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A Selective View of Wolf Ecology

Gordon C. Haber

Mech, L. D., L. G. Adams, T. J. Meier, J. W. Burch, B. W. Dale. *The Wolves of Denali.* 1998. University of Minnesota Press, Minneapolis. 227 pp. $29.95. ISBN 0–8166–2958–7.

Denali National Park, Alaska, has long been recognized as one of the world's premier areas for the scientific study of wolf ecology and the dynamics of wolf-prey systems. Adolph Murie's 1944 classic, *The Wolves of Mount McKinley*, based on his 1939–1941 observations in Denali, was the first scientific study of wolves in the wild. Now another well-known wolf biologist, L. David Mech, has completed a study of the Denali wolves based on observations from 1986–1994 undertaken primarily by four field associates (his coauthors). The results have been published as a large-format book written for both a scientific and lay audience.

Their study, as Mech et al. point out in the introductory sections, represents the first use of radiotelemetry to monitor wolves in Denali and the first attempt to study all of the park-preserve's wolves, as opposed to selected groups. The result is a substantial volume of data, which is summarized throughout the book in easy-to-read tables, maps, and diagrams; there are also many good photographs. I especially like the use of narratives (chapter 3, appendix 2) and "timelines" (appendix 3), to help sort out the data collected on 27 study groups (including replacements). The sprinkling of excerpts from their field notebooks and use of some clever metaphors add to a generally snappy, engaging style that makes this book accessible to nonscientists despite the presence of so much raw data. Biologists and lay readers alike will be able to mine the book for years to come on many topics of wolf ecology, from such basics as reproduction, mortality, dispersal, territoriality, and prey selection to the less familiar details of how new groups are formed, the role of prey spacing in determining what wolves eat, and aspects of wolf population genetics.

As a scientific study, *The Wolves of Denali* attempts to synthesize these many pieces. Mech et al. develop two primary interpretations, one focusing on the wolves and the other on interrelated systems issues. In chapters 3–4 and 8, they conclude that the Denali wolves exhibit high natural rates of "pack" and population turnover, with much mixing and genetic exchange throughout the population. In chapters 5–9, they conclude that wolf numbers, reproduction, dispersal, and other variables closely track changes in the abundance and winter-related vulnerability of caribou and in large measure determine caribou abundance in the first place. They conclude that the overall Denali wolf-prey

system fluctuates as a "boom and bust economy" driven primarily by swings in caribou abundance. They suggest that these swings provide the wolves with little evolutionary incentive to be prudent predators that might otherwise conserve prey resources as persistent social units within relatively stable, long-lasting territories.

Here, unfortunately, is where the reader will come up short. Mech et al. have advanced their two major themes without adequately considering the existing 60-year body of information on Denali wolves and prey, especially in key areas of disagreement. Given the intense controversy over policies of wolf management in Alaska (Haber 1996; National Research Council 1997) and particularly in Denali, where even the core, visitor-accessible groups are legally hunted, trapped, and occasionally eliminated, a book of such potentially great influence should have done much better at taking into account the available information.

The authors' case for high *natural* rates of turnover, mixing, and genetic exchange among groups rests heavily on their sample of mortality causes among radio-collared wolves. But this sample was of questionable size and unrepresentative of the higher trapping vulnerability of young wolves. It did not reflect the important lingering effects of certain losses, especially in the areas used by 16 of their 27 study groups with decades-long histories of wolf hunting and trapping. They say nothing about the hunting and trapping losses of at least several entire (including core) groups over recent years. They say next to nothing about research by myself (1966 to present) and Murie indicating persistence of the East Fork–Toklat family lineage for much of this century, and, until eliminated by hunting and trapping, of Savage and Headquarters for at least 16 and 11 years. Although "chaos and turmoil" (p. 100) may typify relationships among wolves in areas of the park-preserve where prey availability is inherently low, under natural conditions (minus the hunting and trapping effects) the area-wide kinship links and ratios of persistent to short-lived lineages are likely to be quite different than what the authors suggest.

In presenting their case for tight, area-wide coupling between Denali's wolves and caribou, Mech et al. focus on what happened from 1986 to 1994 but ignore data from both Murie's work and mine showing much more spatial and temporal unevenness in the wolf responses and much more dependence on moose and sheep. The pre-1986 caribou information, including data from Skoog's classic dissertation concerning large-scale patterns, indicates a far more dynamic pattern of caribou range and abundance changes. When one considers the full, 1500–25,000 range of variation observed for Denali caribou numbers over the past 80 years, the recent 8-year "boom and bust" of 2500 to 3100 and back to 2100 deflates to just the latest blip within a predator-maintained low (caribou) stable state that has been in effect for this area since the late 1960s.

Given the foregoing, not much of a case remains for the argument that, in an evolutionary sense, the Denali wolves are not prudent predators, especially in view of earlier published arguments to the contrary (Walters et al. 1981) which they do not mention. *The Wolves of Denali* will be an important source of raw information for years to come, but its selective use of all that is known about this world-famous wildlife system means that readers should treat its interpretations with much caution.

Gordon C. Haber

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Abstract. The first real beginning to our understanding of wolf social ecology came from wolf 2204 on 23 May 1972. State depredation control trapper Lawrence Waino, of Duluth, Minnesota, had caught this female wolf 112 km (67 mi) south of where L. D. Mech had radio-collared her in the Superior National Forest 2 years earlier. A young lone wolf, nomadic over 100 km2 (40 mi2) during the 9 months Mech had been able to keep track of her, she had then disappeared until Waino caught her. From her nipples it was apparent that she had just been nursing pups. "This was the puzzle piece I needed,&q Here, we examined how selective breeding and domestication may have disrupted the optimization of these locomotor costs and altered the economy of movement in domestic dogs. This was accomplished by comparing the locomotor kinematics and energetics of three large (>20 kg) breed groups along a continuum of relative genetic and morphological proximity to gray wolves. Northern breed individuals included Siberian huskies, Alaskan malamutes and Samoyeds. These â€˜sled dogsâ€™ are among the oldest domestic dog breeds (Huson et al., 2010; Parker, 2012; Wang et al., 2013) and possess the most lupine tr Ecology[A] is the branch of biology which studies the interactions among organisms and their environment. Objects of study include interactions of organisms that include biotic and abiotic components of their environment. Topics of interest include the biodiversity, distribution, biomass, and populations of organisms, as well as cooperation and competition within and between species. Ecosystems are dynamically interacting systems of organisms, the communities they make up, and the non-living