operation.

CIRCADIAN USAGE PATTERNS OF AVIAN FORAGING GUILDS ASSOCIATED WITH AN ABANDONED GRANITE-QUARRY URBAN REFUSE SITE OF SOUTH-WESTERN NIGERIA

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ABSTRACT

With fast urbanization and economic growth, there is an increase in inadequate waste management, resulting in environmental pollution. Open dumpsites are a common way to dispose of solid waste in Africa and Nigeria. These dumpsites have become an artificial site for birds of various foraging guilds resulting in high population densities in a few opportunistic species which could impair ecological

balance promoting disease transmission. We conducted a study in a highly urbanised area in the Abeokuta South Local Government Area, Ogun State, Nigeria, from October 21 to December 15, 2019, focusing on the diversity and abundance of bird species associated with an abandoned granite-quarry waste management location, the dumpsite of Saje. We evaluated the species composition and abundance of the avian community in the Saje dumpsite using point counts. A total of 1047 birds from 27 species, representing 17 families and 10 orders, were counted: 593 in the morning and 454 in the evening. Our study supports other findings that the presence of waste materials disposed of in dumpsites is the major reason for the peaking abundance of opportunistic commensal bird species in urban areas, providing easy and steady access to abundant food resources. This research advances urban center management and conservation awareness. Open landfills should be converted into refuse recycling and/or power generating plants, where the negative consequences of avian pests would be minimized according to lowered food resource availability for birds dependent upon uncontrolled refuse management in open landfill areas.

A COMPARATIVE STUDY OF THE BIOMETRICS AND SUB SPECIES STATUS OF THE RUFOUS-EARED WARBLER *MALCORUS PECTORALIS* IN THE FREE STATE AND ADJACENT AREAS

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ABSTRACT

The Rufous-eared Warbler (*Malcorus pectoralis*) is a small prinia sized species occurring in areas with low karroid shrub in most parts of the Free State and also mostly associated with disturbed areas where plant species such as (*Felicia filifolia*) and (*Stoebe vulgaris*) occur. Three subspecies are recognized in this taxa of which *P. m. pectoralis* occur in areas south of Bloemfontein and *P. m. ocularis* in areas north of Bloemfontein with eastward populations in the Paul Roux and Lindley areas of the Free State. This study aims to investigate the differences of the biometric data between the two taxa and if there are any genetic differences between them. Rufous-eared Warbler skin specimens in the collection of the National Museum, Bloemfontein, were also used for this study. Biometric measurements and mass data were obtained from skin specimens while other were measured upon collection. As these specimens are sexed on preparation as skins, their biometric data were used as an aid in differentiate between the sexes. Most of the specimens represent the *pectoralis* taxa from areas in the southern and western Free State. A bird ringing programme have been initiated in 2018 at the Florisbad Quaternary Research

station, Soutpan to capture and ring the population of the *ocularis* taxa which occur there. To date 20 individuals have been ringed (very few birds have been ringed in the past) and one recapture after 7 months obtained. Using a guide based on sexed specimens the ringed birds were sexed and aged based on wing, tail and also tarsal lengths. Preliminary analysis of Rufous-eared Warbler biometrics between the two taxa indicates that *P. m. pectoralis* have short tarsus lengths (male: 17.1 – 19.26 – 21.50; female: 15.8 – 18.66 – 23.0) than *P. m. ocularis* with longer tarsus lengths (male: 19.1 – 21.23 – 24.0; female: 17.5 – 19.81 – 24.0). This project aim is to obtain more biometric and genetic material from ringed warblers (for sexing and possible genetic studies) of *M. c. ocularis* populations from the Paul Roux, Lindley and Dealesville – Boshof areas of the Free State. In addition localities in the southern Free State (Springfontein, Fauresmith, Philippolis) will also be visit to obtain comparative biometric and genetic material.

EXPLORING THE POSSIBILITY OF 3D PRINTED ALTERNATIVES TO TRADITIONAL COPPER BLACK BULBS AS A MEANS OF ESTIMATING BIRD OPERATIVE TEMPERATURES

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ABSTRACT

“Operative temperature” is the ‘feels like’ temperature experienced by a bird in the environment, which integrates components of air temperature, solar and reflected radiation, wind speed, and more into a single-number temperature measurement. Copper black bulbs containing temperature dataloggers have traditionally been used as a feasible way to estimate bird operative temperatures in the field, but these need to be custom made and are expensive. We explore the possibility of using 3D printed alternatives to traditional copper black bulbs as proxies for estimating bird operative temperatures, which would lower costs and reduce the time to acquire equipment. Ten 3D printed black bulbs of 30mm diameter and 10 of 60mm diameter were placed in a randomized grid design in a natural grassland, alongside the same numbers and sizes of traditional copper black bulbs. Each bulb contained a thermochron iButton device logging temperature at 30-minute intervals. Temperatures inside copper bulbs are compared to PETG bulbs. The viability of these alternatives is discussed in context of accuracy, cost, availability, and longevity. Overall, this study provides valuable information on the feasibility of

using 3D printed alternatives to estimate bird operative temperature and highlights the potential benefits of incorporating 3D printing technology in ornithological research.

HOT BIRDS AND AN ICONIC AFRICAN RAPTOR

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ABSTRACT

Secretarybirds are large raptors with a breeding and foraging ecology that exposes them to high environmental temperatures – their nests are fully exposed to the sun, and they hunt on foot in sun-beaten, open landscapes throughout the day. This presentation will outline my PhD project which is aimed at understanding the behavioural and physiological thermal tolerances of the Secretarybird, with a focus on the arid extent of their distribution in the Northern Cape. The project is a collaboration between two organizations: BirdLife South Africa, who have an active programme to conserve Secretarybirds as a flagship species for avifauna in the region, and the Hot Birds Research Project, which has been investigating the effect of climate change on birds and bird communities in arid environments for over a decade. My initial aims are to: (1) study the breeding ecology of wild Secretarybirds to examine the effects of high temperatures on food provisioning and nestling health using camera traps and PIT tags; (2) determine whether movement data collected via telemetry mechanisms provide insights into thermoregulatory behaviour of Secretarybirds during foraging, particularly at the fledgling life-stage; (3) investigate behavioural mechanisms which free-ranging Secretarybirds employ to avoid high heat loads and how these influence daily activity patterns; and (4) use the above data to determine if Secretarybirds will experience range contraction or population declines with increasing global temperatures in the future. The project is in its early stages and is projected to run from 2023 to 2025. The findings will increase our understanding of Secretarybird environmental requirements and assist BirdLife South Africa and other conservation practitioners in determining the best way to safeguard this wide-ranging species in the face of future climate change. This information will also contribute to the regional Species Conservation Action Plan which is being planned for this species.

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