SMELLS LIKE HOME: TRANSLOCATIONS OF BLACK RHINOS

By Ashley Bradley

Black rhinos *Diceros bicornis* 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 the San Diego Zoo's center for the 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.

THE SMELL TEST

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. They released a rhino where its dung was scattered. Interestingly, the released rhinos often settled into a territory adjacent to the dung of other rhino, 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, Ph.D., division head of Applied Animal Ecology at CRES and co-principal investigator of the project.

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

TRY IT OUT FOR SIZE

Another issue scientists thought might contribute to low success rates is reserve size. Initial translocations put rhinos in range of reserves, some smaller and some larger than 18,000 hectares. 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, 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 CHARGE FOR RHINOS

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, PhD, 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're 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 zoological institutions 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."

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