

African Penguin Workshop: 17 October 2018: Note of Meeting

(A) Background

African penguins (*Spheniscus demersus*) are endangered and occur only on the coastline of South Africa and Namibia. The population used to exceed 2.5 million birds but over-exploitation in the early 1900s through excessive egg and guano collection, and more recently, over-fishing, has decimated the population. Although much research has been undertaken on the ecological effects on the population, little is known about factors affecting penguin health or colony “health”.

The Faculty of Veterinary Science has a strong reputation for wildlife research, particularly in African mammals. In 2018, a research focus on avian health commenced in the Centre for Veterinary Wildlife Studies (CVWS) and African penguins were identified as a priority given their obvious decline in numbers, recent publications identifying the need for further health research and the 2017/2018 HPAI (H5N8) epidemic that killed a significant but unquantified number of birds. Accordingly, a series of meetings were conducted with key stakeholder groups and researchers in early 2018; the conclusion of these was that a workshop should be a first step to garner views and agree on priorities. Accordingly, funding was obtained to host a one-day workshop and invitations were issued to all groups or individuals with an interest in African penguin research, conservation or regulation.

(B) Programme Details

- A copy of the programme and a list of attendees are appended (Appendices 1 and 2 resp.).
- Copies of the presentations are available at:
https://www.dropbox.com/sh/mwih3u5i7t9qlk0/AACrcK6O08rBVYuFkaR_zHna?dl=0

(C) Key Points/Actions from Presentations and Discussion

(C.1) Information on African penguins and health-related aspects:

- African penguins occur at 13 localities in Namibia and 15 in South Africa; of the latter, 13 are on coastal islands while two are mainland colonies. Eight colonies support approx. 87% of the South African population. The total population is estimated at approx. 15 200 breeding pairs, with an ongoing overall decline due to an eastward shift in prey populations (principally anchovy and sardine) and competition with fisheries. Other threats include pollution (oil spills, plastics), increased predation (seals, sharks, seagulls, mammals) and climate-change effects.
- In 2017, South Africa experienced a nationwide HPAI epidemic with 149 incidents/outbreaks recorded up to 11 January 2018. Of these, 48 incidents were reported in wild birds, with cases occurring between August 2017 and April 2018. At least 21 species of wild birds were putatively infected with mortality/morbidity highest in swift terns (5363 suspect/positive cases reported),

Cape gannets (1627), common terns (259), African penguins (109) and Cape cormorant (100). Positive cases were widely distributed along the coast, from north of Lambert's Bay in the west, to Port Elizabeth in the east. With penguins, positive cases were identified at Boulders (29 Jan to 06 Mar 2018); Stony Point/Betty's Bay (Apr-May), False Bay, Dyer Island (Feb-May), Brandfontein Beach, Robben Island, Eastern Cape. 14 suspect penguin cases were admitted to the African Penguin and Seabird Sanctuary between 12 Jan and 22 Mar 2018 of which six were positive; 14 suspects were admitted to SANCCOB between 19 Sep 2017 and 08 Apr 2018, of which ten were positive. The true extent of disease and mortality remains unknown while Sacred Ibis are suspected to have been the source of infection for seabird colonies.

(C.2) Organisations involved in seabird management/rehabilitation:

- The four most common seabird species received by SANCCOB, Cape Town are African penguins (44% of admissions; n = 779), Hartlaub gulls (37%; n = 657), Kelp gulls (11%; n = 199) and Cape Cormorants (9%; n = 155). A total of 38 other species have also been admitted, at an average of 12 birds/year. The most common reasons for admission include abandonment (36%), debilitation (17%) and trauma (16%) while the latter accounts for most deaths (35%), followed by debilitation (24%). Rehabilitation centres such as SANCCOB provide a valuable role for research given the number of species and birds admitted and the centres' ability to facilitate research projects. SANCCOB is actively involved in ongoing research, with multiple research outputs and ongoing funding for research.
- Cape Nature is the provincial conservation authority for the Western Cape and the managing authority for three African penguin colonies. Monitoring programmes of breeding, health, mortality and movements are ongoing at each colony while research is actively encouraged and facilitated. Botulism is the greatest health challenge at Dassen Island, occurring in sacred ibis, kelp gull, great white pelican and Egyptian geese, while preparedness for epidemics, in respect of staff training and equipment, is the greatest current need.
- SANParks recognize that diseases are a natural part of ecosystem and do not intervene unless there are pressing reasons for so doing. During the 2017/2018 HPAI (H5N8) outbreak park and scientific staff focused on monitoring the outbreak in the respective colonies, and ensuring adequate disposal of dead birds to reduce the risk of transmission. The organisation relies on penguin health experts and will facilitate proposed research, subject to the necessary clearances and permits. Current interests relate to monitoring and issues of readiness (training, test kits, and relevant equipment etc).
- The DEA is committed to facilitating research and has a research group on seabirds as a means of identifying research priorities.

(C.3) Tools facilitating research

- Assessment of the gut microbiome is an invaluable tool to assess (preclinical) effects of wide range of environmental factors.
- Statistical analysis and modelling have provided valuable insights into disease transmission and mitigation effects and should be seen as an essential tool in investigating penguin/colony health.

(C.4) Research opportunities/needs/strategies

- Disease epidemiology etc: e.g. HPAI (epidemiology, prevention, responses), Cholera, herpesvirus, feather loss, Borelia, avian pox, Chlamydia, Rytosporidia, Mycoplasma, Adenovirus and Coronavirus, botulism (non-penguins), ectoparasites and significance, heavy metals/toxicity prevalence, feather-loss (aetiology and risk factors), anaplasmosis (epidemiology and effect on prognosis)
- Diagnostic & Treatment strategies: Normal blood biochemistry in African penguins; identification and significance of faecal flotation results; treatment of babesiosis; blood profiles and air sacculities; validation of tests for important diseases
- Rehabilitation/Rearing: causes and prevention of neonatal death; prognostic predictors for surgery; pain control; effective drug dosages; treatment of emaciation; optimal diets and supplements; environmental enrichment
- Clinical outcomes following admission: association between release rates and admission reason; association between breeding success and admission reason; association between treatment methods and outcome;

(C.5) Discussion on research priorities

- a. There was general agreement that HPAI should be a research priority, with the following elements to be considered:
- Baseline data – establish seroprevalence, whether antibodies are still present in the population, how this can inform epidemiology (impact of AI on penguin health), alignment of testing protocols between colonies.
 - Contingency planning: what actions to take in future outbreaks; what to do with dead birds, whether to close colonies in future, testing protocols to diagnose cause of death
 - Lessons learnt from previous outbreak:
 - i. Protocol needed
 - ii. Training – post mortems and sampling
 - iii. Basic needs like sampling kits
 - iv. Collection of data to underpin epidemiological analysis to inform future responses
 - v. Meeting to be arranged

Other research areas that were discussed include:

- b. Rehabilitation: what are the determinants of successful rehabilitation?
- c. Marine water quality: what are the effects of heavy metals and bioaccumulation effects on penguin health?
- d. Penguin colony health:
- Monitoring pathogens, comparing colonies, management practices and their possible impact e.g. artificial nests fibre glass vs wooden boxes
 - Environmental and ecosystem health affecting penguin health – drivers and stressors like food availability,

- Do differing helminth concentrations affect penguin/colony health?
 - Weight monitoring as an indicator of health (has been related to reprod rate)
- e. General mortality/morbidity data: App development for utilising citizen science for reporting and monitoring purposes.

(D) Acknowledgements

The following organisations provided significant support to the workshop and their assistance is gratefully acknowledged:

- Aviornis International Netherlands (<https://www.aviornis.nl/over-aviornis/english/>) funded the workshop.
- McPhersons Ltd provided a facility for holding the event at a substantially reduced cost.
- SANCCOB personnel provided extended support to confirming the agenda and identifying attendees.

