

Conservation

Huge project to release 2000 white rhinos across Africa

Ryan Truscott

A CONSERVATION group says it will rewild 2000 mostly captive-bred southern white rhinos (*Ceratotherium simum simum*), representing about 15 per cent of the total population of this species.

The rhinos were raised on an 8500-hectare ranch in South Africa owned by John Hume, a businessman who trimmed the horns off his live animals in anticipation of the international trade in rhino horn being legalised. It wasn't, and Hume, who hoped to sell the horns and use the income to fund conservation of the species, had to put his farm up for sale.

African Parks (AP), a conservation group that co-manages protected areas in a dozen African countries, has acquired Hume's rhino project, seen by some as one of the most successful breeding schemes for a threatened species.

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AP says rehoming so many rhinos will represent "one of the largest continent-wide rewilding endeavours to occur for any species". Its CEO, Peter Fearnhead, says that once rewilded, the animals will "contribute to ecosystems by providing nutrient cycling, storing carbon and increasing tourism revenue for local people".

The group's intervention is "probably the best outcome", says Hayley Clements at Stellenbosch University in South Africa. "Hopefully they can progressively rewild those animals and do so into parks that are well managed



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so that they don't end up just getting poached."

Private owners like Hume play a critical role in protecting and expanding the southern white rhino population, which came close to extinction less than a century ago. In 2021, South Africa had 12,968 white rhinos, more than 80 per cent of the continent's total; just under 7000 of them were on private land. But poaching, which has led to steep declines of both white and black rhino (*Diceros bicornis*) in former strongholds like Kruger National Park, has made protecting them more expensive.

"As poaching has increased, the cost of conserving those rhinos has really skyrocketed to the extent that now rhinos in many cases become a liability, more than a benefit," says Clements.

Some question whether rewilding is the right term to use for Hume's animals. "The Hume rhinos contain a mix of wild-caught and captive-born

Some of the dehorned southern white rhinos set to be rewilded

animals, and a small proportion of captive-born animals of captive-born parents," says Dave Balfour at Nelson Mandela University in South Africa.

Depending on how they are released, the captive-born animals could learn from the wild-caught ones, he says. "Most people that I have spoken to, and myself, seem to think that they will generally do fine if they are released into appropriate habitat and with adequate available water of reasonable quality," he adds.

Fearnhead anticipates moving 300 animals per year to parks across Africa where there is suitable protection and sufficient grazing. "The overall vision is to establish a number of strategic populations across the continent, including establishing new founder populations or supplementing existing populations," he says. ■



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Technology

Electrified mist could help capture carbon from power plants

Karmela Padavic-Callaghan

CARBON capture systems could become less expensive and more compact by using a mist of electrically charged droplets.

Simon Rufer at the Massachusetts Institute of Technology and his colleagues envision a carbon capture system in which flue gas from a factory enters a container filled with a mist of microscopic droplets of potassium hydroxide. The carbon dioxide in the gas reacts with these droplets to form droplets of water and potassium carbonate. These move to another part of the device with a high electric voltage, so they become charged. The charged droplets are then attracted to a collector electrode, from which they can be processed back into potassium hydroxide and reused.

Current carbon capture systems typically involve passing flue gas through towers up to 40 metres tall and 20 metres wide. The towers are filled with layers of metal mesh that are soaked with liquids that react with CO₂. In a presentation at the recent American Chemical Society fall meeting in San Francisco, Rufer said that based on the prototype he and his colleagues tested, they estimate that their design could be 95 per cent efficient at capturing CO₂, while measuring less than 4 metres long. This is because the surface area of the droplets in even a small volume of mist is vast, providing a greater area for reactions than solid meshes do.

Rufer said the approach would reduce the costs of adding carbon capture to power plants by about 2.6 times compared with current technology.

"For a typical plant, you are looking at something that's going to cost three-quarters of a billion dollars, so anything that you can do to bring the cost down is going to help," says David Heldebrandt at Pacific Northwest National Laboratory in Washington state. ■