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RESEARCH

Ring around the turtle

What do turtles and trees have in common? More than you might think. Just as scientists can determine historical changes in climate by examining tree rings, Christine Robichaud, a biology student at Mount Allison University in Sackville, N.B., is using the growth rings in turtle shells to predict the danger that global warming poses to the already threatened species.

Funded in part by The Royal Canadian Geographical Society, Robichaud collected wood turtles last summer from New Brunswick's Miramichi River watershed. Named for its textured shell, *Glyptemys*

insculpta, or the common wood turtle, is found across eastern Canada and the north-eastern United States. An adult measures about 25 centimetres in length and lives almost 30 years. Although not protected by federal or provincial legislation, it is considered a species of special concern.

Before releasing each turtle, Robichaud electronically scanned its underbelly, creating a detailed digital image that she then analyzed using software designed to measure a tree's growth rings. Like trees, a turtle shell forms a new ring each year. If a turtle has had an especially good year of feeding and hibernation, it develops a thick growth ring.

"There are two main factors that are really important to turtle populations — habi-

tat and temperature," says Robichaud. "And, in terms of temperature, climate change is a potential threat."

Robichaud found that unseasonal weather can significantly affect the turtle's growth rate. When nesting occurs in late spring, hot weather slows progression.



Christine Robichaud (ABOVE) is studying the growth rings on the shells of wood turtles (TOP).

"I actually thought that warmer temperatures in the summer would raise the turtles' metabolic rates, making them grow faster," says Robichaud. "But that wasn't the case."

Above-average temperatures in September also slow growth, she adds, because the warm creeks and streams interrupt the turtle's underwater hibernation.

Robichaud's next step is to predict what impact climate change might have on new generations of wood turtles. Growth-ring technology has provided a glimpse into the past; if trends continue, the species faces an uncertain future. "We will definitely see more research in this area," says Robichaud. "There is still so much to learn."

Colleen Kimmitt