

## Empowering Citizen Scientists Through Not-for-Profit Collaboration: A Connection Between Ancient Forests Exploration and Research (AFER) and Outward Bound Canada (OBC)

By Robert Wallis, Amy Mudan, Camille LeClair

### Old Growth Trees in Algonquin Park

If you were to stop someone in the street in Toronto, they've probably heard of Algonquin Park. They'll understand that it is a protected provincial park, full of pristine lakes and deep forest. They will most likely be surprised to hear that vast areas of it are still available to logging. This is counter-intuitive, especially given that First Nations were forcibly removed from many parks in Canada to keep them "pristine" and "unadulterated by human influence". When they did live here, these First Nations most likely realized the wisdom of leaving old growth trees in their place given the extensive benefits they have, not only to the natural biodiversity and health of the forest, but also in education and spirituality.

It is generally accepted that **all types of old-growth temperate forests in Ontario are endangered ecosystems**, and the vast majority of them remain unprotected and available to logging, even in Algonquin Park. These unique landscapes provide numerous benefits to people locally, regionally and globally, including carbon storage and sequestration, scientific study, and recreation. However, we don't actually have a solid idea of where the old growth exists and so we are somewhat blind to whether or not these particular old-growth trees are at risk.

### Ancient Forests Exploration and Research (AFER)

The not-for-profit AFER (Ancient Forests Exploration and Research) has been looking at this issue since the organization was formed in 1992, trying to map these old-growth stands and gather information

to inform best practices. However, Canada is vast, and by their very nature "still standing after all this time", old-growth trees are generally found in quite remote areas and are difficult to get to.

Mapping remote old-growth forests and gathering information is therefore an excellent citizen project for those that routinely find themselves in remote areas; for example, organizations such as Outward Bound! What is a citizen project? A citizen project uses the volunteering public to gather scientific data, which serves both to contribute large amounts of data that would normally be difficult and expensive to gather, and also increases scientific awareness. So, the surveying for old-growth forests in Algonquin Park is a citizen science project that is being implemented in collaboration between Outward Bound Canada and AFER. The project uses basic field sampling techniques to gather data about the old-growth trees in the area.

### Environmental Leadership and Outward Bound Canada

Why would Outward Bound Canada, known for its experiential, expedition-based pedagogy, be interested in citizen science? Well, it actually is linked to OBC's long history back when it was founded in the midst of a global crisis, that of World War II. Outward Bound was created to increase participants' "tenacity and fortitude to survive the rigors of war", and today, Outward Bound is well poised to respond to another global crisis: the Climate Crisis. As well as building up participants' resilience and focusing on social and emotional learning, Outward Bound Canada is doubling down on its environmental pedagogy. We aim

to produce environmental leaders, and have recently committed to having a third of our pedagogy be focused on environmental leadership.

In the past, Outward Bound has relied mainly on the osmotic effect of being in nature to provide our environmental curriculum. The famous quote “Let the mountains speak for themselves” was coined by Rusty Baillie of the Colorado Outward Bound School in the 1960s, and there certainly is a certain amount of respect and love of the outdoors that is nurtured by extended immersion in it. However, without facilitation and even a small amount of ecological literacy, the level of environmental sensitivity generated by nature immersion is limited (Hungerford and Volk, 1990).

Outward Bound is an organization that prides itself on teaching experientially, and so the opportunity to provide this curriculum through service projects is easy to see. Since its early years, Outward Bound has had “Compassion through Service” as one of its four pillars. In Canada, Outward Bound’s model focuses on the journey, mainly through expeditions: travelling through the land using non-motorized means for days and weeks, camping, cooking, and journeying. However, in the remote areas that OBC travels within, the development of service projects that are relevant, useful, and interesting enough for students to buy into at short notice has proven to be a challenge.

Outward Bound Canada was therefore very excited when we were introduced to AFER, focused on identifying and characterizing old-growth forests in some of the very regions OBC travels through.

How did this project come to life?

Luckily, people like to network, especially Bob Henderson, the resource editor of this edition of Pathways. Because of this, the founding executive director of AFER Dr. Peter Quimby was put in contact

with Outward Bound Canada (OBC). The relationship is ideal: AFER can access different areas consistently, primarily based on overlaying canoe routes with their old-growth maps, and Outward Bound participants get a meaningful, relevant, and interesting project that connects them closely with the natural world.

