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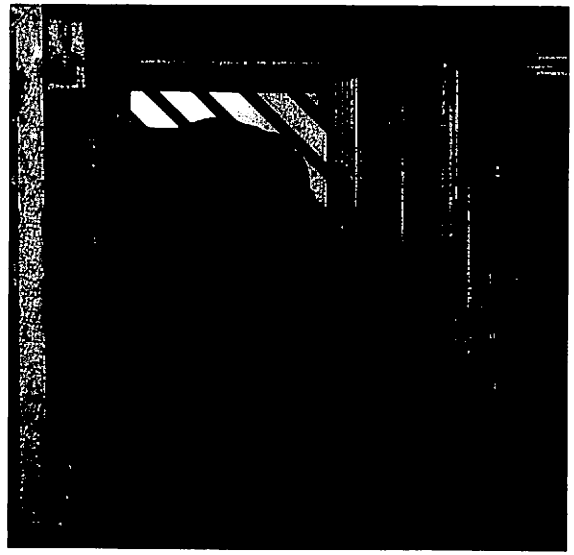
The Benefits of Training Southern White Rhinoceros (Ceratotherium simum simum) at Colchester Zoo

by Sarah Forsyth, Jo Row & Jen Cook

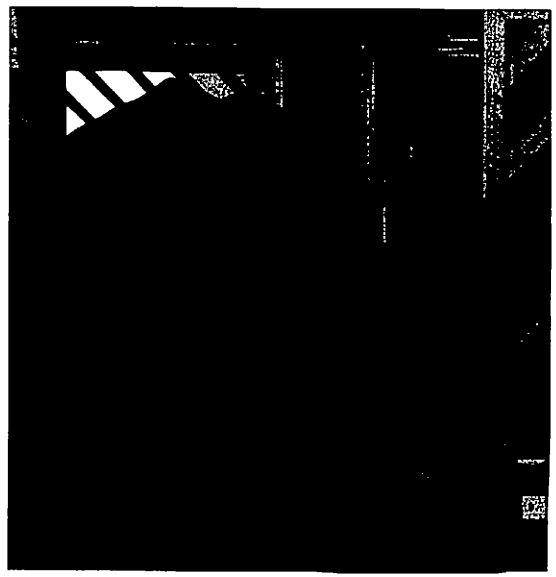
Colchester Zoo currently houses five White rhino in a mixed species exhibit. The herd is made up of an adult male, two adult females and a calf and one very old female. Target training was introduced to the rhino herd over four years ago in the hope it would enable the keepers to manage them more efficiently. The rhinos surprisingly took to the target training almost immediately and since then it has been used as a basis for developing many other types of training from foot care to voluntary blood sampling from their ears.

Some of the Colchester Rhinos

When John Hutchinson from the Royal Veterinary College contacted us asking if he could study our rhinos with some clinical gait analysis/biomechanics techniques they had been developing, we felt confident that with all the training we already had in place we would be able to accommodate the research. We were also keen to get involved in studies that had the potential to assist in the long term care and management of rhinos in captivity, particularly as we had an old female ourselves with foot care issues.



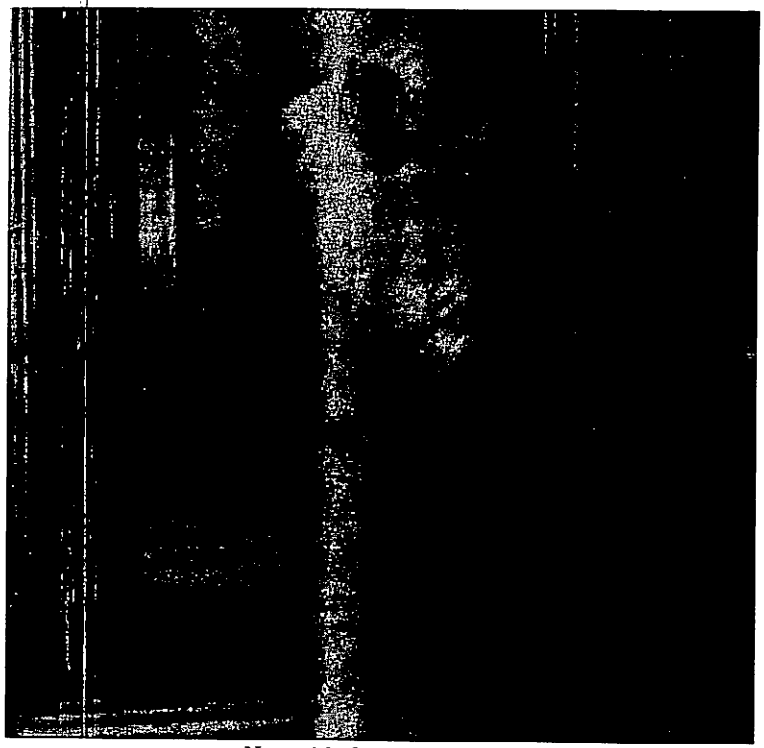
Getting the Rhino accustomed to the race



