From the Carnivore Coexistence Lab: Interview with Adrian Treves, Ph.D.

Adrian Treves, Ph.D. is Director of the Carnivore Coexistence Lab at the Nelson Institute for Environmental Studies, University of Wisconsin-Madison. His research related to predator ecology and large carnivore coexistence is world renowned. We asked Dr. Treves to answer a few questions about coexistence today. Here is his report.

Predator Ecologist Adrian Treves, Ph.D.

You founded the flagship carnivore coexistence lab in the US. What motivated you to start the lab and what is its mission?
At the lab we value strong scientific inference using the highest scientific integrity. Public scientists have a duty to advocate for (a) the broadest public including future generations of all life, (b) for good governance, (c) for fulfilling the duties of public trustees, and (d) for the best available science. Consistent with all that, the mission of the lab is to conduct research, outreach, and education to hold governments accountable to the broad public interest for preserving nature, and regulating its use. Nature is (or should be) held in trust for current and future generations of all life, with priority on preservation, and I wanted there to be a place where these values would be aligned with a research center relative to some of the most difficult species to conserve and live with, terrestrial large carnivores.

What are the major challenges in people living with large carnivores such as wolves and bears?
Large carnivores are difficult to live alongside particularly for owners of livestock/domestic animals or where people claim ownership of wild animals that are prey of large carnivores, like deer or elk. Some large carnivores also make us fear for our personal safety. The challenges come from the perception of threats, whether accurate or not. In my experience, the overriding challenge is that we attach symbolism through social constructions of large carnivores. Most humans rarely see the benefits of large carnivores, so they tend to emphasize the risks and costs carnivores present.

What from history might explain the challenges we see today with carnivore coexistence?
This is a complex topic and goes back centuries. Our relationship to crops and domestic animals that we use for food, clothing, or safety are fundamental to understanding how we perceive and manage large carnivores. Because bears eat all the foods we can and more, and because big cats and wolves eat ungulates, most crops and livestock claimed by people were also the focus of competition with carnivores throughout history. Also, as dogs were domesticated, wolves were a threat because they killed dogs that cultures relied on and wolves bred with dogs which could ruin careful breeding programs. Interestingly, with cultures that had little or no relationship with dogs, such as some tribes and first nations, they can reasonably be said to have shared a history of colonizing North America alongside the gray wolf.

What is the role of efforts to prevent or reduce human-carnivore conflicts?
Scientists and practitioners have been making huge strides in developing and learning about non-lethal methods to prevent wildlife threats to people and property. These methods are generally preventive and proactive, not reactive and vengeful like lethal control is. The first question that must be answered about any predator control method is whether it is effective at protecting the human interest, such as domestic animals. If it is not effective, all the other questions need not be asked – it doesn't matter if it is costly or cheap, easy to implement or technical, socially acceptable, or humane. if it is not effective, then we need to turn to another method. This seemingly commonsense approach for protecting human interests from wild carnivores has largely been ignored relative to lethal management. People asking the government to kill predators forget (or don't care) that a dead wolf or bear is not the same as a protected sheep herd or chicken coop. The idea that if you kill a predator animal, you solve a problem is not borne out by research.

Research shows that bullets, though relatively inexpensive, are not necessarily effective. The methods that are often more effective are the ones that keep carnivores wild because they may return to wild food sources they evolved to eat and won't be replaced by another predator that may cause more damage. Moreover, there are studies that show that killing can actually exacerbate predation by carnivores. To be clear, I am not saying lethal control can never work or isn't sometimes needed; I am saying that the way it has been practiced in the US is not effective or rational. Most carnivore-killing is not selective for the problem individual and most carnivore-killing that is selective leaves a vacancy that will be filled by another predator that may also lack wild food alternatives or prefer the human source. In this case the cycle continues with more conflict and more killing and isn't focused on solving the problem. Preventative methods are a wiser compromise and are often effective, while simultaneously also meeting the public interest of protecting native predators.

I write and speak a lot about non-lethal methods because there is experimental evidence they are effective. Research shows that livestock guarding dogs, fladry, scare devices, herding/range riding and eye-spots on cattle rumps work as large carnivore deterrents when designed and used correctly. Electric fences and night-time enclosures have a strong track record of success worldwide as well, although they have not been studied experimentally as much. Several of these methods look very promising against coyotes too, and scientists have done many experiments on methods to keep bears away from

fixed properties like crops and dumpsters. Each new application of predator control, whether lethal or non-lethal, should be adapted to local conditions and researched, ideally in experimental randomized, controlled trials.

