

FINAL PROGRAM



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

7th ISWE Conference
Skukuza, Kruger National Park
13 – 16 October 2019



SUNDAY OCTOBER 13TH – SKUKUZA, KRUGER NATIONAL PARK

900 – 1600 ISWE Board meeting (closed meeting)

1730 – 2000 BOMA DINNER ICEBREAKER

MONDAY OCTOBER 14TH – SKUKUZA CONFERENCE CENTRE

845 – 915 Opening words

915 – 1015 SESSION 1: STRESS AND WELFARE (Moderator- Beaux Berkeley)

- 1) Maternal effects in snowshoe hare: impact of predation risk on offspring. Laura McCaw (ISWE Travel Grant Awardee)
- 2) Using dermal cortisol to measure the stress physiology of wild and captive Wyoming toads (*Anaxyrus baxteri*). Rachel Santymire
- 3) Non-invasive monitoring of glucocorticoid metabolite concentrations in urine and faeces of the sungazer. Juan Scheun
- 4) Validation of a non-invasive technique using faecal glucocorticoid metabolites to measure stress in leopards (*Panthera pardus*). Andrea Webster

1015 – 1045 Break



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1045 – 1200 SESSION 2: REPRODUCTION (Moderator- Jonathan Aaltonen)

- 1) Effects abnormal prolactin secretion has on the metabolic health of acyclic female African elephants (*Loxodonta africana*). Matthew Krckmarik
- 2) An effect of multiple paternity on females and kittens' immune and hormonal status in felids. Sergei Naidenko
- 3) Assessment of fecal progesterone and estrogen metabolites for reproductive monitoring in female aye-ayes (*Daubentonia madagascariensis*). Elizabeth Donelan
- 4) The clockwork whale: Annual testosterone cycles reconstructed from baleen of adult male bowhead whales (*Balaena mysticetus*). Kathleen Hunt
- 5) Relationship between thyroid and testosterone hormones in aquarium and wild sand tiger sharks (*Carcharias taurus*). Cayman Adams

1200 – 1300 Lunch/Trainee Mentor Luncheon

1300 – 1400 **PLENARY TALK:** Professor Ann MacLarnon – Department of Anthropology, Durham University, United Kingdom. "FROM MECHANISM TO EVOLUTION: THE EXPLANATORY POWER OF WILDLIFE ENDOCRINOLOGY"

1400 – 1415 Break

1415 – 1500 SESSION 3: MISCELLANEOUS (Moderator- Lara Metrione)

- 1) Social context mediates testosterone's effect on snort acoustics in male hyrax songs. Lee Koren
- 2) Hand raised, pack-living dogs' and wolves' urinary oxytocin levels following interactions with human partners. Gwen Wirobski
- 3) Urinary creatinine concentrations reveal that wild chimpanzee mothers positively influence muscle mass development years past weaning. Patrick Tkaczynski

1500 – 1800 Pre-booked activity/Leisure time

1800 – 2000 **POSTER SESSION + Cheese and Wine**



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TUESDAY OCTOBER 15TH – SKUKUZA CONFERENCE CENTRE

900 – 1015 SESSION 4: WILDLIFE CONSERVATION (Moderator- Katie Edwards)

- 1) Drivers of population performance: Physiological responses to environmental stress in equids (Grevy's Zebra, *Equus Grevyi*, Cape mountain zebra, *E. zebra zebra* and Carneddau Welsh mountain ponies *E. ferus caballus*). Danielle Hinchcliffe
- 2) Perioovulatory changes in behaviour and faecal oestrogen and progesterone metabolite concentrations could predict the fertile period in female African wild dogs (*Lycaon pictus*). Monique Paris
- 3) Ecological Espionage: Application of non-invasive methods to evaluate anthropogenic disturbance in elusive African clawless otter (*Aonyx capensis*). Tshepiso Majelantle
- 4) Non-invasive measurement of reproductive and stress hormone metabolites in Asian elephants: an approach towards conservation. Polani Seshagiri
- 5) Climate change and human disturbance increase stress levels in a wild ungulate. Louis Hunninch

