

Chronicle Herald
Small mammals, big study
April 2009

Oxford research project studies South Shore ecosystem
By BEVERLEY WARE South Shore Bureau

UPPER BRANCH — Wendy Quam reaches into the clear plastic bag, delicately takes the little vole by the scruff of the neck and lifts him out.

Her Grade 2 students back home in Iowa will be thrilled to hear about this, especially the part where he peed on her hand as she was about to release him back into the woods.

Ms. Quam is one of a dozen American school teachers working with two researchers from Oxford University's Wildlife Conservation Research Unit, based in London, England. They're working about 15 kilometres outside Bridgewater at a place called Cooks Lake in Upper Branch. The teachers are here for two weeks, the first of 12 teams of volunteers to visit the South Shore over the coming months to study small mammals.

Their work is supported by **Earthwatch** Institute, a non-profit organization that promotes sustainable conservation of the environment.

Oxford research associates Christina Buesching and Chris Newman live part time in Nova Scotia. They have organized this project to monitor mammals in pockets of the South Shore to see how they and the ecosystem are being affected by climate change and other environmental factors, such as recreation and forestry.

It's an extension of their work in England studying the effects of climate change on the survival of badgers and other small mammals.

They're focusing on voles and mice because they're easy to manage, but they also manage to catch some chipmunks, red squirrels and bog lemmings. They want to know the density of these populations, the composition of species and their preferred habitats.

"They're very important in the ecosystem because they are prey for all species and a very important indicator as to the health of the ecosystem," Ms. Buesching said.

Small mammals also adapt quickly to changes in their environment because they mature and breed so quickly. A generation span is just three weeks, so the population can get killed off very quickly, but also rebuild quickly.

They are sexually mature by three weeks, pregnancy lasts three weeks and they generally live only about 12 weeks, usually because they get eaten.

Project organizers say Nova Scotia is on the "global warming front line" because it will be affected by fluctuations in the Gulf Stream current. This area outside Bridgewater works well for study because it is a diverse ecosystem with a varied and healthy population. The 134 hectares of land includes mixed woodland, hay meadows, ponds, streams and wetlands.

The volunteers use metal Longworth or Sherman traps that are about 38 centimetres long. They have a channel in the front where the mouse enters and a nesting chamber at the back filled with hay and seeds. The traps are set in a grid system of five in a row in 10 rows over 5,000 square metres. Some are set in the woods and others in a meadow and the volunteers check them twice a day.

This chilly April morning, Ms. Quam picks up one of the traps set near a hole at the base of a tree. She takes the red-backed vole out and it squirms as Ms. Buesching takes a pair of scissors and cuts a tiny patch of fur so that the dark underfur shows through. This way they'll know it's already been caught if it winds up in a trap again.

They determine the vole is a male. Ms. Buesching weighs him. He's 20.5 grams and is older, showing he was clever enough to survive a winter in the woods.

The volunteers release the mice and voles at the same place where they were caught because the food they like is there and they feel safe from predators.

They release them through a little wooden maze and time how long it takes them to find their way out. Mr. Newman said the theory is that older mammals, such as the vole caught this morning, will get out pretty quickly. Later in the summer, the well-fed younger mammals are expected to take longer because they're naive when it comes to survival skills.

Ms. Buesching said scientists are already seeing the effects of climate change here. Winter has been setting in later the past couple of years, but the spring thaw is coming later.

Mice and voles live off stored food in the winter, but those stores are running out because of the delayed onset of spring, so fewer survive.

Earthwatch Institute's mission is to help scientists use members of the public in their scientific research and education, and encourage the promotion of a more sustainable environment.

Institute project manager Caroline Rodgers said programs like this work so well because anyone can get involved. The youngest volunteer has been 11, the oldest 89. "People don't have to have a scientific background, they just have to have an interest in the environment and environmental sustainability. Anybody can get involved.

"The whole experience is that you can come as a novice and end up inspired and go and

take that enthusiasm back with you and get others involved and active."

The teachers here are in daily contact with their students back home through blogs and interactive video hookups. The kids ask their teachers questions and see what they've been doing that day.

When these teachers return to the classroom, their students can do similar monitoring in their own communities.

The researchers are also taking an interest in the local deer and tick population. They map out deer droppings in a 100-square-metre area and use a formula to extrapolate how many deer are in the area, based on the amount of droppings. Mr. Newman said there are four to five times as many deer in this area than in Kejimikujik National Park, just 70 kilometres away.

They also slowly drag a white blanket over a 10-metre strip of ground to check for ticks. That information is particularly valuable because Lyme disease has become a problem in pockets of Nova Scotia, including Lunenburg and Queens counties.

This research has been going on for three years. Ms. Buesching and Mr. Newman would like to see it continue another 15 or 20 years. "We need long-term data so we can look at population changes over many years," she said. In time, they will submit their research for peer review and publish it in scientific papers.

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Caroline Rodgers Earthwatch Institute