

# ISWE Newsletter



Volume 10: September 2022

## International Society of Wildlife Endocrinology (ISWE) newsletter: Volume 10

In this edition, we highlight ISWE's new board members, spotlight the Conservation & Science Laboratory at the Cleveland Metroparks Zoo, and share some recent publications and exciting upcoming events and opportunities for our members.

*Want to contribute?* We are always seeking newsletter content including: photos, publications, and announcements.

Please contact:

[iswe.socialmedia@gmail.com](mailto:iswe.socialmedia@gmail.com)

if you have contributions.

Thanks from the newsletter committee!

*Tamara Keeley, Grace Fuller, Katie Fowler, Elizabeth Freeman, Laura Amendolagine, Tina Dow & Tabitha Brown*

## Connect with us on social media!

Instagram & Twitter: @iswe\_endo

Facebook:

[International Society of Wildlife Endocrinology-ISWE](#)

## *Introducing the New ISWE Board Members*

At the end of 2021, ISWE members elected three new board members who became part of the ISWE Board in January 2022. Katie Edwards is the new Chair Elect, Tamara Keeley is the new Communications Chair and Tshepiso Majelantle fills a brand new position as our Trainee Representative. Read our new board members' profiles below.



### **Dr. Katie Edwards, Chester Zoo, United Kingdom. Chair Elect**

I am a Lead Conservation Scientist at Chester Zoo, overseeing the wildlife endocrinology lab and biomarker research and development programme. I have been working in the field of wildlife endocrinology for over 15 years, and have been an active member of ISWE since 2010. My research uses

endocrine techniques to measure a variety of biomarkers to help understand and manage reproduction, health and well-being in wildlife. I work with lots of different species, assisting ex situ captive breeding programmes, and applying techniques to benefit in situ conservation. I have always loved the community that ISWE brings and as chair-elect, I am passionate about continuing to grow and advance our amazing society. I look forward to working with our international community over the next four years to develop resources to benefit our members and continue to expand the reach and impact of our field.



### **Dr. Tamara Keeley, The University of Queensland, Australia. Communication Chair**

I started working in the field of wildlife endocrinology when I started my Masters degree on the Vancouver Island marmot at the Toronto Zoo, Canada in 2002 and have been using these techniques ever since. I have spent the last 17 years working in Australia; I developed and managed an endocrine laboratory at Taronga Western Plains Zoo, Australia (2005-2012) and am currently a Lecturer the University of Queensland. [continued pg 2]

## New ISWE Board Members (continued)

**Tamara Keeley:** I have had the pleasure of working on a large number of different exotic and marsupial species with collaborators across Australia and around the world. I have been a member of ISWE since its inception and was the first Communication Chair in 2012 and am very keen to promote and help grow ISWE once again!



**Tshepiso Majelantle, University of Pretoria, South Africa.**

**Trainee Representative (New Board Position):** For as long as I can remember, I spent every school holiday in the bush. During those times, I was surrounded by incredible animals, both wild and domestic. I would spend the whole day watching them wondering about their behaviour. That kind of

curiosity threw me into the field of zoology and inadvertently, the wonderful field of behavioural endocrinology. For my masters, I measured the cortisol levels (as a measure of stress) for African clawless otters (*Aonyx capensis*) occurring in an urban area and natural areas. What I found the most interesting, was that the otters in the urban area not only had higher cortisol levels, but behaved completely differently from the otters in the natural areas. Currently, my PhD project focuses on behavioural endocrinology, specifically, how endocrine correlates are linked to social hierarchy, and animal personality in the spectacular naked mole-rat (*Heterophalus galber*). Thus, my research interest lies in using endocrinology as a measure of animal welfare in conjunction with behavioural correlates. Being a part of the ISWE committee is a fantastic opportunity! In the past few months, working with professionals from all over the world has granted me personal growth. I am excited to apply the skills I have with ISWE, as well as learn tons more.

## Out-going Council Member

We are sad to say goodbye to our former Communication Chair member, Dr Grace Fuller. We wish her the best in her next adventure.