1015 – 1045 Break

1045 – 1200 SESSION 5: STRESS AND WELFARE (Moderator- Ratna Ghosal)

- 1) Snot for Science: A non-invasive technique for measuring cortisol in free-swimming beluga whales (*Delphinapterus leucas*). Justine Hudson (Coralie Munro Memorial Travel Grant Awardee)
- 2) Non-invasive assessment of physiological stress in captive Asian elephants. Govindhasamy Umapathy
- 3) Hairs do not contain a historical record of stress – elucidating hair glucocorticoid kinetics in laboratory rats. Otto Kalliokoski
- 4) Non-invasive monitoring of physiological stress in an Afrotropical arid-zone passerine bird, the southern pied babbler (*Turdoides bicolor*). Emma Jepsen
- 5) Validation of an enzyme immunoassay (EIA) for hair glucocorticoids determination in a wild population of Egyptian mongoose. Katarina Jewgenow

1200 – 1300 Lunch

1300 – 1400 **PLENARY TALK: Professor Nigel Bennett – Professor of Zoology, University of Pretoria, South Africa.**
“TEASING APART SOCIALLY-INDUCED INFERTILITY IN NON-REPRODUCTIVE FEMALE AND MALE EUSOCIAL MOLE-RATS IN HARSH ARID ENVIRONMENTS”

1400 – 1415 Break

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1415 – 1500 SESSION 6: ANIMAL HEALTH (Moderator- Jella Wauters)

- 1) Adiposity, reproductive cycling status, and activity levels in zoo Asian elephants (*Elephas maximus*). Daniella Chusyd
- 2) Acute phase proteins as indicators of the elephant immune response to infectious disease. Katie Edwards
- 3) Predicting all-cause disease, CVD, and mortality risk in zoo-housed western lowland gorillas (*Gorilla gorilla gorilla*) using lipid and inflammatory markers. Ashley Edes

1500 – 1700 Pre-booked activity/Leisure time

1700 – 2100 BUSHBRAAI

WEDNESDAY OCTOBER 16TH – SKUKUZA CONFERENCE CENTRE

900 – 1015 SESSION 7: REPRODUCTION (Moderator- Tamara Keeley)

- 1) Baleen hormone cycles inform reproductive histories of female bowhead whales. Cory Matthews
- 2) Immunocontraception of male and female giraffes using the GnRH vaccine Improvac. Franz Schwarzenberger
- 3) Unraveling the giant panda reproductive biology: potential roles of prostaglandins PGE2 and PGF2 α – preliminary results. Jella Wauters
- 4) Study of reproductive endocrinology in sloth bear females through urinary estradiol and progesterone profiling. Yaduraj Khadpekar
- 5) Role of male androgen production in female mate choice in the endangered black-footed ferret. Emily Potratz

1015 – 1045 Break



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1045 – 1200 SESSION 8: METHODOLOGIES (Moderator- Juan Scheun)

- 1) Hormones in blubber tissue: a new tool for physiological assessment of the endangered North Atlantic right whale (*Eubalaena glacialis*). Katherine Graham
- 2) Preliminary analyses of serum phytoestrogens in white rhinoceros using liquid chromatography-multiple reaction. Angie Adkin
- 3) Hair cortisol analyses in different mammal species: choosing the wrong enzyme immunoassay (EIA) may lead to erroneous results. Martin Dehnhard
- 4) Who's poo? Using progesterone metabolites measured in faecal samples of paired captive short-beaked echidnas as a marker of sex. Kate Dutton-Regester
- 5) Measurement and preliminary validation of 1 α -hydroxycorticosterone (1 α OH-B) stress hormone in elasmobranchs. Catharine Wheaton

1200 – 1300 Lunch

1300 – 1400 SESSION 9: STRESS AND WELFARE (Moderator- Marina Ponzio)

