



Photo by Mike Lynch

Paul Smith's College students look for ticks on their campus this past fall.

Uptick in Lyme disease

■ *Researchers are finding more cases in the Adirondacks, once thought to be a safe haven.*

By Mike Lynch

Dressed in white from head to toe, Lee Ann Sporn is dragging a white cloth flag on the forest floor near the West Branch of the Ausable River looking for deer ticks. After spending a few minutes in a small valley, Sporn yells out that she has found one, a rarity on this warm mid-October day.

Using tweezers, Sporn picks the tick off the white flag, against which the dark speck is easy to spot, and puts it into a vial that she will share with other researchers, who will test it for Lyme and other diseases. Sporn, a professor at Paul Smith's College, is one of several Adirondack researchers working on a Lyme-disease study in the Adirondack Park. She is leading the fieldwork for the college, collecting ticks and small mammals—mice, chipmunks, shrews—for testing. Seventeen students are also working on the study for a senior project. Genetic and lab work is handled by Trudeau Institute in Saranac Lake.

The study seeks to determine where Lyme disease exists in the Adirondacks, where it is likely to spread, and how many people can be expected to get it. The

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scientists also are looking at the virulence of different strains. They plan to educate the public about the risks. In December, Paul Smith's College, Trudeau Institute, Adirondack Medical Center, and High Peaks Animal Hospital held a forum at the Wild Center in Tupper Lake on Lyme disease. AMC is participating in the study by collecting blood samples from patients with Lyme disease for Trudeau to study, while High Peaks is providing data on dogs.

The Northeast has been hit hard by Lyme disease in recent decades, and thousands of cases are reported in New York State every year. The Adirondacks had once been considered a safe haven as experts believed the deer ticks that carry the disease could not survive the region's



Blacklegged tick

Courtesy of CDC.gov

cold winters. In recent years, however, ticks have been found even in the interior of the Adirondacks and cases of Lyme have been reported in people and dogs.

“I treat Lyme-disease patients from Keene, from Lake Placid, from Saranac Lake, and then from the outer areas as far as Ogdensburg,” said Jonathan Krant, head of the rheumatology division at Adirondack Medical Center in Saranac Lake. Nevertheless, he said local cases are still rare.

Fifty-nine-year-old Wilmington resident George Buck is one of the unlucky people who contracted Lyme disease. This past June he started coming down with symptoms of Lyme: fatigue, chills, fever. When the

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► symptoms persisted, he went to the doctor. After multiple visits and blood tests, Buck found out in late August he had Lyme.

“I’m never sick, and I pretty much had an inkling from the symptoms that that’s one of the things it could have been,” Buck said. He added that his doctor was “very, very hesitant” to diagnose Lyme. “I pretty much had to force him to test” for the disease, he said.

Buck said he didn’t leave the Adirondacks during the period when he got Lyme, so he’s confident he got it here.

Buck’s symptoms are common for people in the days and weeks after they’ve contracted Lyme. Another early symptom is a rash that forms in a bull’s-eye pattern around the tick bite. If the disease is caught early, doctors treat it with antibiotics. Symptoms that appear weeks or months later include joint pain, especially in the knees, and neurological problems. Some people experience temporary paralysis on one side of the face (called Bell’s palsy), numbness, weakness in their limbs, and impaired muscle movement. Less common problems include irregular heartbeat, eye inflammation, liver inflammation, and severe fatigue. The symptoms, which vary from patient to patient, can become chronic, if not treated early.

In Essex County, where Wilmington is located, the health department confirmed twenty-two cases of Lyme in 2012 and eighty-one in 2013. Most of those cases have been in the Champlain Valley, said Susan Allott, director of preventive services for the Essex County Public Health Department.

In Franklin County, the health department recorded seven cases in 2011, seven in 2012, and fifteen in 2013. “I would speculate that there’s probably more cases out there,” Franklin County Public Health Director Kathy Strack said.

In the Hamilton County, where roughly five thousand people live, confirmed cases of Lyme are even rarer. There were only three confirmed cases between 2009 and 2013.

Because Lyme disease is endemic in many areas adjacent to the Park, it’s often difficult for public health departments to determine where local residents picked up the disease if they had been traveling. However, there is little doubt that it exists in places here. A high percentage of small mammals found in Queensbury and Schroom Lake that were tested came back positive for the disease. So did a few from Black Brook and Paul Smiths—both of which lie above a thousand feet.

