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# **Voyageurs Wolf Project:**

Studying and Sharing the Summer Ecology of Wolves in the Majestic North Woods By TOM GABLE



was getting gas at the Gateway General just outside of Voyageurs National Park, Minnesota on a blistering August day in 2017 when the county sheriff pulled up to the pump across from me. We made small talk for a few minutes, and eventually I mentioned that I study wolves in the area. The officer changed his posture as I started to explain my job, and it was apparent that he could not wait for me to stop talking so he could challenge me. I hadn't even mouthed the last word of my "what-I-do-for-a-living" spiel when he blurted out:

"So. What is it that we don't already know about wolves?"

The question was steeped in indignance, though I sensed a sliver of curiosity. What the sheriff really wanted to know was, "Why are you wasting time and resources studying wolves, a species that has been studied to death?"

My mind raced through the best answer to the question. At that point in my career, I generally tried to avoid talking to the public or local community about my research for fear of becoming a human piñata—stories abounded

about the extent to which the local community distained wolves—and yet here I was, strung up and getting hit with a broomstick.

My response was simple and short: "No one knows how many deer fawns, beavers or adult deer wolves kill from April until October."

The officer stood there in silence for a second and then, in disbelief, asked, "Really?"

He allowed me to elaborate on my original statement and by the end of our conversation he thanked me for speaking with him and said he learned a lot.

Since that time, I've had numerous conversations that,

while different in the specifics, follow a similar trajectory. There is an impression among a certain percentage of the population that we have studied wolves enough, that we know all there is to know. I feel this sentiment is particularly true in northern Minnesota where there is a rich history of wolf research spanning back to the 1930's. The irony is that, despite the tremendous work that has been done over the past 50-60 years, most, if not all, wolf biologists (including myself) know there is much we do not know about wolves in the north woods and other ecosystems.

#### One Dead Beaver Changes Everything

In April 2015, Austin Homkes currently a field biologist with the Voyageurs Wolf Project (VWP)—and I stood transfixed below the dam of a majestic beaver pond in the middle of the Greater Voyageurs Ecosystem, Minnesota. In the grassy earth before us was a precious treasure: tufts of beaver fur and a small piece of beaver bone—the remains of the first wolf-killed beaver identified in the VWP.



These beaver remains were confirmation, or at least validation, of an idea: that it is possible to find where wolves kill beavers by searching the areas where GPS-collared wolves had spent time. While this might not seem like much of a breakthrough, it was for us. Up to this point, wolf-beaver interactions had been largely overlooked or ignored, which we found surprising because the scant research that existed showed that beavers were an important summer food source for wolves in many areas of North America and Eurasia.

And yet, we later learned that the reasons wolf-beaver interactions had been overlooked or ignored are fairly straightforward: 1) most wolf-prey studies, with a few exceptions, have occurred during the winter when wolves are easier to study and beavers are locked under the ice, 2) observing wolves hunting and killing beavers is effectively impossible due to the dense vegetation in beaver habitats, and 3) finding the places where wolves kill beavers has proven equally challenging, even with GPS-collar technology, because wolves can almost wholly consume a beaver in very little time, leaving hardly anything behind to discover in the field.

Having confirmed that we could locate the places where wolves killed beaver, we became optimistic about understanding wolf-beaver interactions-justifiably, in part. Over the past six years, we have located 273 wolf-killed beavers on our project, and this data has provided a wealth of information about where these events take place. Yet, we realized that finding where wolves kill beavers only tells part of the story. Kill sites tell us where wolves killed beavers, but they tell us relatively little about how wolves actually go about catching beavers. The question, "How do wolves hunt beavers?" might seem simple and straightforward, but it is quite difficult to answer because observing wolves hunting beavers in the north woods is effectively impossible.

Many researchers had speculated on how these hunts were carried out, but due to the challenges of studying wolf-beaver interactions, there was virtually no data to support any of the speculation. We set out to change this.

Fortunately, when we started visiting clusters of GPS-locations (i.e., areas where wolves remained in the same area for a long period of time) from collared wolves in spring 2015, we quickly realized how wolves were hunting beavers: they were ambushing them. While this might seem intuitive—how else would a wolf catch a beaver?— it is important to know that wolves were not considered ambush predators when we started our project. In fact, in 2018, I attended the International Wolf Symposium, where a well-known wolf biologist stated, when

Kill sites tell us where wolves *killed* beavers, but relatively little about how they catch them.

talking about wolf hunting behavior, "And as all good wolf biologists know, wolves do not ambush their prey." Our work, along with a few earlier studies, has shown this is simply not true. Wolves typically do not ambush prey, but they do have the ability to use ambush strategies when it benefits them.

