Chimpanzee enclosure redesign translates wild chimpanzee research to zoo settings

May 12 2016, by Kate Chapple

University of Birmingham scientists have developed a new way to redesign chimpanzee enclosures to translate research on wild chimpanzees into zoos to help preserve the behavioural and physiological adaptations that make the species unique.

The researchers, working with Twycross Zoo and the British and Irish

Association of Zoos and Aquariums (BIAZA), have devised a new Enclosure Design Tool to keep the chimpanzees physically and mentally active and socially interactive, in a bid to ensure their behaviour emulates chimpanzee behaviour in the wild. This will help show how wild chimps really behave, enhance their welfare and improve their chance of survival in the wild, should reintroduction of future generations ever be required.

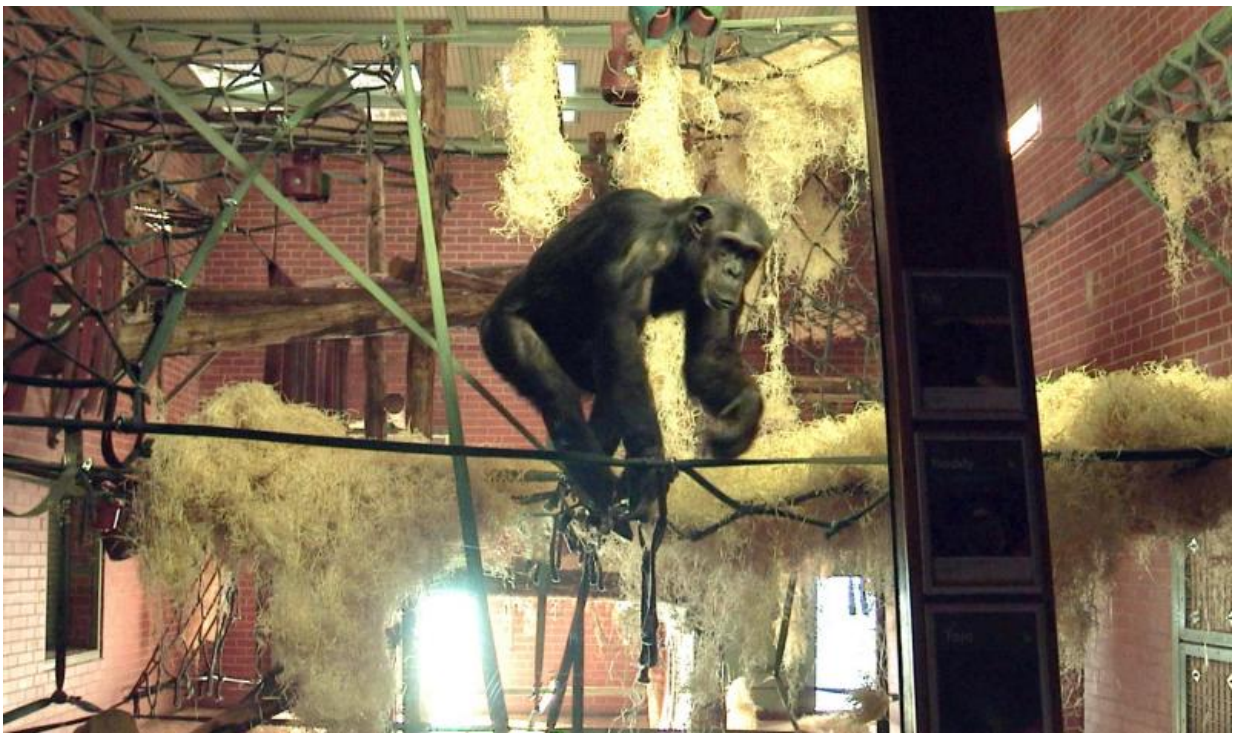
Chimps' behaviour in captivity can be very different to the behaviour they exhibit in the wild where their environment can be unpredictable due to its complexity, for example, threat from predators or changing habitat due to forest growth and decay. In addition, in zoos, chimps can also be more sedentary, and, therefore much like humans, prone to obesity and other illnesses.

The Birmingham-led team have created the enclosure design tool to give UK zoos easy access to research data on wild chimpanzees, and a web-based programme that uses this data to guide introduction of new features to chimp enclosures that emulate the mechanical behaviour of the forest canopy and the physical and cognitive challenges this poses to wild chimpanzees.

For example, the team has introduced a network of interconnected straps and nets at Twycross Zoo, from the top to the bottom of the chimp enclosure, which contains the chimps' bedding material and from which foraging pockets hang, containing their food. The movement of the network of these supports changes depending on how many of the chimps are using them and what they are doing, making their habitat unpredictable and more challenging to move around. The chimps have to arm-hang from multiple flexible straps and duck, dive and bend in different ways, using movements which will build a more natural, wild-type musculo-skeletal system.

These enclosure changes are designed to mimic the wild environment encouraging the animals to become more 'arboreal' and move around using more natural behaviours.

Dr Susannah Thorpe, from the University of Birmingham's School of Biosciences, and lead investigator on the study, said: 'The chimps' habitat in the wild is mechanically very challenging and different every day, so zoos need to be able to recreate a similar environment in captivity. But zoos rarely have ready access to research data on wild chimpanzee behaviour and the way wild chimps interact with their habitat. We have designed this tool to give zoos the ability to compare the behaviour of their animals to the latest research on wild chimps, and to use that to create physically and cognitively stimulating enclosures that mimic, as closely as possible, the mechanics of forest habitats.'



Dr Thorpe continued: 'Great Apes are predicted to be extinct in the wild in around 20 years, so it is extremely important that we go beyond simply 'preserving' the animal for its genetic material to 'conserving the whole organism'- the behavioural traits and physical adaptations that are a vital part of what determines an animal's ability to survive in their natural environment. Our project is about ensuring that future generations of chimps grow up in a complex and dynamic environment that is going to bring out these features to enhance their welfare, show the public how wild chimps really behave and improve their chance of survival in the wild, should it ever be required.'

The researchers' new enclosure design tool will be available to UK zoos through BIAZA. Dr. Kirsten Pullen, CEO of the British and Irish Association of Zoos and Aquariums said: 'We encourage all our zoos to develop their welfare strategies to continuously promote the natural behaviours of the species in their care. This tool is a significant development in the range of techniques available to keep our zoos at the forefront of animal welfare.'

Dr Jackie Chappell, from the University of Birmingham's School of Biosciences, who led the project to develop the new tool, said: 'The enclosure design tool is a web-based tool which provides all the information zoos need to collect and upload behavioural information on their animals. The tool then analyses this information automatically, providing bespoke, evidence-based advice about enclosure modification based on key differences between captive and wild behaviour.'

Dr Charlotte Macdonald, Director of Life Sciences at Twycross Zoo said: 'Twycross Zoo hosts a large number of research projects and facilitates scientific work with the aim to improve the welfare of the animals in our care. We are proud to be at the forefront of great ape conservation and this collaboration with the University of Birmingham provides an opportunity for making sure our enclosures enable our apes to behave as they would in the wild. Having implemented the recommendations based on this research into the enclosure design, we have already seen a positive change in our chimpanzees' behaviour and locomotion to resemble wild chimps.'

Provided by University of Birmingham