

Using Mortality as a Reference for Population Dynamics

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Cougars capture the imagination; their singular beauty, graceful stride, and enchanting, all-encompassing persona haunt the soul. Why do we affix such significance and charm to these creatures? What is it that draws the uninitiated as well as the professional to their academic lair?

Perhaps we see in them vestiges of our own history, a Western heritage that is steeped in the drama of mountain men – individuals who go it alone, against all odds, and against unrelenting hurdles; they are solitary people (like cats) that adapt and overcome. Perhaps we see the bravery of American Indians, people that are focused and determined to retain pride, a people who refuse to sacrifice honor and a commitment to the land. Whatever we see in cougars, we cher-



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ish with an admiration that borders on hero worship. Certainly, this view allows us to gain some degree of respect for the bluntness of their world, but it is a view that, unfortunately, also serves to cloud reality. Whatever we may “want” we have to realize and eventually understand, may be wishful thinking.

In comparing *Puma concolor* with known ancestral relatives, such as *Pseudaelurus*, its neocortex (in the ventral lobe) is more developed and is larger in the anterior and posterior sigmoid gyri. Drawing inferences to enhanced cerebral activity is tempting, but may not be warranted. Fifteen million years of felid evolution has done little to prepare modern day cats with an ability to elude technological mortality. From a standpoint of ethology, cats of all species are still single minded and exceedingly focused when pursuing prey. This single-minded, focused behavior may be one of their greatest handicaps. Simply put, they have not learned to avoid vehicles.

South Dakota has a known population of about 165 cougars. Last year, 25 of these cougars were recovered after death. Among other causes of expiration, these cats were killed by autos, snares and motorcycles – all of this in a state with a relatively low human population and a highway system that is developed but not nearly as extensively as in other states, such as New York. Yellowstone National Park, with a very low road density, has tallied some interesting road kill numbers. The total animals killed on Yellowstone

National Park roadways from 1989 to 2003 are as follows:

Elk	566
Mule deer	456
Bison	192
Coyote	135
Moose	112
Antelope	24
Beaver	17
Black bear	12
Wolf	11
Whitetail deer	10
Raccoon	8
Bighorn Sheep	6
Grizzly bear	5
Bobcat	3
Mountain lion	2

In short, any population of animal, even a population with exceedingly low numbers, is likely to suffer road mortality. With cougars, expired individuals have been found – road killed or otherwise – in areas that clearly have extremely small populations. Illinois, Iowa, and Oklahoma are good examples of states where cougars have been found shot, hit by cars, and killed by trains. Although overall population numbers (for any species) cannot be estimated by mortality alone, the absence of any deceased individuals, especially for long continuous periods, is a palpable indication that a population does not exist.

What, then, does this mean for cougar populations in regions where they have been presumed extirpated

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and where, for year after year, no bodies have been found? It probably means just that: they have been extirpated. It does not mean that they cannot re-colonize, nor does it mean that they will never again be seen in former haunts or that transients cannot occasionally drift through. It does, though, force us to understand that population numbers and mortality are intricately related.

But, it also gives hope! A dead cougar (hit by train, auto, or anything else) may well signal that territory expansion is taking place. Nebraska serves as an interesting state for such a reference. Until recently, cougars had not been seen in that state for decades. Then about 14 years ago, they started to appear in sparing numbers, first in the west and then (as the millennium progressed) toward

the central and eastern boundaries of Nebraska. Predominately, males seemed to be seeking new territories as they apparently spread from the Black Hills of South Dakota, a region that was reaching its carrying



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capacity. Dispersing males from this core (as well as those in Colorado and Wyoming) are probably responsible for the incidental bodies that have appeared in Iowa and Illinois. Should females start to be found, it will likely serve as a flag that cougars are reclaiming lost hunting grounds.

References:

Radinsky, L.B. 1969. Outlines of Canid and Felid Brain Evolution. *Ann. N.Y. Acad. Sci.* 167:277-288

National Park Service