- 1) Findings from long term reproductive and adrenal hormone monitoring of Asian elephants at the National Zoological Park and Oregon Zoo. Janine Brown
- 2) Exploring relationships between fecal glucocorticoid metabolites, social coping mechanisms, and a novel, non-invasive measure of oxidative stress in grizzly bears (*Ursus arctos horribilis*). Grace Fuller
- 3) Validating the use of qiviut cortisol as a stress biomarker in muskoxen (*Ovibos moschatus*). Juliette Di Francesco
- 4) Relationships of nutrition to fecal glucocorticoid metabolites in bison (*Bison bison*). Lara Mettrione

1400 – 1630 **WORKSHOP: Dr. Rupert Palme – “NON-INVASIVE MEASUREMENT OF GLUCOCORTICOIDS: ADVANCES AND PROBLEMS”**

1630 – 1700 Closing remarks



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PLENARY SPEAKER: PROFESSOR ANN MACLARNON



Ann MacLarnon is a Professor of Evolutionary Anthropology in the Department of Anthropology at Durham University, United Kingdom. Professor MacLarnon has worked on a broad range of areas in evolutionary anthropology, including comparative studies of life histories, spinal cord, brain size and gut size, and the evolution of human speech and breathing control. In recent years, her main focus has been on ecological physiology. Professor MacLarnon has directed a non-invasive hormone lab for fifteen years, which she recently moved to Durham. She has collaborated with many behavioral ecologists working on primates and other mammals to investigate together questions of reproductive, stress, and energetic ecology combining physiological and behavioral measures.

PLENARY SPEAKER: PROFESSOR NIGEL C. BENNETT

Nigel C. Bennett is a Professor of Zoology at the University of Pretoria (UP) and occupies the Department of Science and Technology/National Research Foundation (NRF) Research Chair in the field of Mammalian Behavioural Ecology and Physiology and the UP Austin Roberts Chair of African Mammalogy. Professor Bennett's research focus is on ecology, animal physiology and behavior using the African mole-rat as his model animal. He and his colleagues have investigated the ecological and physiological factors that affect the control of reproduction and the evolution of sociality. Professor Bennett's research has set the benchmark for our understanding of phylogenetic and ecological constraints regulating reproductive success and social evolution in mammalian species.



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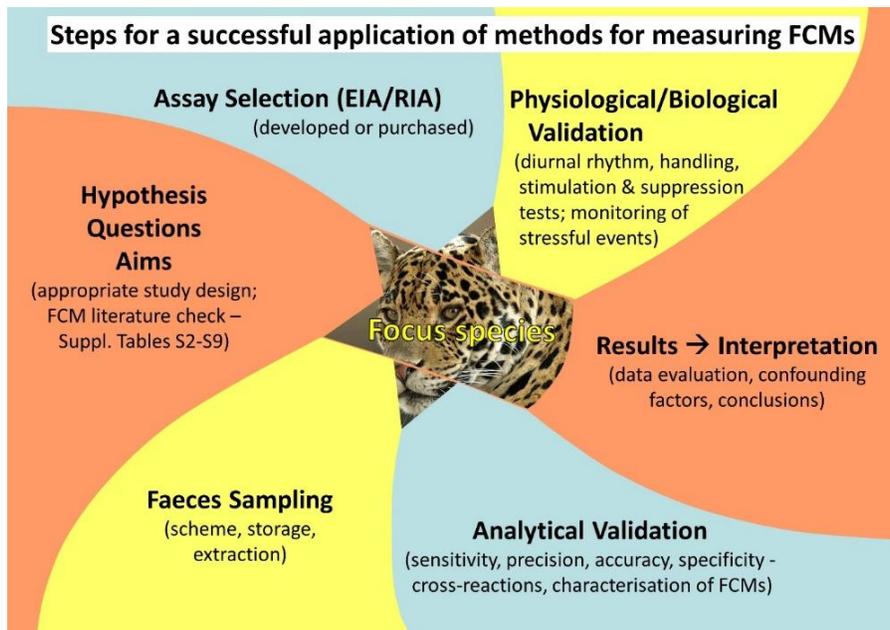
WORKSHOP: DR. RUPERT PALME