The research involved the rhinos walking over a thin pad on flat, level ground repeatedly whilst the royal veterinary college team videotaped them and the foot scan pad measured the pressures under different areas of their feet.

Initially we just went straight ahead and gave the process a go but after the first session it was clear that we needed to work with the rhinos for a period of time first before the actual data collection started. John left us some of the equipment they would need to use and a date for the research was set a few months ahead.

It was decided that the race area within our indoor rhino facilities was the most suitable area to carry out the work. Initially each individual was targeted through the race repeatedly to establish the behaviour and get the rhinos familiar with the process. Timing was crucial as the animal's attention and willingness to train varied greatly throughout the day.



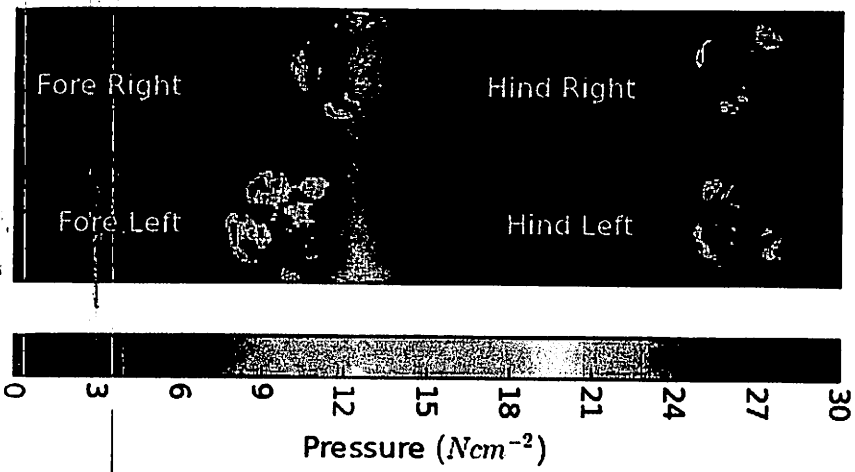
Now with the pressure mat

Once familiarity with the procedure was evident in each individual rhino the next step was to start introducing some of the equipment John had left behind. A long black rubber mat was laid through the race, the function of which was to disguise the expensive sensor pad from the rhinos and act as a guide for foot placement. Initially the rhinos were very wary of this new item but both the bond between keeper and rhino and the familiarity of the basic target training technique convinced them to walk over the mat. This was the greatest obstacle we had to overcome to continue with the research.

The next challenge was to maintain the rhinos attention long enough to repeatedly walk backwards and forwards over the mat, as the data collection required up to 30 good whole footprints from each individual on the sensor pad. Once we managed this, all that remained was the simple task of introducing the researchers themselves and their extra equipment to the rhinos.

Data collection had to take place over a number of sessions in order to collect enough appropriate results, as it proved to be tricky to get full separate foot prints due to the narrow stance of the rhinos. Individual rhinos performed differently on different sessions but overall they were incredibly well behaved and continued to walk back and forth across the pad time and time again. As well as being involved in important research the rhinos also appeared to enjoy the process as training time has always been a big part of their day and a great form of enrichment.

The data the Royal Veterinary College team managed to collect has shown that Rhinos put the most pressure on the inside of their feet, rather than the outside like Elephants. Although it was a very time consuming and intensive process the results of this study can now allow us to better understand how to manage rhino feet in captivity and what we can and can't do to ensure their best possible welfare now and in the future.



