

THE MAMMALIAN PREDATOR COMMUNITY OF  
WIND CAVE NATIONAL PARK

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Objectives

This research has been targeted at describing the species composition of mammalian carnivores inhabiting Wind Cave National Park and at discovering the ecological factors structuring that subset of the animal community. Descriptive studies in 1988 indicated that the community is atypically simple for the Black Hills, and is dominated by coyotes. The objectives in 1989 were to compare Wind Cave to comparable areas outside the park and to discover the causes underlying the community's form within the park.

Methods

Three research methods were employed in 1989. The first was a comparison of the park to adjacent off-park sites. Two areas were chosen for comparison to the park. One was located in Custer State Park, just north of Wind Cave National Park, second was south of Hot Springs, SD in the vicinity of Angostura Reservoir. These areas were surveyed using scent-stations. Since scent-station visitation can be an unreliable index of coyote abundance (Knowlton and Stoddart pers. comm.), a separate series of 1.6 km (one-mile) scat transects were established in each of the areas. Each transect was cleared of scats and then surveyed daily for five days for signs of new scats.

The second method was oriented to monitoring spatial use by the park's coyotes. Four animals were captured in the winter and early summer and equipped with radio-collars.

The third method was an experimental release of a species currently absent from the park. Skunks were chosen for release both because they are common in the southern Black Hills and because they are the least vagile member of the local carnivore community. Ten animals were captured, equipped with radio-collars and released within the park

during late July and August.

### Results

A thorough scent-station survey of the park was made in 1988. In 1989, 73 scent stations were placed in Custer State Park and 44 were placed in the vicinity of Angostura Reservoir. These data are summarized in Table 1. The results suggest that coyotes are about as common in Custer State Park as in Wind Cave and a great deal less abundant in the Angostura Reservoir area, where they are trapped intensively. Foxes and skunks were not observed in Custer State Park but are present in the Angostura area. Raccoons, which are absent from Wind Cave, appear to be fairly common both in Custer and Angostura. The scat transect data confirmed the relative abundances of coyotes; Wind Cave showed .033 scats per transect-day, Custer showed .062 scats per transect-day, and Angostura showed .018 scats per transect-day.

Table 1. Comparison of scent-station visitation by five species of mammalian carnivores of Wind Cave National Park (1988) to Custer State Park and Angostura (1989). The data are the numbers of tracks on scent stations and the percentage of stations visited. The species of foxes could not be determined from tracks.

Location	Species				
	Coyote	Fox	Raccoon	Skunk	Bobcat
Wind Cave N.P.	28 (15%)	1 (1%)	0	0	0
Custer S.P.	15 (21%)	0	6 (8%)	0	1 (1%)
Angostura	1 (2%)	1 (2%)	2 (5%)	3 (7%)	0

Three of the four radio-collared coyotes were not detectable shortly after capture. Because commercially produced transmitters should not fail at this rate, I conclude that these animals left the park shortly after capture. This conclusion must remain tentative, however, since the budget did not allow for aerial surveys off the park. The remaining animal was located with regularity, a total of 13 times.

Skunks that were released in the park proved to be extremely difficult to radiotrack from the ground. In all cases they moved rapidly away from the release site. An aerial survey at the end of this effort (August 22) showed that only one of the ten animals remained in the park. This animal had been released the night before the aerial survey and had traveled 5 km (3 miles) from the release site.

### Conclusions

Coyote densities appear to be high both on Wind Cave National Park and on Custer State Park. Raccoons are fairly common in Custer while they are essentially absent from Wind Cave National Park. The presence of raccoon's dominant predator on both sites suggests that raccoons may be absent from Wind Cave for other reasons, most likely a lack of suitable riparian habitat. Skunks appear to be found off the park only where coyote numbers have been reduced.

Radiotelemetry work is surprisingly difficult in the park. The forest cover and highly dissected terrain make ground locations difficult to obtain. Any future telemetry research on mammalian carnivores should plan to rely primarily upon aerial tracking. This difficulty notwithstanding, I feel safe in concluding that there is a good deal of movement off of the park by the coyote population. The park's coyote population, along with that of Custer State Park, probably serves as a reservoir to replenish off-park populations which are annually reduced by trapping.

The lack of success at establishing skunks in the park suggests that these animals do not find the park a suitable environment. This is not likely derived from lack of suitable habitat. Skunks are quite flexible in their habitat requirements, and the park contains many areas identical to sites outside of the park where skunks are found. The combination of the telemetry data with the scent-station data suggests that skunks may be unwilling or unable to live with high densities of coyotes.