NON-INVASIVE MEASUREMENT OF GLUCOCORTICOIDS: ADVANCES AND PROBLEMS

Glucocorticoids (GCs) are a central component of the neuroendocrine stress response and their measurement is frequently used to evaluate the impact of potentially challenging situations. Their faecal metabolites are often measured as a non-invasive evaluation of adrenocortical activity in wildlife species. When applied properly, such methods are a powerful tool to a variety of disciplines. However, appropriate study design, methodology, validations, and interpretation are all key to obtaining meaningful data. This interactive workshop will address some pitfalls and potentially confounding factors and provide an insight into the steps researchers should take before embarking on such techniques, especially focusing on validation and interpretation of results.



Rupert Palme is Associate Professor in the Division of Physiology, Pathophysiology and Experimental Endocrinology at the University of Veterinary Medicine, Vienna. His work focuses on the metabolism and excretion of steroid hormones and the development and application of non-invasive methods for their quantification in various animal species. He and his coworkers succeeded in establishing the world-wide first non-invasive method for stress-assessment in animals by measuring faecal glucocorticoid metabolites. Their assays are now applied successfully in an increasing number of bird and mammalian species in a variety of research fields.



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POSTER PRESENTATIONS

REPRODUCTION

1. Using ultrasonography and endocrinology to understand folliculogenesis and reproductive failure in whooping cranes. Megan Brown
2. Are we expecting? Developing a test for pregnancy detection in captive snow leopards (*Panthera uncia*). Beth Roberts
3. Leave me alone - Association patterns influence reproductive and stress-related faecal hormone metabolite concentrations in giraffe bulls. Tanja Wolf
4. Is a GnRH vaccine an effective contraception method in zoo-managed mammals? Shana Lavin
5. Establishing a Living Koala Genome Bank: Non-invasive hormone monitoring as a management tool for breeding koalas in captivity. Tamara Keeley
6. Determining the effects of dietary phytoestrogens on red colobus monkey (*Piliocolobus tephrosceles*) fecal hormone levels in Kibale National Park, Uganda. Michael Wasserman
7. Urinary biomarkers of pregnancy and pregnancy-loss detection in the giant panda. Kirsten Wilson
8. Non-invasive monitoring of the oestrous cycle of female African lions (*Panthera leo*): can I trust this stool? Isabel Callealta
9. Non-invasive monitoring of estrogen and testosterone metabolites in amphibian urine: Applications for determining gender, seasonal steroidogenesis and spermatogenesis. Andrew Kouba
10. A combination of non-invasive endocrine monitoring and predictive models to assess pregnancy status in wild guanacos: a population approach. Antonela Marozzi
11. Use of urinary biomarkers of ovarian function in Chinchilla lanigera: assessing protocols for synchronization and ovulation induction. Marina Ponzio
12. Functional relationships between estradiol and paternal care in red bellied lemurs. Madalena Birr
13. Ovarian suppression with Improvest®, a GnRH immunological product in Giraffe (*Giraffa* spp) under managed care. Linda Penfold
14. Reproductive and adrenal physiology of dwarf mongoose in relation to social changes. Candace Scarlata
15. Southern white rhinoceros (*Ceratotherium simum*) transferred from Kruger National Park to New Zealand: A review of reproduction during twenty years *ex situ*. Catherine Morrow



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METHODOLOGIES

16. Non-invasive pregnancy diagnosis via faecal sample analysis in non-domestic equids. Sue Walker
17. Non-invasive assessment of fecal glucocorticoid and androgen metabolites in pygmy hippopotamus (*Choeropsis liberiensis*). Gabriella Flacke
18. Identification and quantification of steroid hormones in polar bear (*Ursus maritimus*) feces by HPLC. Kristen Counsell
19. Validation of the measurement of progesterone and glucocorticoid metabolite concentrations in feces and analysis through anxiolytic medication administration to facilitate social pairing of an Allen's swamp monkey (*Allenopithecus nigroviridis*). Laura Amendolagine
20. Sex determination in Brazilian macaws (*Ara ararauna*, *A. macao* and *A. chloropterus*) by enzyme immunoassay of progesterone and androgen metabolites from excreta. Bruna Vieira
21. Conserving primary antibody stocks: The development of robust indirect competitive enzyme linked immunosorbent assays (ELISA). Rebecca Mogey
22. Progesterone determination in preserved corpora lutea of bobcat (*Lynx rufus*). Beate Braun
23. Development of a new progesterone metabolite EIA for non-invasive reproductive monitoring. Russell Hart
24. A novel and highly sensitive non-invasive method to measure steroid hormones in claws reveals sex- and age-specific seasonal variation in cortisol in European Badgers (*Meles meles*). Bobby Fokidis