This image shows where the rhinos put the most weight on their feet. From J. Hutchinson

Having identified this difference between elephants and rhinos, the next step is to see if there are any anatomical peculiarities in the locomotion-mechanics which might account for this.

Professor Hutchinson's team is funded by the UK government (BBSRC) to study this subject in a wide array of quadrupedal mammals, from livestock to elephants, so we expect to have new answers to these questions soon. He comments, "To learn about the normal and abnormal musculoskeletal function of exotic species, researchers need to have access to them, and zoos play a critical role in this need. But to have trained animals accessible opens exciting vistas of potential for really delving deeper into how animals work and how certain conditions might promote or prevent disease. We were very lucky to have such cooperative rhinos and zoo staff; without them there would still be some major question marks surrounding rhinoceros foot function and health."

Our rhino training continues to progress and develop and we have used what we have learnt from working with this study to help with other clinical veterinary procedures. Using targets, our rhinos can now be moved into an accessible position within the race and using the same technique of getting them familiar with equipment involved in the process, we desensitized them to the smell and spray of surgical spirit so that we can now take regular voluntary blood samples from their ears to aid in the monitoring of their health.

Our work with the Royal Veterinary College doesn't end here as our Giraffe are now going through the same training process and have already been walking across the rubber mat. To be able to have the same information on the weight distribution in the giraffe's hoof will be another huge step in ensuring we can provide the best possible care for these animals in captivity.

Sarah Forsyth – Curator, Jo Row – Head of Section, Jen Cook – Senior Keeper.
Email: ***SarahForsyth@colchester-zoo.co.uk***

Professor John R. Hutchinson collaborated on this article in an advisory capacity.

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LETTERS TO THE EDITOR

Dear Sir,

I was disappointed by the negativity of John Tuson's review (International Zoo News Vol.58/5 September/October 2011) of my book, *What Zoos Can Do: The Leading Zoological Gardens of Europe*. This contrasts with favourable reviews in WAZA News (03/11) and other zoo publications and to the positive reception given to the English and German versions of the book by the majority of Zoo Directors.

Constructive criticism is always welcome and I concede absolutely the irksome lack of editorial tightness to which he refers and which needs to be remedied in future reprints or editions.

What appears unnecessarily negative is a failure to acknowledge the book's ground-breaking and positive aspects: collating and presenting this information represents a significant addition to current literature on European Zoos: it has been possible only through the significant help and time commitment of the Zoo Directors and Zoo Professionals in these European Zoos.

I wish to address some of the specific points made in the review:

My aims were stated in Chapter 1 as well as my conviction that, "Zoological Gardens matter greatly". As the title suggests, I have tried to bring to a broader and not necessarily academic readership an awareness of the multi-faceted role of zoos today particularly their education, conservation and commercial aspects as well as the obvious one of a major visitor attraction.

In increasingly difficult economic times, I believe it helpful to raise the profile of just what can be offered by a leading European Zoo and just how much is being invested Europe wide in animal welfare, conservation, education and visitor experience. The reviewer says the book is "too diffuse in its aspirations": surely the very point is that zoos have to be extraordinarily wide-ranging in their responsibilities and ambitions, appealing to a very wide audience – the public, media, politicians and sponsors.

Tuson uses the phrase, "the eighty zoos that Sheridan has decreed to be Europe's best": this hardly reflects my basic criteria of Europe's leading zoological gardens clearly stated in Chapter 2 in terms of animal collection, visitor numbers, employment and location.

The reference Tuson makes to the year in which statistics such as visitor numbers refer is unfair given my statement in Chapter 11 concerning my definition of visitor numbers over the past five years.

Tuson' statement, "league tables ....can have no place in the world of zoos" is at variance with many who consider that ranking lists have merit and provide focus. Just as in the spheres of education and health there is a perfectly good case for comparing and ranking zoos. *What Zoos Can Do* contains four different ranking lists in Chapter 13 reflecting different perspectives arising from analysis of 26 factors. He expresses sympathy for Ljubljana Zoo "at the bottom of