“We were surprised to find positive animals at Paul Smiths and at Black Brook because we’re out in the field all of the time, and we’ve never seen deer ticks here,” Sporn said. “We thought this would be our negative, but it wasn’t. So now that we do know there were positive ticks here, we are talking about looking at higher elevations.”

Dogs in the Lake Placid region have been testing positive for several years. Jennifer Gallagher, a veterinarian at High Peaks Animal Hospital in Ray Brook and Malone, said dogs are testing positive in both places she works. “There is more of it up here in Franklin County near the Canadian border than there is inside the Park that we’re finding, but it is in both places,” she said.

Many of the dogs that she has found with Lyme have been asymptomatic, she said. Those that do show symptoms often develop arthritis. In more serious cases, dogs can develop heart and liver problems. Others suffer serious neurological changes that can cause seizures.

There is a Lyme disease vaccine for dogs, but not for humans, Brian Leydet Jr., a postdoctoral researcher at Trudeau, said Trudeau is working on a vaccine, but it’s a long process.

Scientists believe that ticks haven’t been able to thrive



White-tailed deer (above) and deer mice (left) are hosts for ticks that carry Lyme disease.

called questing. In this stage, the ticks are tiny and hard to spot, and this is when people and dogs often pick up Lyme disease. Once a tick becomes attached, it takes at least twenty-four hours to transmit the disease through a bacterium that gets into the host’s bloodstream. That’s why doctors recommend that people check themselves after spending time outdoors and remove ticks immediately, using tweezers.

After a while, a tick will drop off its second host. Now in adult stage, it seeks out a third host, usually a large mammal like a deer. This is when ticks mate on the host animal. The female then lays her eggs in the spring.

Although deer ticks are more common in low-lying regions on the fringe of the Park, Sporn has found them in Wilmington, Ausable Forks, and Elizabethtown, located in the interior. She also has received ticks from dog owners who said they came from the Bloomingdale Bog near Saranac Lake and Keese Mill Road in Paul Smiths. Efforts by the field crews dragging flags through the tall grass and leaf litter were unsuccessful in finding ticks in the latter two places.

“We flagged three hundred meters combined [at Bloomingdale Bog], and that was at the height of the questing, where you are supposed to find them the easiest,” said Ben Andrews, one of the student researchers.

The researchers believe ticks at higher elevations may live in isolated populations and thus are hard to find. Patrick said that eventually these pockets may grow and become connected, allowing for Lyme and other diseases to spread. “As time progresses and climate change occurs, more suitable habitat emerges,” he said.

Still unanswered is how ticks reached locations in the interior of the Adirondacks that are distant from the main range of Lyme disease. There is evidence that deer ticks can travel long distances on birds, deer, and other animals. Scientists at the Trudeau Institute are trying to figure out how long the ticks have been here and where they came from by studying their “genetic signature.”

“If you think about deer, deer travel long distances, and as we know, deer don’t come and stay up in the higher elevations in the winter because of the low abundance of food, so they move a lot in the Adirondacks,” said Leydet, the Trudeau researcher. “The ticks don’t disperse on their own.” ■

in the Adirondacks historically because of long, cold winters, but they are still studying that topic.

“We don’t have a definitive answer,” said David Patrick, a researcher at Paul Smith’s College. “We assume that winter cold is the limiting factor leading to direct mortality of the ticks, but it might be that the duration of the warmer period is the issue.”

If that were the case, he said, ticks need a sufficiently long period of active time in order to complete their life cycle, which starts in spring.

People get Lyme disease from blacklegged ticks (more commonly known as deer ticks). The ticks get the disease from host animals, usually from small mammals such as mice, chipmunks, and shrews.

Female ticks lay up to three thousand eggs in the spring. In summer, the eggs hatch into larvae, which search out their first blood meal, often latching onto a small mammal. Larval ticks eat only blood, and this is how they pick up diseases. After becoming engorged in a few days, the larvae drop off their hosts and remain inactive through the winter.

In the following spring and summer, now nymphs, the ticks begin searching for their next blood meal. They wait in tall grass or leaf litter for a host to come by. This is