(E) Useful References/Links

Southern African Seabird Colony Disease Risk Assessment:

<https://sanccob.co.za/wp-content/uploads/2017/01/Southern-African-Seabird-Colony-Disease-Risk-Assessment.pdf>

African Penguin Biodiversity Management Plan:

https://www.environment.gov.za/sites/default/files/gazetted_notices/africanpenguin_biodiversitymanagement_gn824_0.pdf



Darrell Abernethy



Centre for Veterinary Wildlife Studies



Workshop: African penguin health – what are the priorities?

Location: McPhersons, 42 Gill Rd, Tableview, Cape Town

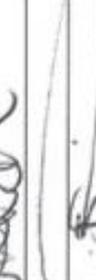
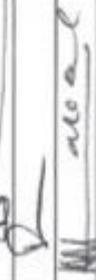
Date: Wednesday 17 October 2018

Programme

Time	Item	Presenter/Facilitator
0830 - 0900	<i>Tea/Coffee</i>	
0900- 0930	Introductions/Workshop Objectives	Darrell Abernethy, UP
Review/Challenge		
0930 - 0950	African penguins and conservation – what do we know?	Lauren Waller, SANCCOB
0950 - 1010	African penguin health – what do we know?	David Roberts/Nola Parsons, SANCCOB
1010 - 1040	Avian flu and its impact on seabirds and penguins - what do we know?	Laura Roberts, W Cape Govt
1040 - 1110	Research that will assist penguin rehabilitation – what do we want?	David Roberts, SANCCOB
1110 - 1130	Bird statistics at SANCCOB – what do we have?	Albert Snyman, SANCCOB
1130 - 1145	<i>Tea/Coffee</i>	
1145 - 1215	Statistics and modelling - can they help us manage wild animals?	Christl Donnelly, Oxford
1215 - 1245	Penguin microbiomes – what can they tell us?	Christoff Truter, SU
1245 - 1330	<i>Lunch</i>	
Discussions/Brain-storming		
1330 - 1530	Open discussion to establish research priorities, including role of organisations in facilitating research: <ul style="list-style-type: none"> • Alison Kock: SANParks perspective • Johan Visagie: CapeNature perspective 	Darrell Abernethy, UP
1530 - 1600	Actions/Timelines/Outputs	
1600	Close	

Appendix 2: African Penguin Workshop: Attendee List

African Penguin Health Workshop

	Person	Organisation	E-mail	Sign
1	Darrell Abernethy	UP	Darrell.abernethy@up.ac.za	
2	Lauren Waller	SANCCOB	lauren@sanccob.co.za	
3	Stephen vd Spuy	SANCCOB	stephen@sanccob.co.za	
4	David Roberts	SANCCOB	David.gr@sanccob.co.za	
5	Albert Snyman	SANCCOB	albert@sanccob.co.za	
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7	Christoff Truter	Stellenbosch University	jctruter@sun.ac.za	
8	Laura Roberts	SW Cape Vet Services	LauraR@eisenburg.com	
9	Dorothy Breed	City of CT - Vet	Dorothy.breed@capetown.gov.za	
10	Arne Purves	City of Cape Town	Arne.Purves@capetown.gov.za	
11	Alison Kock	SANParks	Alison.Kock@sanparks.org	
12	Lisa Nupens	UCT	lisanupen@gmail.com	
13	Sabelo Matlala	Robben Island	Sabelom@robben-island.org.za	
14	Peter Barham	Bristol University	Peter.Barham@bristol.ac.uk	
15	Millicent Makoala	DEA	Mmakoola@environment.gov.za	
15	Deon Geldenhuys	Cape Nature	dgeidenhuys@capenature.co.za	
16	Johan Visagie	Cape Nature	jvisagie@capenature.co.za	
17	Owen Denny	NI	Owendenny@aol.com	
18	Christl Donnelly	ICI/Oxford	c.donnelly@imperial.ac.uk	
19	Marcela Espinaze Pardo	SU	mespinaze@sun.ac.za	