

## Chester's growing crash!

Born to mum Zuri in June 2013, Embu is the fifth black rhino born at Chester Zoo since 2008. Our 10 Eastern black rhinoceros are listed on the European Endangered Species Breeding Programme, which means we work closely with other zoos to breed more of this valuable species. You'll find our 10 living in small groups. We might place a breeding pair together, or a mother with her young. You might also see a couple of adult females together sometimes with a male.

**Dr Andrea Fidgett | Zoo Nutritionist, Chester Zoo** **Dr Sue Walker | Endocrinologist, Chester Zoo**

**D**r Mark Pilgrim, Chester Zoo's Director General, co-ordinates the European breeding programme for the Eastern black rhino, *D. b. michaeli*, of which there are 63 held in zoos in Europe (10% of the total wild population of this sub-species) acting as an insurance population for their wild relatives.

He said, 'These new arrivals – Asani, Bashira, Chanua, Dakima and Embu – are down to real team work and years of planning, excellent husbandry and science in

for rhinos now includes fresh browse, which supplements their nutritional requirements and also satisfies their behavioural needs.

In 2007, Chester Zoo established an on-site endocrinology (or hormone assessment) service. Tracking hormones non-invasively in material such as dung gives an insight into what is going on inside these animals.

It can help determine:

- whether an animal is a seasonal breeder
- whether it has reached puberty
- whether it is cycling on a regular basis or not
- when the optimum time to introduce a male to a female is.

It can also help us diagnose pregnancies and estimate birth dates.

Dr Sue Walker, endocrinologist at Chester Zoo, said: 'It was sometimes difficult to see from the rhino behaviour when a female was receptive to a male, so introductions could be difficult. Based on hormones in dung samples, however, we could predict the best time for introductions to increase the chances of successful mating.'

This work grew into doctoral research with Dr Susanne Shultz from The University of Manchester and Katie Edwards, PhD student from the University of Liverpool's Institute of Integrative Biology. The aim was to determine the sustainability of the European captive population of Eastern black rhinoceros, and investigate factors that may influence reproduction in this species. The study was conducted on 90% of the European population and several intrinsic differences in reproductive hormones in both males and females were identified including a link between nutrition (body weight) and reproduction; females that had never had young had higher body condition scores, and were less likely to exhibit regular signs of oestrus.

Dr Walker added: 'It is essential that we achieve successful breeding from as many of the rhinos in zoos as possible.

To do this effectively, we need to look at the population of rhinos in zoos across the whole of Europe, not just the ones here in Chester. A better understanding of the causes of these differences would be beneficial to maximise growth rates and overall population performance of this valuable *ex situ* population.'

### Chester Zoo's support for *in situ* rhino conservation programmes

For over a decade, Chester Zoo has supported Eastern black rhino work in Kenya and Tanzania, and for some 6–7 years, it has also supported Greater one-horned and Sumatran rhino conservation work through Save the Rhino. Thank you!



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Above: Chester Zoo has established an on-site endocrinology service to improve the breeding success of its Eastern black rhinos

Below and right: mother Zuri with new calf Embu

action. Be it our facilities, the husbandry techniques of our keepers, nutrition, endocrinology or veterinary care, it's been a great team effort over the past decade.'

Dr Andrea Fidgett, zoo nutritionist at Chester Zoo, works closely with the Animal Supplies Department, which sources, manages and distributes food to the keepers. Each animal's diet is reviewed regularly to ensure nutritional support for all life stages. Specific nutrients are required, not necessary specific foods – although the physical form of food, dietary diversity and presentation may be important in promoting normal feeding behaviour and physiology. Keepers are closely involved in any suggested adjustments as they are usually the first to record any health changes. Since 2007, following a thorough evaluation, the daily diet