Where are we headed in the next decade and what more can be done?
Scientific understanding has been slower to surface than social constructions about large carnivores in North America. But there are a few advances in research in ecology and on human-carnivore coexistence that may yield dividends in the future. Ecologists are beginning to recognize that ecosystems are not structured as a pyramid with a wide base of vegetation sustained by sunlight and therefore predictably built from the bottom up. Instead, the view that the top-down effects of predators support higher biological diversity and healthier ecosystems than those without top predators is slowly being recognized. This shift is still underway and has not penetrated deeply into wildlife management science yet. When it does, in the next 10 years I predict, the view that deer, elk, moose, and game-birds are better off without predators around them will give way to the view that intact ecosystems are healthiest, as Aldo Leopold glimpsed a century ago.

Also, our understanding that killing predators may have adverse effects may also become more widespread. Traditionally, owners of livestock and crops have assumed that killing wildlife would always reduce threats to their property. Since 2016 though, a dozen scientific reviews of studies from around the world have concluded that the picture is far more complex. If the Alaskan wolf biologist Gordon Haber had not died in an untimely aircraft accident, the field of carnivore science might have appreciated his 1996 insights earlier. Haber predicted that human actions disrupting wolf social organization would create demographic and behavioral pressures that can lead to undesirable results for people. This prediction is supported by research in the US and European countries: When wolves are killed in one place, a neighboring ranch or farm may see an uptick in predation, and this joins decades of similar findings related to killing coyotes and cougars. What scientists lack at present is a clear theory for how to design lethal interventions so they do not risk counter-productive effects.

The emergence of social science is also promising. Scientists such as Michael Manfredo, Tara Teel, and Jeremy Bruskotter have pioneered methods to explain human worldviews about carnivores and other animals, including experimental evidence about tolerance. A common claim about the social tolerance for large carnivores has been steadily undermined by social scientific evidence. This claim says that carnivore numbers must be limited by "social carrying capacity" and that killing them or allowing such killing will raise tolerance for them, such as: "Just let us kill carnivores and we will be okay with them on the landscape." But this turns out to be a thinly-veiled argument for one person's or organization's preference for a certain population size. In some cases, wildlife agencies or politicians cave to this argument to tamp down anger at elected officials, the agency, or its policy. In other cases, agencies or organizations embrace the view because their constituencies insist on it and their revenues rely on it. But the scientific evidence suggests something very different: that weakening protections for carnivores results in diminishing tolerance and encourages more legal and illegal killing.

Finally, the non-lethal tools and practices in prevention that I referred to in my previous response are advancing. For carnivore deterrence, the most promising tools seem to be electric fences, enclosures or other barriers especially those for young livestock, and livestock guards (dogs or humans). These methods are not perfect because there are no panaceas, whether lethal or non-lethal. But there is proof that at least a handful of methods work to keep large carnivores away from attractants and anecdotal evidence is strong. It is not easy to set up scientific experiments with some of these tools, but we need to continue to investigate them and document results because it will be tricky in the future to persuade governments to promote and subsidize such methods for the next generation of farmers and ranchers willing to adopt them. Evidence of effectiveness will support adoption across a region and large-scale government or private funding for it. While science, policy, and cultures evolve, at least we have these tools to coexist now.

What is most promising?
I share the impatience of many for progress and evolution in our governance. Science is slow and justice seems even slower. Coexisting peacefully with other life and particularly life that is difficult to live alongside, like carnivores, takes ingenuity, hope for a better future, and a willingness to take risks or try new things. In my view, coexistence with minimal conflict and the fight against extinction has strong support in the broader public, and there is growing (albeit slow) cultural change on many landscapes thanks to effective tools and innovations like those People and Carnivores use. We also have powerful new allies in young people and in the fight for environmental justice. There are challenges, but all of this prompts an outward-facing vision of a healthier planet that includes large carnivores.

What is your favorite large carnivore and why?
Personally, I love watching big cats for their stealth, poise, and coloration, but wolves need our empathy and understanding if they are to survive and be seen wild and free by our grandchildren.

To learn more about Dr. Treves' work and the Carnivore Coexistence Lab, visit http://faculty.nelson.wisc.edu/treves/.