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MISCELLANY

Zoos can learn from *in situ* black rhino translocations

Black rhinos are surly individuals, extremely aggressive, unpredictable, and difficult to manage. And these solitary animals that live and feed in the dense bush of southern Africa aren't the easiest species to track, much less study, particularly since populations have dwindled dramatically in the last three decades, primarily due to poaching. Their keen sense of smell and early warning system – oxpeckers perch on their backs and alert them to danger – makes gathering scientific data quite an experience. According to researchers studying black rhinos in the field, there's nothing quite like being charged or unexpectedly chased up a tree by a rhino.

Conservation management of the black rhino in southern Africa focuses on repopulating areas that contain suitable habitat and expanding the population. But reports of unsuccessful translocations of black rhinos – from more populated areas to less populated, protected reserves – triggered interest from researchers at San Diego Zoo's Center for Conservation and Research for Endangered Species (CRES). Scientists wanted to figure out how to better manage black rhino populations and increase survivorship and breeding at the new locations. Since 2001, a multi-organizational team of scientists, universities, and in-country partners have tracked more than 100 rhinos, studied their behavior and biology, and conducted field experiments to further understand what is necessary for black rhinos to thrive.

One of the reasons for low survivorship at the new reserves is that the rhinos tended to kill each other. Rhinos were transported thousands of miles and released into unfamiliar territories with other black rhinos they didn't know. This lack of familiarity on the part of both the resident and the relocated rhinos triggered aggression. In an attempt to make the rhinos more familiar with one another before release, researchers used 'scent broadcasting'. They set up a dozen virtual scent territories in suitable habitats, distributing piles of dung just as a rhino would naturally. Then they released a rhino where its dung was scattered. Interestingly, the released rhinos often settled into a territory adjacent to the dung of other rhinos, not in the staged territory of their own dung. 'We thought we could get them to settle where their own dung is, but it almost seemed to give them confidence to go further,' says Ron Swaisgood, division head of Applied Animal Ecology at CRES and co-principal investigator of the project.

Scientists found that the theory of 'conspecific attraction' – that animals are more likely to take up residence in an area where others of their species live – proved true. It enabled rhinos to establish themselves more quickly and reduced fighting among the resident and translocated populations.

Another issue scientists thought might contribute to low success rates is reserve size. Initial translocations put rhinos in reserves with a range of different areas. After looking at data on survivorship and interaction in the smaller reserves, scientists found that the smaller size caused rhinos to encounter one another more frequently, leading to fights and tests of reserve boundaries. As a solitary species, black rhinos like their space, and having a smaller reserve makes cohabitation too close for comfort.

Further examination of the reserve sizes and numbers of individuals showed a critical threshold of 18,000 hectares. At this reserve size or larger, rhinos rarely associated with one another and were inclined to demonstrate typical behaviors, test the boundaries less often, and exhibit less aggression. As a result, populations on larger reserves had higher survival rates.

The intense study of black rhinos through translocation has enabled scientists to gather extensive information on the species, such as stress hormone levels. 'Knowing what is normal, abnormal, and how species differ in response to stress can have important implications for AZA institutions, such as a better understanding of how to integrate captive and wild populations,' says Wayne Linklater, conservation biologist, Victoria University of Wellington, and lead principal investigator of the project. 'Black rhinos in North American institutions have a relatively poor breeding history. I think some of our insights are going to help with that.' While the fieldwork is completed, scientists are able to take a closer look at the data and further refine management plans to help recover the species. One question they are exploring is why black rhinos do not quickly recolonize empty habitat when individuals are translocated. Another issue they're pursuing is an overabundance of males born after translocation. This creates a management issue, as greater numbers of females are essential to species recovery.

Field programs allow zoos to be proactive in conservation in developing countries that may not have the resources for research. 'Research should be integrated with what we do in the zoo, but we should also do conservation for conservation's sake in the field,' says Swaisgood. 'In the end, we don't want to have a species extinct in the wild so we can have them for our viewing pleasure in the zoo.'

Ashley Bradley in *Connect* (Association of Zoos and Aquariums), February 2008

Doubt cast on a common field survey technique

A collaborative project between four scientific organizations in three countries has cast doubt on the accepted method of surveying elusive antelope species in the wild. Experts from the Whitley Wildlife Conservation Trust (WWCT), the University of Exeter, the University of Stellenbosch in South Africa and the Tanzanian programme of the Wildlife Conservation Society have shown that the identification of antelope dung in the field is not accurate enough to give statistically valid data. This is the first time the accuracy of dung identification has been tested in East Africa. The findings, to be published in a forthcoming issue of *Conservation Genetics*, are a setback for researchers and conservationists trying to monitor these rare species.

Researchers studying animals rarely seen in the wild often count dung samples to infer the abundance of individuals. Dung is easier to find than elusive antelopes such as Abbott's duiker. The WWCT, based at Paignton Zoo, U.K., funds research work into this endangered duiker in the Udzungwa Mountains in Tanzania and its even rarer relative, Aders' duiker, in coastal Kenya.

'Scientists often survey duiker by counting dung, assuming they know which sort of animal the dung came from,' explains Dr Amy Plowman, Paignton's Head of Field Conservation and Research. 'We checked our identification skills – and those of a local expert – against DNA from the same samples. At best we got one in four wrong. This degree of inaccuracy would bias the results of such a survey.'

The work forms part of Andy Bowkett's Ph.D. looking into factors affecting duiker population structure, being undertaken at the University of Exeter. Andy travelled to South Africa to work with experts in African mammal evolution, learn molecular biology and use laboratory facilities at the University of Stellenbosch. 'I was sequencing part of the mitochondrial control region from faecal DNA. Field identification was found to be correct in