Once we figured out that wolves were waiting in ambush for beavers, we started meticulously recording information about ambushing locations, hoping that if we collected enough data, we could understand where and how wolves chose ambushing locations. Six years later, having recorded detailed data on more than 990 ambushing attempts, we know that wolves have figured out how beavers detect predators (using scent in particular) and that wolves ambush their prey from locations where beavers are unable to detect them (e.g., waiting downwind so that beaver cannot smell them). In other words, ambushing behavior by wolves appears well-honed and adapted for hunting beavers.

Though it may appear that we have figured out wolf-beaver interactions, nothing could be farther from the truth. Sure, we have largely figured out how to study wolf predation on beavers but in doing so we have realized how much we truly do not understand. As we answer one basic question about wolf-beaver interactions, we find, through detailed observation and intensive field-based research, that this interaction is more complex and nuanced than we initially thought. For instance, we had assumed all wolves knew how to ambush and kill beavers, but substantial variation exists in the number of beavers individual wolves kill and the amount of time each wolf spends waiting in ambush. Complicating the situation is that, while ambushing appears to be wolves' primary hunting strategy for catching beavers, wolves do kill beavers when opportunistic encounters with beavers occur-and opportunistic encounters can be frequent in Greater Voyageurs Ecosystem, where wolves and beavers occur in high densities. More perplexing is that some wolves that spend substantial time waiting to ambush beavers kill very few-and others that never spend time ambushing, kill beavers in large numbers!

We still do not understand why. Given all the effort we have put in thus far, this is quite humbling and yet at the same time motivating and exhilarating!

#### A Gaping Hole in Our Knowledge of Wolves

In 2014, I clawed through the available scientific literature when I started studying wolves in the Greater Voyageurs Ecosystem, and I realized that wolfbeaver interactions were just the tip of that oft-mentioned iceberg; below the surface was an icy behemoth that has evaded our observation and understanding for decades: wolf predation during summer. There are a handful of studies on the topic in Yellowstone and Scandinavia, but wolf predation during summer remains unstudied in the majority of ecosystems wolves occupyincluding boreal ecosystems like northern Minnesota. For example, wolves rely heavily on deer-particularly deer fawns—during summer throughout Minnesota, Wisconsin, Michigan and southern Canada—and yet there are no estimates of the number of fawns and adult deer that wolves kill each year.

Wolf predation during summer is not the only gaping hole in our knowledge. Many aspects of pup-rearing behavior and the success of wolves remain less explored. Wolf pup survival rates, and more importantly, factors that cause changes in pup survival rates, are particularly enigmatic, largely due to the challenges of following wolf pups in their first year of life. But we need to conquer those challenges; pup-survival data are valuable for understanding the rate of, and reasons for, changes in wolf numbers.

We do know that starvation is one of the primary sources of wolf pup mortality. Given this, there is likely a relationship between the summer predation success of adult wolves and the survival of their pups. Presumably, more food leads to higher survival but how much food is needed to prevent three, five or seven pups from starving? Is starvation primarily a function of prey availability or is it largely a result of the hunting prowess of the pack members provisioning the pups?

Ultimately, answers to these questions hinge on a detailed understanding of both the pup-rearing and predation behavior of wolves during summer. Without both pieces of information, these questions will continue to remain unanswered and, to put it plainly, we will continue to have a poor understanding of the summer ecology of wolves.

#### The Voyageurs Wolf Project: Filling in the Gaps

It is a humid, calm, 85 F degree day in late June, and I am on all fours in a bug shirt and pair of leather gloves, crawling around in my portable sauna, sifting through the leaf litter to find the remains of a wolf-killed fawn. The mosquitoes are biting through my pants, and sweat is pouring off my face, getting stuck in the mesh of my bug shirt, which makes it difficult to see. I contemplate deep, existential thoughts like: "Why am I here? Is this worth it? Is this why I went to college?"

Austin Homkes, left, and Tom Gable of the Voyageurs Wolf Project are pictured examining a kill site near the Moose River in northern Minnesota.





