

population increased in size from 25 to 68; it then experienced heavy mortality and sharp decline in 1987. This study documents the dynamics of the Rachel Carson population and examines the behavioral and demographic consequences of high population density and limited food supply. Coincident with increasing population size were an increased age of first reproduction for females, decreasing fertility, increasing mortality rates, decreasing body condition, and a high proportion of time devoted to grazing. The genetic consequences of the heavy mortality in 1987 and their management implications are discussed.

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Short-term separation and stress of mother and daughter southern white rhinoceroses at the North Carolina Zoological Park

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ABSTRACT

A mother–daughter pair of southern white rhinoceroses (*Ceratotherium simum simum*) was separated for the first time after 9 years. It was hoped that reducing the strength of the pair bond would make breeding more likely for either female with the 1 male and would build a tolerance to separation, thereby reducing future stress in the event of the transfer of 1 of the females to another zoo. The females were together every night but were rotated out on exhibit with the male at 1 week intervals. All 3 were out every third week. Focal and scan sampling techniques were used to collect data on behavioral states and events for the group on exhibit before, during, and after periods of female separation. During separation, both females exhibited increased locomotor activity, increased frequency and variety of vocalizations, and increased greeting and horn-touching with the male. When both females were out, the females spent their time in close association and the male occasionally followed. When separated, the exhibit female followed the male, reversing following behavior. The male showed an increase in ano-genital sniffing of either exhibit female during separation. The changes in behavior indicate an initially high level of separation anxiety for the females which dissipated over time. Pre-copulatory behavior patterns observed during separation may either be indicative of true estrus or of high stress levels which may have induced displacement behavior.
