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Spatial population modelling of southern white rhinoceros, Ceratotherium simum simum, in Kruger National Park

The conservation status of the southern white rhino (Ceratotherium simum simum) is currently classified as “near threatened”. Ongoing poaching for their horns, however, may degrade southern white rhino populations in future. For instance, population numbers in the Kruger National Park (Kruger) declined significantly from 8,968 (95% CI: 8,394-9,564) individuals in 2013 to 2,607 (95% CI: 2,475–2,752) by 2020. Poaching has driven the decline, although the severe drought of 2015/2016 also influenced this trend. The combined consequences of increased death rates and decreased birth rates have led to the decline in white rhino numbers in Kruger. Poaching pressure creates “ecological traps” within the range of white rhinos, i.e. areas that white rhinos preferentially select, but which also harbour increased risks of mortality. Park anti-poaching initiatives seek to identify these areas to prioritize ranger presence and law enforcement. To accomplish that, we are combining a Step Selection Function (SSF) approach with the extensive database of rhino collar (2016-2018) held by South African National Parks. The SSF model utilises the finer scale (spatial and temporal) dynamics of rhino movement in Kruger to predict future movement patterns based on the preferences of the different environmental variables. We provide a summary of the above mentioned extensive database of rhino collar (2016-2018) and census (1989-present) data held by South African National Parks that will ultimately train and validate our model.