After a seeming eternity, I find a small tuft of fawn hair and little fleck of fresh bone—enough evidence to confirm our collared wolf had killed a fawn here. I record some data, whip off the bug shirt and start hiking as fast as I can to avoid winged creatures. Despite my best efforts, I'm escorted by a buzzing halo of deer flies. Finally, I reach my car, jump inside, turn on the air conditioning and listen to the deer flies bouncing off the car like tiny ping-pong balls.

Another brutal summer day on the VWP completed.

Through countless hours and miles of fieldwork, in all sorts of conditions—with continued funding from Voyageurs National Park, University of Minnesota, the Minnesota Environment and Natural Resources Trust Fund, and several other organizations—we have figured out how to study wolves during summer, and in that sense, we're starting to fill the knowledge gaps.

While studying wolf-beaver interactions is particularly interesting, the objective of the VWP is much broader. Our overarching goal is to provide a comprehensive understanding of the summer ecology of wolves in the Greater Voyageurs Ecosystem in northern Minnesota. We do this by understanding wolf predation behavior and reproductive ecology (e.g., number of pups born and pup survival) from April to October. We have been doing this intensive research since 2015, and six years later are still going strong, with each

year bringing new insights and enlightened perspectives.

Our main research tools are GPScollars, remote video cameras and thousands of hours in the field each summer. GPS and remote-camera technology allow us to identify where wolves kill prey—mainly beavers and fawns during the summer, and also document some peculiar foraging habits of wolves in our area. Examples include wolves foraging on blueberries in July and August, a pack of wolves that has learned to hunt and kill spawning suckers in the spring, and wolves feasting on bearbait piles in late summer.

This technology is also integral in studying pup survival and pup-rearing behavior. In the spring, we can find wolf dens by tracking GPS-collared wolves. We visit each den once to count the number of pups. Because pups become increasingly mobile in early-to-mid summer, we spread dozens of remote video cameras across each wolf-pack territory to capture videos of the pups traveling together. From this, we can estimate pup survival rates. Our hope is that with enough time, we will be able to understand the connection between predation and pup-rearing success, and gain a broader understanding of wolves' summer behavior.

### The Sketchy Wolf Biologists?

Wolf biologists are hunterhating, animal-rights supporting, far-left leaning liberal quacks who have a secret agenda to protect the wolves. You simply cannot trust what

they tell you—their study designs are fatally flawed and the data pathetically biased.

While this might sound humorous, I have heard members of the public express these sentiments regarding the VWP and its members—including me on more occasions than I can count. This is frustrating, as it's certainly not an accurate characterization of the project or me. Even worse, there is virtually nothing I can say or do to convince these people otherwise. How do we change their perception? How do we let people see what our project is really about, what we actually do, and that we don't have a "secret agenda"?

The answer: effective outreach.

In fall 2018, we formally named our project the "Voyageurs Wolf Project" and dove head-first into the world of outreach. First, we created a Facebook page to give the public an inside look at our research and to provide a space for folks to ask questions about our work. Our hope was to couple our wolf research with top-notch outreach that was engaging, entertaining and educational. Our Facebook page amassed a large following very quickly and now, a little over 18 months later, we have more than 64,900 people who follow the project on Facebook and 8,900+ who follow the Instagram account we started last summer. On Facebook alone, our project now reaches more than 93,000 people per day and has helped reached more than 30 million since we started our outreach campaign (statistics from Facebook).

Outreach has done wonders for our project. It has helped change perceptions of our work, especially in the local community, and helped facilitate meaningful connections with people who were initially skeptical. Our social media provide the public with direct access to the biologists on the project. We answer every message, question and comment we get—even the tough or unfriendly ones! I think people often feel there is a barrier between biologists and the public. Our goal is to ensure that is not the case with the VWP.

Projects like ours are the only way the public can get the kind of information we discover. People can't go out in the forest and start putting GPS collars on wolves to see where they go, and the public doesn't have the time or resources to purchase and deploy dozens of remote video cameras across large expanses of wilderness. However, with the public's support and funding, we do. Our goal is to make the VWP a long-term, iconic wolf research project. Whether we will accomplish that goal is uncertain, as we are not currently assured enough funds to continue for another yearlet alone another 10 or 20. But as long as the VWP exists and can secure funding, we will continue to uncover the secret lives of wolves during summer and share that journey with everyone.

#### Acknowledgements:

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Austin Homkes looks over an abandoned rendezvous site from the Moose River Pack in Voyageurs National Park. He and his colleague, Tom Gable, were picking up wolf scats at the site to study wolf diets. Homkes said that wolves often had rendezvous sites in drained beaver meadows, pictured in the background.