

Useful references

The following are a selection of interesting publications concerning the use of contraception in population management, as well as information on the reproductive physiologies of certain species. This is by no means a comprehensive list, and if you would like more information please contact us at contraception@chesterzoo.org.

Wildlife contraception:

- Asa, C. S., & Porton, I. J. (2005). *Wildlife Contraception: Issues, Methods, and Applications*. JHU Press.

Contraception and population management:

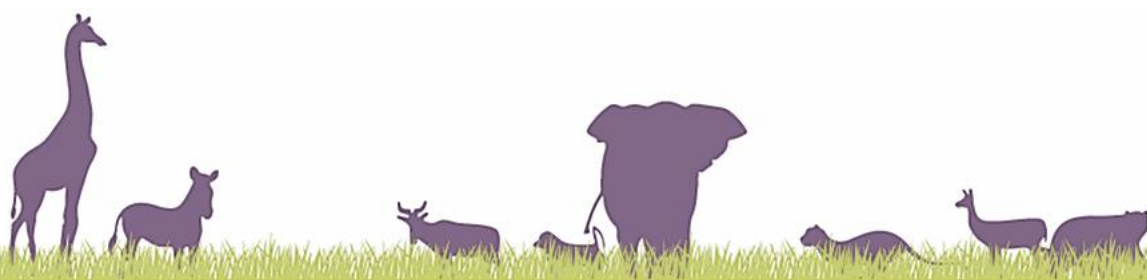
- Cowan D., Massei G. 2009. Modelling the population consequences of fertility control: how much fertility control is enough? 3rd International Fertility Control for Wildlife Management Workshop, 25th - 27th February 2009, Lincoln, New Zealand.

General reproductive physiology:

- Hayssen, V., van Tienhoven, A. & van Tienhoven, A. (1993) *Asdell's Patterns of Mammalian Reproduction: A Compendium of Species-Specific Data*. Cornell University Press, Ithaca, New York.

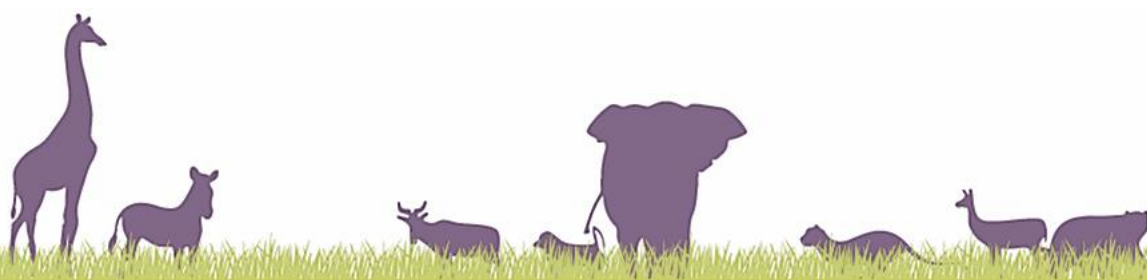
Ungulates:

- Asher, G.W. (2011) Reproductive cycles of deer. *Animal Reproduction Science*, 124(304), 170-175.
- Bercovitch, F.B., Bashaw, M.J. & del Castillo, S.M. (2006) Sociosexual behaviours, male mating tactics, and the reproductive cycle of giraffe *Giraffa camelopardalis*. *Hormones and Behaviour*, 50(2): 314-321.
- C.J. Joonè, H.J. Bertschinger, S.K. Gupta, G.T. Fosgate, A.P. Arukha, V. Minhas, E. Dieterman, M.L. Schulman. (2015) Ovarian function and pregnancy outcome in pony mares following immunocontraception with native and recombinant porcine zona pellucida vaccines. *Equine Veterinary Journal* (in press).
- De Nys, H.M., Bertschinger H.J., Turkstram J.A., Colendrander, B., Palme, R. & Human, A.M. (2010) Vaccination against GnRH may suppress aggressive behaviour and musth in African



elephant (*Loxodonta africana*) bulls – a pilot study. *Journal of the South African Veterinary Association* 81: 8-15.