## Guess Whose Poo?

Can you "guess whose poo"? Check out the picture provided, and see if you can correctly identify the poo. [Answer page 6]



## Save the Date for the 8th ISWE Conference!

The next ISWE conference will be held November 6th-10th, 2023 at the Riverview Retreat in Jim Corbett National Park, India!

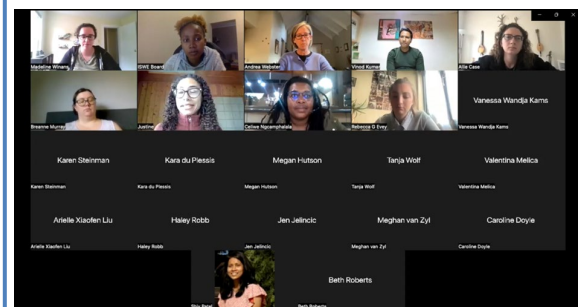
This will be hybrid conference with in-person and virtual attendance options.

We hope to see you in India!



## New Trainee Affairs Committee

Introducing the new ISWE Trainee Affairs Committee (TAC)! The TAC aims to create career and professional development opportunities for trainees and foster outreach partnerships with new members in ISWE. Their first and current initiative is the Coffee Talk series of panel discussions on a range of topic provided for trainee and ISWE members every few months in 2022. The first two panel discussions in May on "Field Work Do's and Don'ts" followed by the second in July on "Sample Analysis" were excellent sources of information and shared experiences. Please keep your eye out for our upcoming Coffee Talks sessions!



# Lab in the Spotlight: The Conservation & Science Laboratory, Cleveland Metroparks Zoo, Cleveland, Ohio, USA.

Laura Amendolagine (Lab Manager), Dr. Diana Koester (Research Curator)



*Left:* Conservation & Science laboratory space in the Sarah Allison Steffee Center for Zoological Medicine.

## Are you interested in pursuing collaborations within ISWE?

We are always looking for new collaborators! As so little is known about tree kangaroos in general, we would be excited to work with anyone studying other species of tree kangaroos. Based at a zoo, we offer up potentially hard to get samples to support your research projects. Our keeper staff is excellent and able to train voluntary participation in invasive sample collection from invertebrates, birds, and mammals alike.

## Any recent publications?

Amendolagine L, Schoffner T, Koscielny L, Schook M, Copeland D, Casteel J, Duff B, Koester DC. 2018. In-house monitoring of steroid hormone metabolites in urine informs breeding management of a giant anteater (*Myrmecophaga tridactyla*). *Zoo Biology*, 37:40-45.

Leeds A, Good J, Schook M, Dennis P, Stoinski T, Willis M, Lukas K. 2019. Evaluating changes in salivary oxytocin and cortisol following positive reinforcement training in two adult male western lowland gorillas (*Gorilla gorilla gorilla*). *Zoo Biology*, 39:51-55.

Our "Lab in the Spotlight" feature highlights teams in the ISWE community. Want your lab to be in the spotlight? Email us at: [iswe.socialmedia@gmail.com](mailto:iswe.socialmedia@gmail.com)

*Left to Right:* Laura Amendolagine, Dr. Diana Koester and . Kaylin Tennant, (Graduate Research Associate)

## Tell us a little about your lab.

Our lab supports the Zoo as the home base for any and all laboratory-based research projects (not just endocrine!) to generate data for studies of animal health and animal welfare, including reproductive, adrenal, and metabolic hormones, DNA extraction to evaluate gut microbial communities, and diet studies of macronutrient composition, digestibility, and energy intake and expenditure. The lab also provides in-house hormone analysis to assist with answering Zoo animal management-related questions, to help time breeding introductions, determine pregnancy and birth windows, diagnose reproductive issues, and make changes to improve animal welfare across a diverse array of species.

