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WOLVES ON THE HUNT: THE BEHAVIOR OF WOLVES HUNTING WILD PREY

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WOLVES ON THE HUNT: THE BEHAVIOR OF WOLVES HUNTING WILD PREY. By L. DAVID MECH, DOUGLAS W. SMITH, and DANIEL R. MACNULTY. Chicago: University of Chicago Press, 2015. ISBN 978-0-226-25514-9. xiii + 187 p., b&w illus., 28 colour plates, literature cited, author and subject indexes. Hardbound. US$50.00; £35.00. Also available as an eBook.

Among nature's compelling interactions is the pursuit of prey by wolves. Both predator and prey are well adapted to the interaction, and for those fortunate to witness such an event, it may unfold as a spectacular and dramatic scene with multiple attempts by the prey to escape, and swift, relentless, and persistent attack by the wolves. The book, *Wolves on the Hunt: The Behavior of Wolves Hunting Wild Prey*, by L. David Mech, Douglas W. Smith, and Daniel R. MacNulty, represents a collection of wolf hunting observations. These observations come in the form of written narratives and supporting videos available online, from which the authors infer the behaviors of wolves as they hunt prey and the defenses of prey and evaluate what factors affect the success or failure of the hunt. The authors are well qualified on the subject: Mech has studied wolves for more than 50 years and is an internationally recognized wolf authority, Smith has documented the dynamics of wolves and their prey following wolf reintroduction to Yellowstone National Park for more than 20 years, and MacNulty has devoted much of his research to understanding wolf hunting behavior.

Chapter 1 introduces the wolf as a hunter. Wolf adaptations to hunting are described. Included is that wolves may range far and wide to locate vulnerable prey, with an impressive rate of travel of 8.7 km/hr and total distances of 76 km in 12 hours mentioned. Besides physical adaptations for capturing prey, such as keen olfactory senses, fasting ability (up to 17 days without eating), body size, and bite force, wolves employ the advantage of working together and may use cognitive strategies or hunting strategy to tip the scales in their favor. Wolves are quick learners, and the strategies of ambushing prey, using a decoy wolf to distract prey, and driving prey toward hidden wolves or into favorable terrain have all been described. Despite all of this, however, most often the hunt ends in failure for the wolf. Importantly, this dispels the common perception that wolves kill whenever and whatever they want. Specific defenses of prey to wolf hunting are left for description in the subsequent chapters.

Chapters 2 to 8 are the core of the book. These chapters are organized by prey type, with chapters specific to white-tailed deer, moose, caribou, elk, mountain sheep and goats, bison, muskoxen, and miscellaneous prey, including pronghorn antelope, wild horses, wild boars, seals, beavers, Arctic and snowshoe hares, salmon, waterfowl, and small mammals. Each chapter begins with an introduction of the prey species, including its distribution throughout the world, body size, favored habitats, and general vulnerability to wolves. Antipredator strategies are discussed, such as caribou living in herds to reduce predation risk to individuals, or moose spacing out to minimize the rate of encounters with wolves. The chapters then transition to individual accounts of wolves hunting prey. These accounts begin with the date, location, and observer(s), followed by a narrative of the interaction. I found the narratives to be factual and informative. In some instances, such as with bison, only a sample of the narratives is presented for brevity. Readers are also directed to videos online. Each chapter ends with conclusions regarding wolf-hunting behavior from the observations. As was documented in a study by coauthor MacNulty, the pursuit of prey by wolves can be broken down into six stages: search, approach, watch, attack-group, attack-individual, and capture. Conclusions drawn from the observations generally follow this convention. Most commonly it seems prey simply outrun wolves and the wolves give up. If prey cannot outrun wolves, they may escape to rugged terrain (e.g., mountain sheep) or form a circle to face the attack (e.g., muskoxen). In the case of Arctic hares, wolves run about the same speed, but wolves cannot match the sharp zigzagging of the hares. When the wolf is successful, factors that affect success are discussed, such as the greater vulnerability of young prey or severity of winter; of factors that may influence the wolf hunting success, snow depth was the

most common across species. How wolves take down prey is presented; most commonly, wolves grasp or crush the skulls of the smallest prey (hares and newly born young), tear at the throat of adult smaller (deer) and medium-sized prey (elk), and may attack the nose of larger prey such as moose. With a wolf holding the nose, other wolves can attack vulnerable areas, such as the belly or back end.

Chapter 9 offers a concluding summary and discussion of two new topics. First, while it is clear that wolf hunting success is low (lowest for bison, 3%–10%) and wolves generally kill vulnerable prey, assessing the health of wolf-killed prey is difficult. Part of this chapter challenges whether an investigator may simply claim a wolf-killed animal "was perfectly healthy" because it was of prime age and in good condition. I concur. Several compelling alternative explanations are presented. Next is the topic of surplus killing: wolves kill more prey than they can immediately consume. It is noted that wolves do return and feed on what was originally thought to be discarded food, if sufficient time passes without scavengers consuming the carcass. The authors conclude that "The fact is that wolves are programmed to kill and eat whenever they can because generally it requires considerable time, energy, and risk most of the time to do so" (p. 162).

The publication of this book is timely. With the widespread use of global positioning system (GPS) radio collars to study wolves, investigators commonly obtain locations at regular intervals (sometimes just minutes apart), and new insights into wolf-hunting behavior can be made by connecting the sequence of these locations. It is possible to ask questions about what habitats are favored or distances traveled while wolves search for prey, among others. I expect this book to be highly useful for defining research questions and informing conclusions from such studies of wolf hunting behavior. Most investigators of these studies will be lucky to witness the pursuit of wolves just once even though this is their focus. Accordingly, this book will be a valuable reference (in more than 1000 hours of radio tracking wolves and moose, I have witnessed only three wolf-prey interactions). I expect the book to be of broad interest as well because the polarizing nature of wolves is due, in part, to their hunting and predatory behavior. As someone who participates in wildlife management meetings where wolves and their prey are common topics of discussion, I can personally attest to the latter. Stories are shared regularly at these meetings, but usually these stories are full of hearsay and innuendo with little fact. The facts contained within this book can inform these discussions, with the ultimate goal of fostering a better understanding of wolves and their interactions with prey.

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