So, the perfect match! But how do we go about such a project?

Dr. Quimby has been very generous with the sharing of his time and expertise. He also shared his data so that participants can actually see the impact of what they are doing. The trick with a citizen project is to make it easy enough so that lay people can understand how to collect the data in a manageable way on expedition, while still maintaining the academic rigor and attention to detail that is required for an academic research study.

## Overview of the Project

To allow organizations to be as independent as possible, AFER produced a map of old-growth forests in Algonquin (see end of this document) that can be used in conjunction with an Algonquin Canoe Routes map to select the type and location of an old-growth forest for citizen scientists to visit. In addition, AFER provides the conservation status of central Ontario’s temperate forests at risk (**all forest ages**) to help determine the forest types on which citizen scientists should focus their field surveys. **These forest types at risk include forests of all ages, not just the old-growth age group.** Using this, citizen scientists can choose to survey in old-growth forests that are most at risk given their precarious population levels and thus, increasing their likelihood of protection.

Participants are guided to select trees that meet the minimum diameter to ensure they are at the provincial old-growth age, and are provided a basic sampling protocol to support field surveys of

potential undocumented old-growth forests in Algonquin Park.

AFER organizes, analyzes and presents the field data and related results obtained by Outward Bound on one or more of AFER's websites. They also use feedback and observations on habitat conditions around old-growth trees, in order to refine their predictions of tree age from tree diameter across landscape variations. The beauty of citizen science projects is the diversity and number of individuals making the observations.

This old-growth tree project helps students be empowered to become stewards of our planet and the environment. Outward Bound instructor Camille LeClair shares students' experiences with the old-growth tree citizen project:

"This experience makes sense in the woods. When we introduce the old-growth tree project to the students, they are intrigued and we could have a great conversation about the ecology and especially about the trees in the Algonquin Park. I remember that the students were impressed about how big the trees could be and to know more about the signification of old-growth trees."

Service projects help connect environmental issues to real-world experiences. The connection is powerful as experiences make the most significant emotional impact, serving as a catalyst to students developing a passion for environmental stewardship.

"The students were glad to participate in this type of project and to be able to maybe protect those big trees from the logging in the park. The curiosity to find more trees was particularly there for two students in the group that keep having this idea in their mind as long as the expedition goes. The interest was more there. They wanted to also know what they could do at home or if there were any other kind of project they could do back in the civilisation."

Although this project really connects to some, for others it doesn't. To overcome this, OBC frames service in

