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AN ELEGANT ENIGMA

WITH A SLOW, concealed approach, followed by a 68-mile-per-hour sprint of 300 or so yards, the cheetah closes in on its target. The chase ends when the cat sideswipes its prey with a forepaw, knocking a gazelle's legs out from under it or bowling a small hare over and over. To kill, the cheetah seizes its victim by the throat until the animal suffocates. The startling speed of its hunt and the cat's grace and beauty have attracted admirers for centuries. Ancient Assyrians used cheetahs for coursing. Classical Greeks kept them as pets. And in the Middle Ages, Italian noblemen often owned them, perhaps as a symbol of their exalted status. Even today, the cheetah seems to wear a mantle of mystique shared by few other predators.

The cheetah's social organization is equally unique. Most other cat species lead solitary lives—males and females associate only to mate

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BY TIM CARO

—with the outstanding exception being the society of lions, where females live in groups, or prides, and males form small, all-male bands called coalitions. In contrast, cheetah society exhibits great variability. Females live alone or with dependent cubs, males live either alone or in lifelong coalitions of two or three animals, and newly independent littermates remain together for up to seven months after separating from their mother.

Finding out why different segments of cheetah society live in small groups—some permanent, some less so—and why they appear to be teetering on the edge of sociability were the principal focuses of my ten years of research in Tanzania's Serengeti National Park during the 1980s.

I discovered that in the



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The cheetah has long been admired not only for its beauty (left, depicted in an Egyptian painting), but also for its prowess in chasing down prey (above, with an impala).



course of a year females wander over huge territories, covering as much as 300 square miles while following the migratory movements of their principal prey, Thomson's gazelles. Some male cheetahs, which I termed "floaters," live a similarly nomadic life-style, but others set up small territories of about 15 square miles, in which many females gather during certain times of the year. These female hot spots usually contain high concentrations of gazelles, and the topography offers much cover—rocky outcrops, water-



courses, and uneven ground—from which the cats can sneak up unseen on prey. Because they have numerical advantage in the fierce fights over limited space that occur between male cheetahs, males in coalitions are better able to take over and hold onto these territories than lone cheetahs, and consequently have access to large numbers of females. So great are the reproductive benefits that even unrelated males as well as brothers join up for life.

I also learned that by staying together after leaving their mother, littermates are better protected from spotted hyenas and lions. These larger predators often harass cheetahs on the Serengeti Plains if they find them with a carcass they can steal, and sometimes, they kill cheetahs. Hyenas are far more wary about approaching a group than a single cheetah, so adolescents gain safety in numbers.

Finally, I found that cubs travel alongside their mothers for more than a year after being weaned because they have yet to develop effective hunting skills and still rely on her to provide them with food. In particular, adolescent cubs are hesitant about slapping down prey at the end of a chase.

Over the years, it became increasingly clear that groups of cheetahs band together for different reasons. It is interesting that none of these has to do with cooperative hunting, so often used to explain group-living in large carnivores.

Fascinating though these behavioral intricacies are, it is the cheetah's conservation plight that has attracted the most attention in recent years. By the 1970s, researchers knew with certainty that cheetahs live at low densities throughout a diminishing range: The species is patchily distributed in sub-Saharan Africa, though a small population may survive in Iran. In addition, it has been extremely difficult to breed cheetahs in captivity; Whipsnade Park in Britain and De Wildt Cheetah Research and Breeding Facility in South Africa have had the most success.

Then, beginning in 1983, research biologists Steve O'Brien, David Wildt, and Mitch Bush reported that cheetahs exhibit a dramatic lack of genetic variation compared with other mammals—a genetic deficiency comparable, in fact, to that of inbred strains of laboratory mice. Because sperm abnormalities and impaired disease resistance often stem from lack of genetic variability, the scientists suggested that this could account for poor breeding performance in captivity and declining populations in the wild. The cheetah became a textbook example for those conservation biologists wishing to stress the significance of genetic variability in long-term conservation.

Like so many scientific tales that seem clear-cut to begin with, we now know that the story is a good deal more complex. It picks up again in the

A cub (right) begins to stalk small birds by the time it is three months old—although it never catches them. When cubs separate from their mothers at between 14 and 18 months, they are still poor hunters. It takes a lot of practice to become skilled at capturing prey (opposite, top, an adult cheetah on the heels of a wildebeest).





1990s with researcher Karen Laurenson's work in the Serengeti. To follow the reproductive lives of female cheetahs, she outfitted some with radio-collars, which allowed her to pinpoint the time and place they gave birth. Then, when she knew that mothers had left their dens to hunt, she entered to count and weigh the cubs. Laurenson found that 95 percent of cubs died before reaching independence, mainly due to predatory lions. Cheetah mothers also abandoned some litters when local prey was scarce. Laurenson took stringent precautions to ensure that her presence did not influence cub survival. As it turns out, lions not only take a heavy toll on cheetah cubs in Serengeti National Park, but in other protected areas in Africa as well. As a rule, cheetah populations seem to vary inversely with those of lions: The more lions there are, the fewer cheetahs. In short, predation rather than genetics seems to be responsible for the low population density in the wild.

But what about poor breeding in captivity? Researcher Nadja Wielebnowski examined the breeding records of cheetahs in North American zoos. She learned that during the last two

decades breeding success has soared. Also, some institutions are better than others at breeding cheetahs—so much better that some zoos have had to stop breeding cheetahs because they have too many. This suggests that management factors such as information-sharing among zoos and skillful zoo-keeping affect captive breeding more than do genetic factors—which would be unlikely to change over a short period of time or show large variation among facilities. Perhaps the most telling part of this research is that it revealed that more cheetah cubs die of poor husbandry and maternal neglect in zoos than from genetic deformities as conservation genetics would predict. The prospects for captive cheetahs now seem much brighter than when we erroneously believed that genetics had sealed their fate.

In the wild, the cheetah's prospects may be better as well (see Conservation Hotline, "To the Rescue [in Namibia]," September/October 1994). Recently, biologist Paule Gros surveyed cheetahs throughout Kenya. She interviewed wildlife personnel, farmers, researchers, tourists and tour guides, professional hunters, and tradi-

tional pastoralists to gather details about cheetah sightings both inside and outside protected areas. Interviews provide surprisingly accurate estimates of cheetah numbers—better than all other methods, aside from recognizing animals individually. Gros found that densities across Kenya were higher than in many other African countries. Most interesting, current estimates of cheetah numbers and distribution showed remarkable stability when compared with similar in-country surveys conducted over the last 30 years.

Although we still need to collate densities from other countries, in Kenya at least, the cheetah appears to be holding its own. This encouraging news, given Kenya's escalating human population, suggests that the cheetah has a fighting chance in the wild. If African nations can continue to conserve some wild areas through the next century, our children's children may still be able to experience the exhilaration of watching the world's fastest mammal catch its dinner in the wild.



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