Outside

Pika: The Alpine Poster Child for Climate Change

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By Adventure Ethics

A pika in its talus home. Photo: Karunakar Rayker

By Mary Ellen Hannibal

When Chris Ray got started studying pika, she could not have anticipated that these small rabbit relatives would one day become a poster child for climate change, which the species has, partly through the efforts of the Center for Biological Diversity to get them on the Endangered Species List. Because pika live mostly in alpine environments, are sensitive to temperature, and are poor dispersers, they are perhaps particularly vulnerable to increasing temperatures. In late August 2011 I joined Ray, a research associate at the University of Colorado, Boulder, at Emerald Lake in Hyalite Canyon, near Bozeman, Montana, where she has studied pika every year for the past 21 years.

Pika live in talus slopes, which are gullies of rock making gray stripes down the otherwise evergreen-covered rises around the canyon. Ray is gone from her tent at the campsite before 6:30 each morning, carrying equipment to the slopes, leaving her husband and her four-year-old son asleep. By 7:30 I head off with two young research assistants to join her. We call in to Ray and she gives us GPS points for her location. The first morning I go with them, it takes us a full hour to reach her. The rocks are piled up on each other and unsteady. The angle is steep. I'm rather obsessed with the distinct possibility of breaking my leg, and exhausted when we reach our destination, before the day's work, which Ray will continue without break until six or seven p.m., has even begun.

Ray collects data about pika presence and absence at 100 control points in a study area that is overall two kilometers by three kilometers. She also tracks temperature throughout the year using “iButton” data loggers dispersed around the talus. Using four different ear positions and five colors of tags, Ray ear-tags pika annually—this summer she tagged 45—thus recognizing their individuality, by which she can keep track of their mortality. To date she has tagged and tracked 625 unique pika; she has observed some individuals as many as nine years in a row.

Pika are saucy little bunnies, and they spend all summer "making hay while the sun shines," because they don't hibernate. One of the main things they do is cache "haypiles" in the rocks. That means they race around with flowers in their mouths much of the time. These little bunnies take the Goldilocks syndrome very far, with finely tuned sensitivity to hot and cold. While other animals have natural thermoregulatory responses to temperature fluctuations, the pika have to deal with these behaviorally. They don't hibernate, so they need a very insulating fur coat, which is good in winter, but in the summer it becomes a problem. To help deal with the winter chill, the resting body temperature of a pika is near its lethal maximum, which is what makes them intolerant to summer heat. Pika have to be out working hard all summer to collect enough food to last them all winter, and during the hottest part of summer days they take refuge in the spaces under the rocks in the talus.

While many have written the end story for pika by pointing upward and finding nowhere for them to go as the climate warms, Ray has in the back of her mind another idea. She wonders if what makes pika so sensitive and evidently vulnerable will wind up being their salvation. “Pikas are so good at finding the microclimate they need that they may avoid climate change altogether,” she says. Although that depends on a fairly stable mountain ecosystem.

CLIMATE CHANGE ALSO RISES

"I'm sorry you have to read this," Shaye Wolf says to me, referring to a 34-page document with the catchy title "Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List the American Pika as Threatened or Endangered." Wolf is a biologist in the climate change program of the Center for Biological Diversity (CBD), a pugnacious non-profit devoted to enjoining the federal government to protect species and their habitats under the Endangered Species Act (ESA). In 2007, EarthJustice attorney Greg Loarie helped CBD petition both the State of California and the U.S. to list the pika. They have been denied nationally but are still battling at the state level.

Indeed the document is a slog, veering back and forth between seeming admissions that the pika is in danger of extinction, citing evidence of "the disappearance of populations at relatively lower elevations and hotter sites..." and then conversely asserting, "We do not anticipate the species to be adversely affected on a range-wide basis by increased summer temperatures...." The U.S. Fish and Wildlife (FWS) authors of the report end up turning down the petition not based on either observation, but by drawing a line in the sand. CBD had provided papers from three sets of scientists—including Scott Loarie, Greg Loarie's brother—who project higher temperatures and shrinking ranges for pika through 2100. The FWS response was that they could use climate projections that go only through 2050.

Chris Ray is not a big fan of using the Endangered Species Act as a lever against climate change; like other scientists, she worries that this is a stretch of its purview and deploying it might make the Act more vulnerable to weakening by hostile members of Congress. But she is not happy about this claim of the FWS that there is some cut-off point after which climate projections can't be considered, and calls it a "sleight of hand."

In February 2011 I attended a pika consortium in Riverdale, California. Much of the discussion devolved around streamlining a way to collect pika pellets to better quantify presence-absence data. There is also discussion about the best way to anesthetize pika, which have a habit of dying when you look at them cross-eyed.

An affable, white-haired man ran around the conference room distributing papers. "This is so great," he says. "Forty years ago I had nobody to talk with about pika." Andrew Smith, the senior statesman of pika, is active in conservation efforts to halt mass extermination of Tibetan pika in Asia. When it is his turn to speak he admonishes the other researchers in the room to be super-transparent and value-free when communicating their work to the public. "Another plea," he says. "There is a photograph of a pika at the California Academy of Sciences. The caption says the animal dies when the temperature reaches 78 degrees. The general public now thinks all pika die when the temperature reaches 78! But that's based on my study, as you know, and anybody who reads it knows I placed pika in cages and didn't let them move. The public does not know this!"

Later, Smith beckons me. "I have things to tell you," he says. We chat. "How could you fry those bunnies?" I ask him. He makes a very sad face. "Oh God, it was the '70s. We didn't know what we were doing. I would never do that again."

Then Smith tells me the FWS contacted him to comment on the petition to list the pika. "I said, 'You bet I want to comment.' But I was in Tibet and I couldn't do it in their time frame. So they waited for me. I missed the deadline, so my comments are not in the public record, but they heard me." We chat about how Smith hates the CBD. "Did you see that guy?" Smith asks me. That would be Scott Loarie, who had Skyped into the meeting. "His brother is the lawyer on this so I'm totally outflanked."

"I think those two are trying to save nature," I say. "Oh, I guess so," he avers. "Do you have trouble with the computer modeling?" I ask. "Yes!" he says.

In his response to the pika petition, Smith slams Scott Loarie's climate modeling work but according to different terms than those upon which it was written: namely that it "cites no papers concerning the biology of the species and fails to list any of the restrictive assumptions of the climate-envelope model utilized ... it would be in error to put too much emphasis on a document of this nature." I can just feel a whole bunch of biologists wincing as I type those words. In fact, of course, the computer models do incorporate the biology of the species. Their starting point and center point are exactly what Smith says they ignore. While yes, pika may find refugia for a time, at a certain point there will be no refugia. The coolness in the talus will be warmer. Smith is refusing the future scenario, and he handed the FWS a respected scientist's excuse to refuse it, too. And off the record, to boot.