



# RHSP Reproductive Health Surveillance Program

Anneke Moresco and Dalen Agnew

IMPROVED SUSTAINABILITY THROUGH PATHOLOGY

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## African Painted Dog Genetics and Pyometra

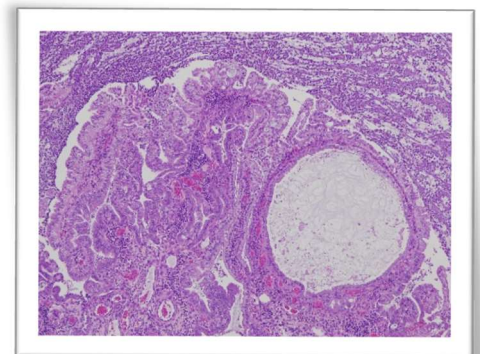
Pyometra and cystic endometrial hyperplasia (CEH) are highly prevalent in African painted dogs. While both diseases can affect fertility and thus, sustainability of zoo populations, pyometra can also be life-threatening. Fertile animals are essential for the sustainability of breeding programs. The **Reproductive Health Surveillance Program** and the **Reproductive Management Center** received grant support from the **Association of Zoos and Aquariums** for a project to better understand the risk factors for CEH and pyometra and to establish a method for early diagnosis and potential prevention in this charismatic species.

### How is this being done?

To accomplish this, first we must obtain in-depth environmental data via a survey sent to African Painted Dogs holding institutions. Then samples will be collected, stored and archived to create a “biobank” for CEH and pyometra. Collection kits were sent to holding institutions to ensure proper collection and shipping. Once enough samples are accumulated, genes in the hyperplastic, inflamed, and normal uterine tissues will be sequenced to identify genes that are up- or down-regulated in these conditions. If a biomarker for pyometra or CEH can be found, and if that biomarker is excreted in, for example, urine, then an associated diagnostic

test for uterine inflammation or hyperplasia can be developed for samples collected non-invasively. This could be used in African Painted dogs in lieu of relying on uterine tissue biopsies or blood samples, which are much more invasive.

Thus far the project has collected > 61 uterine samples in formalin from 58 females and 17 samples in RNA preservative.



African Painted Dog (*Lycaon pictus*). Left: Gross image of pyometra. Top: Micrograph of pyometra Photo: RHSP database.

We want to thank the zoos that have contributed tissues, but particularly those that have sent tissues for genetic work as this is a prospective effort that requires planning to contribute.

This project is an example of the **Reproductive Health Surveillance Program's** general interest in reproductive pathology and the sustainability of ex-situ populations, in addition to pathology associated with contraception.

## Deslorelin assay in final stages of development and validation

Deslorelin is a contraceptive used to down regulate the ovaries and suppress them in order to avoid the side effects of long-term progestin contraceptives such as MGA. Deslorelin is the contraception of choice in many carnivore patients, especially felids, which have been shown to be more likely to develop mammary cancer, endometrial hyperplasia, and uterine cancer when treated with MGA for long periods. However, there have been cases where return to fertility post-deslorelin treatment takes longer than anticipated and this presents a challenge for population management. In order to find out whether these cases are associated with lingering hormones from the deslorelin implant, Michigan State University started to develop an assay for serum samples from animals treated with deslorelin. That assay has been developed and is in the final stages of validation. We are preparing a methodology paper for publication and soon we hope to be able to receive samples from zoos for analysis at the Michigan State University diagnostic laboratory.

## Cancer in cats

The **RHSP** is collaborating with the Exotic Species Cancer Research Alliance (**ESCRA**), to investigate the prevalence of cancer in felids. In a previous publication, an increased risk of neoplasia was documented in *Panthera* felids compared to *non-Panthera* felids (<https://doi.org/10.3390/ani10122376>). Following this publication, questions arose about whether contraceptives might differentially affect large vs small felids and whether contraceptives could affect non-



Ocelot (*Leopardus pardalis*). Photo: A. Moresco.



Tiger (*Panthera tigris*). Photo: A. Moresco.

reproductive organs. The RHSP archive will contribute valuable data to this project.

## RHSP publications and presentations 2020

McClusky B, Agnew D. Spermatogenesis in Mexican wolf testis of differing ages. MSU CVM Phi Zeta Day, East Lansing, MI (virtual). 2-23 October 2020.



Chimpanzee (*Pan troglodytes verus*). Photo: A. Moresco/ Tacugama Chimpanzee Sanctuary

Moresco et al. 2020. Reproductive health evaluation and contraceptive use in sanctuary chimpanzees (*Pan troglodytes verus*) in Sierra Leone. In: Proc. American Association Zoo Veterinarians; p. 85-86.

Moresco et al. 2020. Taxonomic distribution of neoplasia among non-domestic felid species under managed care. *Animals*. 10. <https://doi.org/10.3390/ani10122376>

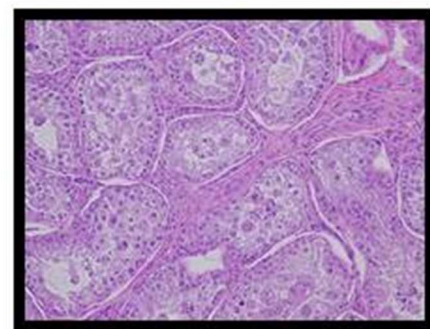
Nguyen et al. 2020 preprint. Integrins mediate placental extracellular vesicle trafficking to lung and liver in vivo. Pre-print bioRxiv.

<https://doi.org/10.1101/2020.09.22.309047>

Strachota et al. Theriogenology Question of the Month. *Journal of the American Veterinary Medical Association*. 2020; 257(9): 917-920.

<https://doi.org/10.2460/javma.257.9.917>

Sayles H, Agnew D. The clinical significance of hemorrhage and congestion in the uterus of Mexican wolves. MSU CVM Phi Zeta Day, East Lansing, MI (virtual). 2-23 October 2020



Mexican wolf (*Canis lupus baileyi*) Testicular degeneration micrograph. Photo: D. Agnew.

Woloszyk Z, Agnew D. Down under in the land down under: monotreme reproduction. MSU CVM Phi Zeta Day, East Lansing, MI (virtual). 2-23 October 2020.

Additional publications can be found at:

<https://www.researchgate.net/project/Reproductive-Health-Surveillance-Project>

## STATS IN A FLASH

- **ALMOST 30 YEARS OF DATA**
- **> 3,100 ARCHIVED CASES**
- **> 350 SPECIES**
- **190 ZOOS & AQUARIA PARTNERS**
- **16 UNIVERSITIES COLLABORATORS**
- **> 50 PUBLICATIONS AND PRESENTATIONS**
- **TRAINED NUMEROUS UNDERGRADUATE, VETERINARY, GRADUATE, AND POST-DOC STUDENTS AS WELL AS JUNIOR FACULTY.**
- **IDEAL FOR COMPARATIVE RESEARCH**
- **ARCHIVE IS AVAILABLE TO COLLEAGUES FOR COLLABORATIVE PROJECTS**