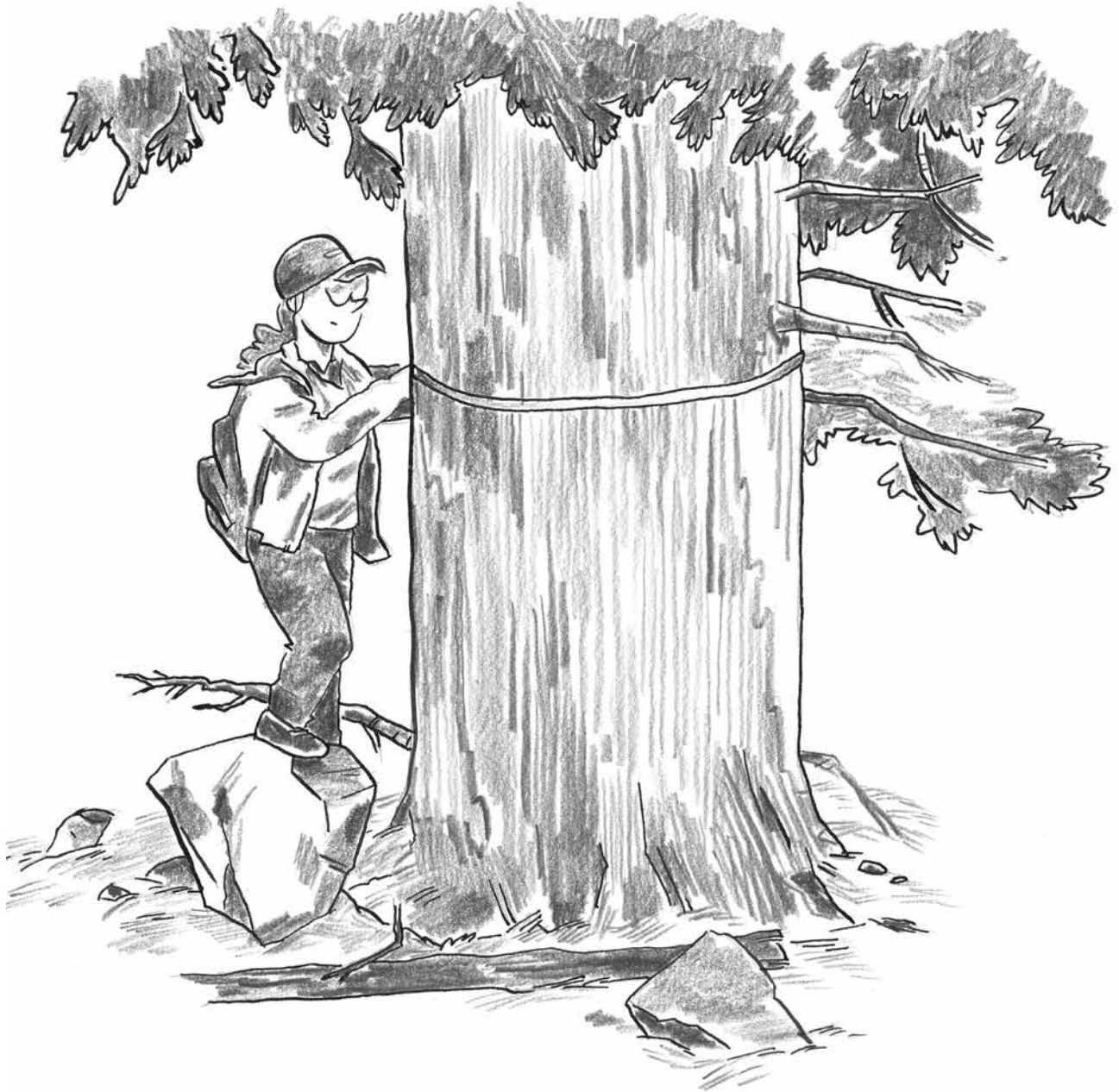
a number of ways. One such way is to frame this experience as an example and to allow students to set their own goals for service and volunteering post course. Explaining that service, and to some extent volunteering, is one of the only ways that a person has complete autonomy over what they want to do is a potent message—where else do you get that choice? Being able to decide where you will put your efforts to do good is a powerful motivator.

"It introduced well one conversation that we got into about climate change and little things that we could do on our own at home and in expeditions to help this crisis. Even what we could change at Outward Bound to use less plastic, have less garbage and habits that they could change in their own life. The students that were more concerned by this activity wanted to protect the environment. During the ecological conversation ideas also came out, to try to have less impact, not just in the woods but in the way that they lived at home. At least, this environmental project helps to do something about the environment and to give some ways to engage in a tangible activity."

Therefore, after being introduced to a citizen science project on an outdoor immersion, students gained an interest in staying involved with environmental stewardship projects. This is one of the main goals of Outward Bound, to inspire and empower youth through outdoor experiences to become environmental leaders.

### Tree Museum

Today, as we see the effects of decades of procrastination over environmental action including a summer of heat waves and other extreme weather, the climate crisis is causing intense "eco-anxiety" in our youth. Learning about ecological literacy and environmental issues in the classroom is only one small part of environmental education and may, in fact, be disproportionately contributing to the rise in eco-anxiety.



The lyric from Big Yellow Taxi by Joni Mitchell “They took all the trees put em’ in a tree museum” can serve as a metaphor for learning about the environment only through the classroom, as students start to feel hopeless and helpless if they are not able to do something—anything—about it. Providing experiences in which students feel that they are making a positive difference alleviates some of this anxiety and also motivates them to be environmental stewards.

Projects such as the old-growth tree citizen project increase participants’ connection with themselves by increasing confidence in their own abilities, forming connections with their peers through working as a team, and improve their connection with the Earth by contributing to the health of the planet. Instead of being paralyzed by eco-anxiety, youth are empowered to take action and feel they can make a difference in their communities when they are given the opportunities and real-world experiences to do so. And they may save a few trees in the process...

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