- Delsink, A.K., Kirkpatrick, J., van Altena, J.J., Bertschinger, H.J., Ferreira, S.M. & Slotow, R. (2013) Lack of spatial and behavioral responses to immunocontraception application in African elephants (*Loxodonta africana*). *Journal of Zoo and Wildlife Medicine* 44(4S): S52–S74.
- Fayrer-Hosken, R.A., Grobler, D., Van Altena, J.J., Berschinger, H.J. & Kirkpatrick, J.F. (2000) Immunocontraception of African elephants. *Nature*, 407:149.
- Hildebrandt, T.B., Lueders, I., Hermes, R., Goeritz, F. & Saragusty, J. (2011) Reproductive cycle of the elephant. *Animal Reproduction Science*, 124: 176-183.
- Kirkpatrick, J., Delsink, A.K., van Altena, J.J. & Bertschinger, H.J. (2012) Fertility control and African elephants: A new paradigm for management. In: *Ecology, behaviour and conservation*. Eds M. Aranovich and O. Dufresne. Nova Publishers, Inc., New York: pp77-96.
- Lueders, I., Niemuller, C., Gray, C., Rich, P. & Hildebrandt, T.B. (2010) Luteogenesis during the estrous cycle in Asian elephants (*Elephas maximus*). *Reproduction* 140: 777-786.
- Lueders, I., Hildebrandt, T.B., Pootoolal, J., Rich, P., Gray, C. & Niemuller, C. (2009) Ovarian ultrasonography correlated with fecal progesterone and estradiol during the estrous cycle and early pregnancy in giraffes (*Giraffa camelopardalis rothschildi*). *Biology of Reproduction* 81: 989-995.
- Massei G., Cowan D.P., Coats J., Bellamy F., Quay R., Brash M., Miller L.A. 2012. Long-term effects of immunocontraception on wild boar fertility, physiology and behaviour. *Wildlife Research* 39:378-385.
- Massei G., Cowan P., and Eckery D. E. Novel Management Methods: Immunocontraception and Other Fertility Control Tools. 2014. In: *Behaviour and Management of European Ungulates*. Putman R. & Apollonio M. Eds, Whittles Publishing, Dunbeath, UK, 209-235 pp.
- Massei, G., Koon K.K., Benton S., Brown R., Gomm M., Orahod D. S., Pietravallo S., Eckery D.E. 2015. Immunocontraception for managing feral cattle in Hong Kong. *PloS one* 10.4 : e0121598.
- Quay R. J., Massei G., Lambert M.S., Coats J., Miller L.A., Cowan D.P. (2014). Effects of a GnRH vaccine on the movement and activity of free-living wild boar (*Sus scrofa*). *Wildlife Research* 41: 185-193.
- Roth, T.L. (2006) A review of the reproductive physiology of rhinoceros species in captivity. *International Zoo Yearbook*, 40(1): 130-143.
- Skidmore, J.A. (2011) Reproductive physiology in female Old World Camelids. *Animal Reproduction Science*, 123(3-4): 148-154.
- Smith, C.L., Peter, A.T. & Pugh, D.G. (1994) Reproduction in llamas and alpacas: a review. *Theriogenology*, 41:573-592.



- Walzer, C., Petit, T., Stalder, G.L., Horowitz, I., Saragusty, J. & Hermes, R. (2014) Surgical castration of the male common hippopotamus (*Hippopotamus amphibius*). *Theriogenology*, 81:514-518.

Carnivora:

- Bertshinger, H.J. & Human, A. (2002) Contraception of lions and cheetahs using the GnRH analogue deslorelin *Reproduction in Domestic Animals* 37: 226
- Bertshinger, H.J., Asa, C.S., Calle, P.P., Long, J.A., Bauman, K., Dematte, K, Jöchle, W. & Trigg, T.E. (2001) Control of reproduction and sex related behaviour in exotic carnivores with the GnRH analogue deslorelin: preliminary observations. *Journal of Reproduction and Fertility, Supplement* 57: 275-283.
- Jewgenow, K., Songsasen, N. (2014): Reproduction and advances in reproductive studies in carnivores. *Advances in Experimental Medicine and Biology*. 753:205-39.
- Newell-Fugate, A.E., Nöthling, J.O. & Berschinger, H.J. (2012) Seasonal changes in steroid hormone profiles, body weight, semen quality, and the reproductive tract in captive African wild dogs (*Lycaon pictus*) in South Africa. *General and Comparative Endocrinology* 178: 272-281.
- Van den Berghe, F., Paris, D.B.B.P., Van Soom, A., Rijsselaere, T., Van der Weyded, L., Bertschinger, H.J. & Paris, M.C.J. (2012) Reproduction in the endangered African wild dog: Basic physiology, reproductive suppression and possible benefits of artificial insemination. *Animal Reproduction Science*, 133: 1-9.

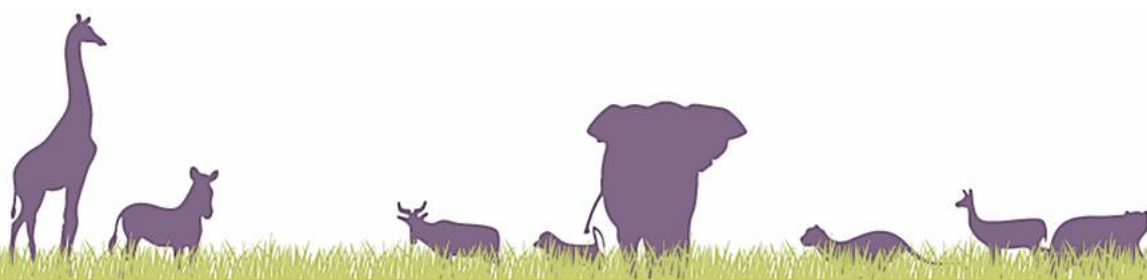
Primates:

- Saltzman, W., Tardif, S.D. & Rutherford, J.N. (2010) Hormones and Reproductive cycles in Primates IN *Hormones and Reproduction of Vertebrates* Vol. 5, eds. Norris, D.O. & Lopez, K.H., Elsevier, London.

Reptiles:

- Aldridge, R.D. & Sever, D.M. (2011) Environmental and neuroendocrine control of reproduction in snakes IN *Reproductive Biology and Phylogeny of Snakes*. Enfield, NHL Science Publishers.

Marine mammals:



- Pomeroy, P. (2011) Reproductive cycles of marine mammals. *Animal Reproduction Science*, 124(3-4): 184-193.

Marsupials:

- Renfree, M.B. & Shaw, G. (1996) Reproduction of a marsupial: From uterus to pouch. *Animal Reproduction Science*, 42:393-403.

Aves:

- Lambert M., Massei G., Yoder C. and Cowan D. 2010. Towards non-lethal management of a non-native avian species: An Evaluation of Diazacon as a Potential Contraceptive in Non-Native Rose-Ringed Parakeets *Journal of Wildlife Management* 74(3):573–581.