WILDLIFE CONSERVATION

25. Sex ratios of olive ridley sea turtles in the Pacific: establishing baselines for climate change research. Camryn Allen
26. Endocrine correlates of gender and throat colouration in the Southern Ground-Hornbill (*Bucorvus leadbeateri*). Sophie Neller



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STRESS AND WELFARE

27. Understanding stress physiology of tigers in the Terai-Arc landscape (TAL), India - a pilot study. Shiv Kumari Patel
28. The tail-tale of stress: an exploratory study to assess hair cortisol in Asian elephants. Sanjeeta Sharma Pokharel
29. Effects of habitat enrichment on stress physiology of Leopard (*Panthera pardus*) under captive conditions. Ratna Ghosal
30. Experimental assessment of feather corticosterone as an integrated measure of hypothalamic-pituitary-adrenal axis activity. Catherine Soos
31. Cortisol, T3, and land use associations in two primate species in Costa Rican lowlands. Emily Chester
32. Capture as an acute stressor: phylogenetic and seasonal variation in avian stress responses. Celiwe Ngcamphalala
33. Seasonal effects of faecal glucocorticoid (fGCM) and triiodothyronine (FTM) metabolites in a model nocturnal strepsirrhine primate population. Channen Long
34. Effects of transfer on fecal glucocorticoid metabolites in red pandas (*Ailurus fulgens*). Monika Conrad
35. The effects of environmental stress and body condition on African wild dog (*Lycaon pictus*) faecal glucocorticoid metabolite concentrations. Bruce Crossey
36. Anthropogenic disturbances and physiological stress in free-ranging primates: A meta-analysis. Olivier Kaisin
37. The effect of capture and transport on serum cortisol and total thyroxine concentrations in white rhinoceroses (*Ceratotherium simum*) sedated with either azaperone or midazolam. Friederike Pohlin
38. The effects of after-hour visitor events on cheetah (*Acinonyx jubatus*) and giraffe (*Giraffa tippelskirchii* & *Giraffa camelopardalis reticulata*) behavior and adrenal activity at the Oregon Zoo. Laurel Fink
39. Using multiple endocrine indicators to determine acclimation to a zoo-housed setting in white-bellied pangolin (*Phataginus tricuspis*). Jocelyn Bryant
40. The effects of pre-hatching elevated corticosterone and post-hatching restrictive food availability on HPA axis development of mallard ducks (*Anas platyrhynchos*). Breanne Murray
41. Neurobiology of stress in captive capuchin monkeys (*Sapajus nigritus*). Nei Moreira
42. Physiological and behavioural measure of animal welfare in relation to semi-captive African Elephant (*Africana Loxodonta*) interaction programs. Elizabeth Berkeley
43. Non-invasive monitoring of adrenocortical activity in free-ranging Namaqua rock mice (*Micaelamys namaquensis*) in response to anthropogenic land use and season. Mmatsawela Ramahlo
44. Establishing a non-invasive method for monitoring adrenocortical function in roan antelope (*Hippotragus equinus*). Vanessa Wandja Kamgang
45. Stress and reproductive hormone profiles as measured in baleen from two humpback whales (*Megaptera novaeangliae*) of different sex and habitat. Carley Lowe
46. Comparing the performance of “native hormone” versus “group-specific” assays for assessing faecal glucocorticoid metabolites in African herbivores. Susanne Shultz