

## Belmont Public Schools – Earthwatch Institute Collaboration

In the 2012-2013 school year, the Belmont Public Schools and Earthwatch Institute will launch a collaboration to enrich and enhance science learning in Belmont. Through this program, Belmont educators and students will participate in the Earthwatch science expedition “Mammals of Nova Scotia” where the work is focused on the impact of climate change and other environmental challenges. Our plan is to send two educators on the expedition for two weeks in March (one elementary and one middle school educator) and a group of high school students (rising seniors) in the summer, accompanied by two high school educators. The participating educators and students will apply what they have learned on their expeditions to a community action project, which will engage the entire Belmont community in a focus on environmental awareness, during the 2013-2014 school year.

Earthwatch is a respected leader in the field of environmental education through experiential learning models that provide professional development and environmental stewardship opportunities. They have a fifteen year history of educational outreach benefiting 8,000 teachers, and seek to create the world’s future environmental ambassadors while improving literacy in math, science, technology, and geography instruction. Their goal is to change attitudes and behavior by increasing environmental and cultural awareness through transfer of knowledge and development of new skills.

On this Earthwatch expedition, participants will have the opportunity to work alongside distinguished field scientists. The educators who go in March will be on a “Live from the Field” expedition, which is a unique and enhanced program that brings the field experience directly to the classroom through the use of technology. Educators are provided with the technology necessary to enable communication with their students from their expedition field research site. Using Internet blogs, videoconferences, and conference calls, teachers are connected directly with their students, allowing them to share questions and answers, to celebrate new discoveries together, and to broaden horizons from thousands of miles apart. It would be a district-wide collaboration, involving support from the Science Director, the K-4 Elementary Curriculum Specialist for Math and Science, the Technology Director and IT Department, and Principals, to ensure all students participate in the experience with the fellowship teachers before, during, and after the March expedition.

Earthwatch received an \$11,000 anonymous donation to begin this program in Belmont. The funding will support one educator fellowship on a “Live from the Field” expedition, and will also offset the cost of the student expedition. We have requested funding from the Foundation for Belmont Education to support the second educator fellowship; we will receive a response to this grant request in early June. The only cost to the district will be for the substitutes while the educators participate in the March expedition. We are grateful to Holly Muson, a Belmont resident and parent, who serves on Earthwatch’s International Board of Advisors, for initiating the effort to bring this program to the Belmont Public Schools, and we look forward to taking full advantage of the many opportunities it offers our students to be excited about learning science.



## **Belmont HS-Mammals of Nova Scotia – June 23<sup>rd</sup> – July 5<sup>th</sup>**

### **On the Expedition**

You'll monitor mammal populations to determine the impacts of climate change and other environmental challenges.

Working in diverse habitats, from forests to meadows and from wetlands to sweeping beaches, you'll use various methods to monitor Nova Scotian wildlife. You'll observe the behavior of raccoons, beavers, skunks, and porcupines, and establish the locations of dens and wildlife trails. You may also use infrared video surveillance and camera traps to monitor more elusive animals such as fisher (a type of marten), coyote, or bobcat. You'll use trapping grids to sample rodents and shrews, and count deer and snowshoe hare droppings to estimate their population densities and habitat preferences. You may also be involved with using bat detectors to count bats, sampling invertebrates, surveying seabirds, and watching for marine wildlife. In your recreational time, you can go to the waterfront town of Lunenburg and visit museums, see the famous racing schooner *Bluenose*, check email, and enjoy the shops.

### **Meals and Accommodations**

Your team will stay in traditional South Shore accommodations, in single-gender, double rooms with twin beds and shared bathrooms, a lecture room, and a large garden with a deck for relaxing in the evening. Spectacular white-sand beaches, rocky inlets, and salty lagoons pepper this coastline, including some of the few remaining breeding areas for the endangered piping plover. Nutritious meals will be provided, sometimes featuring local specialties; you'll be asked to help with kitchen clean-up.

### **About the Research Area**

Geologically, the province of Nova Scotia is the oldest part of the North American Shield. It is almost completely surrounded by the Atlantic Ocean, connected to mainland Canada's east coast by a tiny piece of land. Across the Bay of Fundy from Nova Scotia is New Brunswick, Canada, north of the state of Maine in the United States. A large part of the province, Cape Breton, is an island connected to Nova Scotia's mainland by a causeway. The province is twice the size of Massachusetts, and just a bit smaller than Ireland. Wherever you go in Nova Scotia, you are no more than 56 kilometers (35 miles) from the sea.

