Reproductive Health Surveillance Program 2021 Report

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Chimpanzee (*Pan troglodytes*). Photo A. Moresco/ Tacugama Chimpanzee Sanctuary, Sierra Leone

IMPROVED SUSTAINABILITY THROUGH PATHOLOGY

ARCHIVE EST. 1992

RHSP celebrates 30 years of archiving and collaborating

Our 30th anniversary is a great time to recognize the founder of the program. Dr. Linda Munson was an exceptional visionary. While she was doing her residency, Dr. Munson started to collect reproductive organ samples and maintain an inventory of these samples along with histopathology findings and life histories of each animal. It is thanks to this archive and her analytical skills that we now know that long-term progestin contraception in felids can be associated with the development of diseases such as endometrial hyperplasia and mineralization and mammary cancer, while it does not appear to be linked to ovarian lesions. We know that African Painted Dogs are in a league of their own when it comes to uterine disease. Findings such as these are key to shaping the contraception recommendations and breeding management practices for felids, canids and small carnivores.

As new contraceptives are developed and used, more of this kind of research is needed to continue to provide the best care possible for the animals under the stewardship of zoos. Additionally, as the numbers of samples increase with time, re-analyzing the archive allows for a greater degree of resolution. A larger dataset will allow the RHSP to assess if there are differences in the effects of contraception by species.

The RHSP closely collaborates with and is supported by the Reproductive Management Center and the Association of Zoos and Aquariums. Previous supporters include the American Association of Zoo Veterinarians.

We also wish to thank all the individuals who have submitted samples in so that the RHSP can in turn, provide information to improve care of zoo collections. On to the next **30**!

Ocelot (*Leopardus pardalis*). Non-*panthera* felids may be less susceptible to cancer compared to Panthera felids. Photo: A. Moresco.

Do contraceptives affect small and large felids differently?

The RHSP is a partner of the Exotic Species Cancer Research Alliance (ESCRA), and together we will analyze the prevalence of cancer in felids. In a previous publication, an increased risk of neoplasia was documented in large (*Panthera*) felids compared to small (*non-Panthera*) felids. Following this publication, questions arose about whether contraceptives might differentially affect large vs small felids and whether contraceptives could affect non-reproductive organs. The RHSP archive will contribute valuable data to this project.

Comparative Reproduction: Cancer in apes

The Arizona Cancer Evolution (ACE) Center was looking for a large amount of data on primate reproductive cancer to perform a robust comparative study. So naturally, when they approached the Reproductive Health Surveillance Program (RHSP) to discuss collaboration, we were very excited. The project's vision is to include all primates, from lemurs to humans. For now, the **RHSP** and **ACE** are starting by looking at apes and humans. The Triangle Center for Evolutionary Medicine (TriCEM) awarded this project a pilot grant to cover the expenses of processing tissues, reading the histopathology, and of course, entering everything into the database.

So far, the project includes 95 gorillas, chimpanzees, orangutans and bonobos, siamangs, and gibbons. Siamangs and gibbons, sometimes called *lesser apes*, are frequently overlooked, and a lot less is known about them compared to the *great apes.*

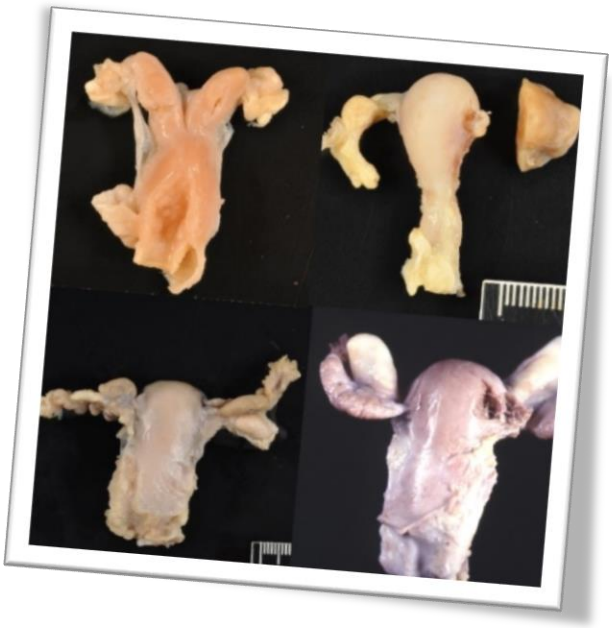
Why is this an important project?

The reproductive tracts of humans and apes share many characteristics in terms of anatomy and physiology. In zoos, reproduction in apes is often controlled using the same contraceptives used by women. This means that many diseases are similar and that the more we know about when, why, and how these diseases occur and progress in one species, the more we will know about the disease in other species. But comparative research means that we can also learn a lot from when, why, and how these diseases ***do not*** occur, and allows us to leverage the knowledge in each species to benefit the other.

This project represents one of the largest collaborative studies the **RHSP** has embarked on so far, and illustrates how human medicine can benefit from what we learn in zoo species and how advances in diagnostic tests and treatments developed for humans can help the health of zoo animals

Training the Next Generation

The next generation of zoo scientists is working in our laboratories! Besides the hundreds of veterinary and veterinary nursing students we reach in our "day jobs" as university faculty, we actively engage DVM, graduate and undergraduate students, residents, and interns in research and collaborations with the RHSP. Megan Crawford (pictured to the right) is working on a study evaluating African Painted Dog endometrium.



Panel illustrating the similarities and differences in primate reproductive anatomy. Clockwise: uterus of a Ringtail lemur, Tamarin, Orangutan, and Black & White Colobus. Photos: RHSP archive

Megan Crawford, Veterinary student working on the African Painted Dog Project

2021 selected publications

Crawford M. et al. 2021. Relationship between parity and reproductive disease in managed African Painted Dogs (*Lycaon pictus*). Proceedings of the National Veterinary Summer Scholars.

Landolfi, J.A et al. 2021. Reproductive tract neoplasia in adult female Asian elephants (*Elephas maximus*). https://doi.org/10.1177/0300985821103184 3

Moresco, A., et al. 2021. Hydrometra in Rock hyrax (Procavia capensis) under managed care. https://doi.org/10.1638/2020-0178

Moresco, A., et al. Reproductive One Health in Primates. https://doi.org/10.1002/ajp.23325

Moresco, A. et al. 2021. Diagnosis and treatment of endometriosis in a hooded capuchin (*Sapajus apella*). https://doi.org/10.1111/jmp.12513

Moresco, A. et al. 2021. Reproductive suppression of giraffe (*Giraffa camelopardalis*) under managed care using a GnRH immunological product. https://doi.org/10.1002/zoo.21652

A complete list of RHSP publications can be found here

RHSP STATS IN A FLASH

- **30** YEARS OF DATA
- **> 3,100** ARCHIVED REPRO TRACTS
- **> 350** SPECIES
- **190** ZOO & AQUARIUM PARTNERS
- **16** UNIVERSITY COLLABORATORS
- **> 90** PUBLICATIONS
- **INCLUDING 33** STUDENT PUBLICATIONS
- IDEAL FOR **COMPARATIVE** RESEARCH
- ARCHIVE IS **AVAILABLE** TO COLLEAGUES FOR COLLABORATIVE PROJECTS