

Paparazzi in the Woods:

Hidden surveillance cameras are making the wilderness less wild

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Next time you go for a hike, keep an eye out for the hidden cameras. The first sign that you're under surveillance might be a plastic or metal case, about the size of a hefty hardcover book, strapped to a tree and painted to blend into the bark. If you're listening carefully, you might even hear the click of the shutter or the whirr of the film advancing.

The cameras are not meant for you, and you'll probably have to get off the trail—at least, off human trails—to find them. They are designed to capture images of wild animals, and in recent years their use by hunters and wildlife biologists has been increasing exponentially. According to one study, there has been a 50 percent increase in the number of scientific papers involving data from camera traps every year for the past decade; at any given time, there may be about 10,000 deployed in research projects. And that's just the tip of the iceberg. Exact figures are hard to come by, but industry sources say that as many as 300,000 are sold every year, mostly to hunters.

In fact, camera traps are so useful for science, fund-raising, and conservation that few researchers or conservationists have paused to consider the unintended side effects of this massive deployment. The cameras may be hurting the animals they're used to study—and they may be affecting humans, too.

Hidden cameras can produce spectacular images: Mountain beavers trundle shyly on the way to a stream, playful foxes scamper along a fallen log, snow leopards prowl in the middle of the night*, and all of it gets recorded without the presence of single human being. Traps are often set up along a game trail or near a watering hole; every animal that trips the infrared beam gets caught on film, to be categorized and counted by researchers when the film is collected weeks or months later. (Hunters use them to study the habits of their favorite prey or to keep track of which bucks are growing the biggest racks of antlers.)

In recent years, camera traps have helped prove that India's tiger populations were declining far faster than the government would admit. They've produced the first-ever photographs of certain rare and elusive species, such as the Bornean rhino, and tantalizing glimpses of as-yet unidentified species. Indeed, the images they capture are perfect for the media-friendly science of organizations such as the National Geographic Society and the World Wildlife Fund, which have been among the traps' biggest promoters.

That the traps have some kind of impact on the animals is obvious from the images themselves, which often show animals startled by, fleeing from, investigating, or even attacking the traps. This sequence of photos, for example, shows a bear investigating a trap belonging to retired Smithsonian biologist Chris Wemmer, who keeps a blog about his camera-trapping activities in Northern California. The same bear destroyed another of Wemmer's cameras a few days later. WWF has posted footage of a rare Javan rhino attacking a video camera trap (see embedded video), as well as photographs of a tiger destroying a camera trap in Sumatra.

It's hard to know whether these animals were angry or simply curious; most researchers believe it's the latter. What's undeniable is that they were, in one way or another, provoked. If such provocation were consistent and widespread—and the increasing popularity of camera traps means that it is rapidly becoming both—it could lead endangered animals to waste energy or avoid fruitful areas for foraging or hunting. Camera trappers acknowledge that animals react to the traps, but they're skeptical that the effect is significant compared with the stress provoked by lightning storms, predator attacks, or other human activities. Unfortunately, no one has systematically studied the impact of camera traps on wildlife.

The good news is that many of the most obtrusive aspects of camera trapping are already being addressed. The mechanical whirr and click of first-generation traps hasn't been entirely eliminated, but the latest models are much quieter. Infrared cameras are reducing the need for night-time flashes. Longer-lived batteries and

larger memory cards in digital cameras can reduce the frequency with which researchers have to visit each trap. And when visits are required, practices such as wearing gloves to avoid leaving a scent on the camera can minimize the impact of the disturbance.

There is one impact, however, that no amount of technical refinement will be able to change: that of surveillance itself. The spread of camera traps also affects the humans who share landscapes with the animals being studied. In some cases, this is undoubtedly a good thing: Camera traps in one of Nepal's national parks recently caught a party of tiger poachers on film. The potential impact on hikers and campers is less clearly positive. National parks and wilderness areas have long been valued in part because they provide opportunities for solitude, self-reliance, and a temporary escape from the everyday pressures of modern life. Can such values survive in a "wilderness" blanketed with surveillance devices?

Today's wilderness advocates aren't tackling that question, but it's one that has a venerable history within the wilderness movement. In the 1960s, Adolph Murie, a wildlife biologist and wilderness activist, mounted a campaign against the use of wildlife radio tags and collars in national parks and wilderness areas. Murie had no problem with wildlife tagging per se—he had tagged hundreds of animals for his own research—but he saw parks and wilderness areas as places with a special cultural mission, one that was threatened by the unrestrained use of modern technology. People visited wilderness areas because they wanted to experience the natural world on its own terms—not to encounter radio-collared animals and the scientists who managed them.

Murie's was one of the first of a series of protests against hands-on, high-tech research methods. Those protests, which reached their peak of intensity during the 1970s and early 1980s, spurred the development of less invasive techniques such as camera trapping. But by the mid-1980s, the environmental movement had changed. The cultural and experiential concerns that had motivated Murie were overshadowed by a new focus on biodiversity and quantitative science. The possibility that there might be too much research—that the costs of knowledge might outweigh the benefits—became virtually unthinkable.

Camera traps are a good thing. They have already enriched our understanding of the species with which we share the planet and cause less disturbance than many other research methods. Used thoughtfully, they can give us a deep sense of connection to nature, not just the kind of alienation that Murie feared. And along with other surveillance technologies, from high-resolution satellite imaging to miniature radio tags, they will be crucial tools for preserving what's left of the world's biodiversity. We live in a thoroughly humanized world, and the networks of environmental surveillance with which we are quilting the planet will help keep it habitable—or at least let us know how quickly it's going to hell.

Still, as we expand the culture of surveillance into nature's last redoubts, it might be worth keeping some of Murie's concerns in mind: namely, that the means we use to promote biodiversity can undermine our purposes and that a technology that's right for one place isn't necessarily right for all places. Wilderness activists of the last century believed it was crucial to maintain a few places where one could hike for days without encountering cars or roads. This wasn't because they hated automobiles—after all, it was cars that made wilderness areas widely accessible for the first time—but because they believed that certain valuable experiences could be had only in their absence. Wilderness activists of this century would do well to consider whether it's worth having a few places where you'll never find a surveillance camera strapped to a nearby tree.

Correction, Aug. 14: This article originally depicted a snow leopard prowling "through the jungle." Snow leopards, of course, do not live in the jungle. (Return to the corrected sentence.)

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