Nova Scotia's highest point, on hilly Cape Breton Island, is White Hill Lake at 530 meters (1,742 feet) above sea level. The lowest lands in the province are actually below sea level, in the Annapolis Valley. Huge dikes hold back the sea and create thousands of acres of farmland. Much of the middle and upper parts of the province are rocky highland plateaus reminiscent of the Scottish landscapes of many of the province's ancestors.

Cook's Lake, a focal area for the project, is more than just a lake: The area contains some 330 acres (134 hectares) of mixed coniferous and deciduous woodland, hay meadows, ponds, streams, and wetlands. This woodland has been owned by the family of Earthwatch scientist Dr. Christina Buesching for 20 years as a haven for wildlife.

## Research Summary

*South Shore region, Nova Scotia, Canada* — Nova Scotia is a peninsula of wilderness on Canada's rugged Atlantic Coast. Fewer than one million people live here, mostly along the 7,500 kilometers of meandering shoreline, leaving lots of room for an abundance of wildlife. From white-tailed deer to meadow voles, from lynx to loons, the vast forests, rolling hills, and varied coastlines of the South Shore region provide a rich tapestry of species. Watch beavers busily harvesting wood out on the lakes, see otters fishing on the coast, and enjoy the antics of skunks, raccoons, and porcupines as they forage around the field site in the evening.

Nova Scotia's ecological diversity is a product of delicately balanced environmental conditions, and these are vulnerable to the rapid changes expected with global warming. You can help **Drs Christina Buesching** and **Chris Newman** explore how Nova Scotia's wilderness ecosystem is being affected by climate change, and help understand the implications for forestry, hunting, and tourism so vital to the local economy.

## Meet the Scientists



Dr Christina Buesching

*Wildlife Conservation Unit (WildCru), Oxford University*

Christina was born in Winnipeg, Canada, in 1969 and is a Research Associate with the Wildlife Conservation Research Unit at Oxford University; she's been coming to Nova Scotia for more than 20 years. Christina has a M.Sc. from the German Primate Center, Göttingen, on the reproductive physiology and behavior of the female lesser mouse lemur and a D.Phil. from Oxford University investigating mammalian sociality and communication in badgers. In the past, Christina has worked on a wide variety of

mammals ranging from Australian marsupials to Madagascan prosimians and European carnivores and rodents. She is particularly interested in investigating the socio-political and biological implications of the involvement of volunteers in ecological monitoring. She is a founder and committee member of the Tracking Mammals Partnership and serves on the group focusing on volunteer involvement. Christina has two years of experience teaching general zoology to final year students in Germany and has worked as a Science Officer with Earthwatch Europe. Christina is a member of the committee of the Tobeatic Research Institute of Nova Scotia.

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Dr Chris Newman

*WildCRU, Oxford University*

Chris was born in 1969 and is a Research Associate with the Wildlife Conservation Research Unit at Oxford University as well as an experienced Earthwatch Principal Investigator. He undertook his D.Phil. on Population Ecology, Demography and Parasitology at Oxford University and now co-manages the Mammal Monitoring and Badger Projects for the WildCRU. Chris is the Mammals Officer and senior Animal Care and Welfare Officer for the university's Animal Ethics Committee. He is extensively licensed and experienced in working with a wide variety of wildlife. He also serves on the executive committee of the UK's Tracking Mammals Partnership. Chris has studied physical geography, geomorphology and geology, allowing him to set ecosystems in their physical context. In the past, he has also taught wilderness survival skills to students. Chris is a member of the committee of the Tobeatic Research Institute of Nova Scotia.

## **Expedition Summary**

Duration	13 days
Cost	\$3699 per participant based on 12 full paying students and two teacher chaperones. (includes breakfast, lunch and dinner daily, round trip flight from Boston to Halifax and comprehensive medical insurance.)
Minimum Participants	8
Maximum Participants	14
Accommodation	Traditional South Shore Fisherman Cottages
Rendezvous	Halifax, Nova Scotia
Activity Level	Moderate
Dates	Jun 23 <sup>rd</sup> to July 5 <sup>th</sup> 2013
Excursion	1 Day-visit to the town of Lunenburg. Opportunity to tour the Fisheries Museum and see Gaff Pt. (Nature reserve).
# of paying participants	7-12