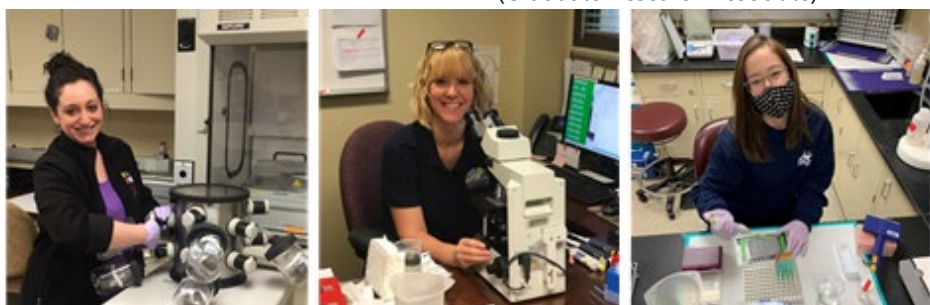
## Any funny stories from the lab?

With the passing of our geriatric giant Pacific octopus, we had the unique opportunity to collect the adrenal glands to help validate a glucocorticoid assay for the species. I (Diana) recall standing with Dr. Charles Ritzler, and our veterinarian, with several books open, trying to navigate the exceedingly interesting anatomy of the deceased cephalopod to harvest the tiny endocrine organs. They are behind the eyes! It is a good reminder of the diversity of the animal kingdom and how lucky we are to get to be around such amazing species every day.

## What are some current projects?

We have multiple ongoing projects on diet, health, and reproduction of zoo-housed Matschie's tree kangaroos. We are currently completing studies on reproductive hormone profiles for females at different body weights and conditions, and for pregnancy and lactation and a study investigating the gut microbiome of Matschie's tree kangaroos fed diets containing varying amounts of leafy browse material.

We are currently investigating the association between insulin resistance and the regurgitation and reingestion (R/R) behavior in zoo-housed gorillas and have used voluntary saliva collection to evaluate fasted salivary insulin levels in our troop of 1.4 gorillas and compare them to observed rates of R/R. Our team was the first to conduct an oral sugar test on gorillas which we used to biologically validate a commercial assay for salivary insulin. We plan to expand our sample size through collaboration with other zoos to assess insulin resistance in the AZA gorilla population.



## Recent Publication Highlights

The “Publication Highlights” section offers brief summaries of recent publications by ISWE members. If you want to see your article in an upcoming newsletter, send us the citation and a photo showing your work in action. All submissions welcome (email: [ISWE.socialmedia@gmail.com](mailto:ISWE.socialmedia@gmail.com)).

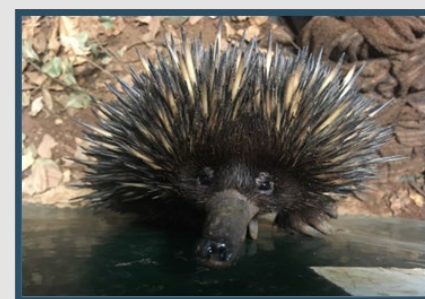
### Plasma progesterone secretion during gestation of captive short-beaked echidnas (*Tachyglossus aculeatus aculeatus*).

The reproductive physiology of the short-beaked echidna, an egg-laying mammal of Australia and Papua New Guinea, has fascinated scientists and naturalists for over two centuries. However, much remains to be explored including the precise timing and characterisation of gestation and development of the temporary pouch into which the egg is deposited as gestation terminates. This study aimed to describe the progesterone profile during pregnancy and the changes in pouch morphology in adult female echidnas.

Plasma samples were collected, and pouch morphology was assessed three times a week. Additionally, breeding pairs were monitored daily by video surveillance to confirm key reproductive behaviour. The length of gestation was confirmed to be  $16.7 \pm 0.2$  days with a luteal phase of  $15.1 \pm 1.0$  days. From confirmed copulation, plasma progesterone increased above baseline values within 3 days, reached peak concentrations within 12 days, but then declined to basal levels within 1 day of egg laying and remained basal throughout the 10-day egg incubation period. The female echidna's pouch only develops during gestation and by using the most distinguishable characteristics of pouch development, the authors were able to create a four-stage grading system. Maximum pouch development was associated with declining progesterone concentrations, with the pouch closing in a drawstring-like manner at egg laying.

