



## Let's Plant!

>> The Canadian TREE Fund Helps Lead the Way!

*Benchmarking Biodiversity and Planning Future Forests in Urban Impacted Areas* was made possible through the early support of the Canadian TREE Fund (CTF) at a crucial stage in the development of the protocols used today. Below is a project update from ACER.

**L**ets Plant! is an ACER program for community-based planting and monitoring of future forests. CTF supported the development of the measuring protocols used by students and other volunteers to plant and track the growth and success of their planting.

Some 2,100 trees representing 76 species were planted, from the fall of 2002 to the fall of 2003. The trees are now part of the "Measure and Mulch" program in which students collect data annually. The data will determine those tree species that will survive climate change and human impact. These techniques can also be applied to spaces such as schoolyards, parks or riparian zones and encourage individuals, groups, communities and scientists to work together and share results.

### Who is ACER?

The Association for Canadian Educational Resources (ACER), in partnership with Humber Arboretum, Arborvitae (non-profit) and Meteorological Service of Canada, with funding support, established a experimental site at the Humber Arboretum in northwest Toronto to monitor the impacts of warmer temperatures on urban forest biodiversity.

### What Do We Do?

A goal of the project is to investigate the benefits of forest planting design and the selection of species. The design optimizes species biodiversity to ensure increased climatic resilience of species under current and changed climate conditions, particularly for urban forests. Teaching the community to benchmark existing biodiversity according to international, scientific protocols; training



community members in the measuring, monitoring and proper planting of new urban forest; and demonstrating to communities the tree planting protocols are all part of the program. The observations from this site will help develop new adaptive management practices, including the selection of the best species for the future.

### Why at Humber Arboretum?

Southern Ontario is projected, by the end of this century, to have a warming of 1.4 to 5.8°C in mean annual temperatures. The Humber Arboretum site provides a remarkable “climate change laboratory” due to the heat island effect ( Toronto is already 4°C higher than the most of Ontario). The species in the Canadian Ecozones, as we now know them, will survive by migration northward as climate change continues.

By taking advantage of earlier studies documenting the Toronto warming influence and locating the experimental site within the urban core, the study has the added advantage of already providing an anecdotal indication of the impact of warmer temperatures, at least for minimum temperatures, on tree growth and response through comparison with conditions at cooler rural sites. Volunteers measure the success of the trees in early May or late October to document a year’s growth while reducing human impact.



### Why Use International Monitoring Standards?

By choosing consistent SI/MAB protocols to monitor the biodiversity condition of this experimental site, these measurements can readily be compared with other forest biodiversity monitoring sites in southern Ontario. Results from the Humber Arboretum benchmark site, along with its comparison to rural sites within a similar climatological region, will provide needed input for the development of guidelines for the selection of adaptive vegetative species for changing climate conditions and concentrations.



**Top:** Brush blanket and mulch pay off!  
**Middle:** Measuring bud length. **Adjacent:** Measuring crown width.

### What Was Planted?

The Humber Arboretum plot has 25 standard 20 m by 20 m quadrats with an average of 86 plants in each. The spacing is approximately 2-1/2 metres and less between shrubs. Planting for biodiversity and climatic warming, it also was designed to incorporate the four steps for disease resistance. (i.e. not too many of one species, no more than 5-10% of any one species, no more than 20% of species in the same genus and no more than 30% in the same family).

Annual monitoring for this study included root collar diameter, total height, current leader length, crown dimensions (two measurements), bud size and dbh (if taller than 1.3 m). Survival, health and damage were also recorded.

### Results Achieved... Lessons Learned

A valuable lesson drawn from this project, now in its fourth year, is the importance of community volunteers and their participation in benchmarking monitoring activities. The process of integrating a benchmarking activity (i.e. documentation of existing conditions) as an annual seasonal community event ensures that, with training by educators and scientists, communities can maintain a long-term interest in their urban forests and be better informed and proactive about potential changes in climate affecting local landscapes. ♦

### More Information

**Explore “Climate Change in Context” at [www.acer-acre.org](http://www.acer-acre.org).**

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**Note that CTF grant proposals for this year are due January 13, 2006.**