

Environmental educator learns about climate change in Alaska during his latest expedition

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MENDHAM — This summer, Bruce Taterka spent three weeks in the desolate meadows of northern Alaska as part of a team that studied how climate change is shrinking the tundra and the frozen underground in the Arctic Circle.

Four years ago, his vacation in the Andes Mountains of Ecuador focused on how an increasing caterpillar population and dwindling wasp numbers may be harming the ecosystem. And three years ago in the Gulf of Mexico, he was looking at the effects of the BP oil spill.

Not the most relaxing way to spend free time in those locales, but it makes perfect sense to Taterka, an environmental science teacher at Mendham High School.

"I like going to interesting places," he said. "It makes teaching a lot more fun. I have lots of fresh ideas and new things to bring to the classroom. The big thing is to keep these kids interested in the environment, because they're going to manage it in the future."

For this year's expedition, Taterka was one of 15 teachers selected nationwide to participate in PolarTrec, an Alaska-based program funded by the National Science Foundation that conducts research in remote locations.

Taterka worked with a team of students and professors from the University of Michigan who were based at the Toolik Field Station, 10 hours north of Fairbanks in the heart of Alaska's North Slope, a 140-mile-wide region that sits between the Brooks Mountain Range and the Arctic Ocean.

No one lives there, but moose, grizzly bears, caribou and other creatures roam freely on the barren tundra.

From their encampment of tents, Taterka and the others would venture out each day to take samples of plants, dirt, groundwater, lakes and streams to determine the level of carbon, the key indicator of climate change.

As the Earth warms, Taterka said, the tundra is shrinking as forests move farther north.

Meanwhile, below the surface, the permafrost — a once-frozen layer that contains many dead plants — is thawing. Melting permafrost can expose previously frozen carbon to sunlight and bacteria, helping convert it to carbon dioxide, a greenhouse gas that heats the planet.

The group's mission, he said, was to find out what exactly is happening to the carbon.

"It's very exciting to be up there, to be in this exotic location and learn about this. You learn that doing this is real hard work," Taterka said.

The group worked long days, the weather was often cold and rainy and there were "hoards" of mosquitoes, Taterka said. And during his time there, from late June thorough mid-July, "the sun never set."

The weather was sometimes "beautiful," he said, but it could be very variable: When he arrived at Fairbanks, the temperature was in the 90s, but by the time he got to Toolik, it was in the 30s.

But Taterka, 51, who took a 75 percent pay cut when he switched from being an environmental lawyer to being an environmental teacher, says it will be well worth it when he returns to the classroom.

When people ask him about the reality of climate change, he said, "I can give them answers. I've been out on the studies."

Taterka's dedication was duly noted by his team leader in Alaska, Rose Cory, an assistant professor of earth and environmental sciences at Michigan.

"I've worked with a lot of excellent teachers, but Bruce is top of the line," Cory said. "He's really committed. My students really liked working with him — he brings a lot of different experiences."

Cory, in the third year of a three-year project in Alaska, said her studies have determined that once carbon reaches the Earth's surface, it can release 40 percent more carbon dioxide than if it were left in the dark.

Back in New Jersey, Mackey Pendergrast, superintendent of the West Morris Regional High School District, said Taterka's expeditions illustrate how "we're doing as much as we can to promote science and scientific thinking."

"It's real science, and it's great to have a teacher who's had the opportunity to do something this exciting," Pendergrast said. "He can bring back his inspiration. It can have a profound effect on the kids."

Taterka's journals of his expeditions **may be viewed online**.

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