Control of pouch development in pregnant echidnas is not yet clear but pouch closure may be under mechanical influences of the egg or young in the pouch. Results of this study greatly contribute to our overall understanding of echidna reproductive physiology and that of egg laying mammals more broadly. Further, this work provides valuable information that can be incorporated into the reproductive management of zoo-housed echidnas.

[Dutton-Regester, K.J., Keeley, T., Fenelon, J.C., Roser, A., Meer, H., Hill, A., Pyne, M., Renfree, M.B., Johnston, S.D. 2021, \*Reproduction\*, vol. 162, pp. 267-275.](#)



### A practical method for storage, preservation and transportation of anuran urine samples using filter paper for hormone analysis.

An ongoing challenge for field research is how to collect, store, and transport biological samples in a simple, cost-effective way that does not compromise hormones and biomarkers within. Kumar et al., recently investigated the use of filter paper as a novel approach to store and preserve anuran urine. The aim of the study was to assess the efficacy of types of filter paper and different storage conditions of samples utilizing High-Performance Liquid Chromatography and enzyme immunoassays for analysis of progesterone and testosterone metabolites. Results would be used to validate and standardize the proposed method.

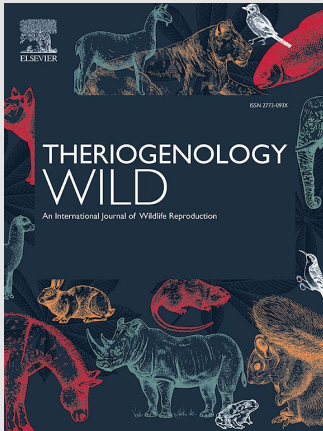
Data collected concludes that Whatman grade 50 filter paper was the most suitable for short-term sample storage at room temperature for up to 10 weeks. The thinner cotton linter paper has a smaller pore size that worked best for particle retention. Compared to control samples stored at  $-20^{\circ}\text{C}$  for the same duration, urinary hormone metabolite concentrations were found to be similar, showing no indication of a decrease in hormone quality or quantity. Thus, the group confirms the current protocol is a new and inexpensive way for sample collection, storage, and preservation in field conditions. In addition, application of such a method has great potential for work in remote areas with limited resources and the absence of refrigeration.

[Kumar, V., Sood, S., Vasudevan, K., and Umapathy, G. \*Methods X\* 8 \(2021\) 101578](#)

# Photos From The Field



**Kimberly Todd (MSc student; George Mason University)** is participating in the reintroduction of swift foxes (*Vulpes velox*) to the Fort Belknap Indian Reservation in northcentral Montana. Her master's research investigates how bold personality together with stress (cortisol) and nutritional (triiodothyronine) physiology influence post-release survival and reproduction in translocated foxes. To do this, she is collecting behavioral data as well as scat samples for each fox at every stage of the translocation process from trap to soft-release pen.



*Invitation to Contribute!*

## **ISWE Special Issue Theriogenology WILD “Biomarkers of Reproductive Health in Wildlife”**

Original Research Manuscripts that investigate the endocrinology of reproductive health in wildlife species (mammals, birds, reptiles and amphibians) are invited for this ISWE Special Issue. Topics of special interest include innovative techniques and approaches that evaluate the endocrinology of fertility, contraception, reproductive pathology, pregnancy diagnostics, puberty, senescence, and assisted reproductive technique development.”

Theriogenology Wild will be open access BUT fees will be completely waived for ISWE Special Issue.

**Intent to Contribute Email Due: 3rd October 2022**

**Manuscript Submission Deadline: 1st March 2023**

**Please see the ISWE website for more details!**

**[www.iswe-endo.org](http://www.iswe-endo.org)**

### *Guess Whose Poo?*

The mystery fecals were collected from wild Ghost bats (*Macroderma gigas*). Ghost bats are the largest of the microbats (130-170g; wingspan ~ 500 mm) in Australia and are found inhabiting caves and old mines in northern Australia. They are highly sensitive to disturbances so to collect samples, a collection sheet is placed on the floor of the cave while the bats are out foraging and collected several weeks later to minimize disturbances. The cave's stable temperature and humidity conditions help preserve the fecal hormones during this time.

