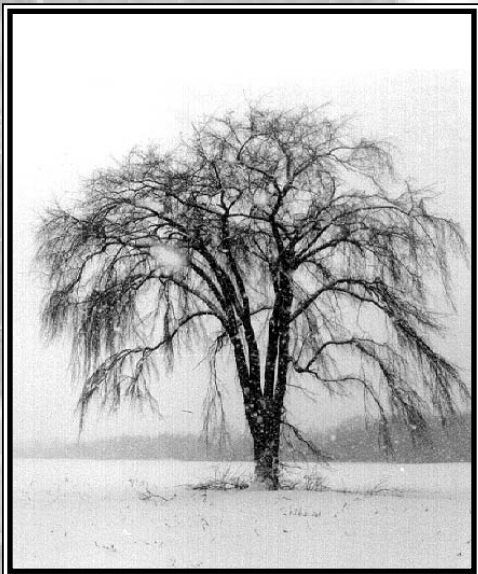


THE ARBORETUM

ELM RECOVERY PROJECT

SOME OF THE GREAT ELMS HAVE SURVIVED!



This 377 cm circumference White Elm is growing in Lambton County, ON. Photo by Henry Kock



The Arboretum invites you to help make healthy elms an integral part of our landscape again.

The Elm Story

Elms were once a significant and very important tree of forests and cities. Few other trees can tolerate the exposure and harsh street conditions as well as the elm. The most common elm, the one that once arched over the streets of eastern North America is white elm, also known as American elm. It's characteristic "V" shaped, umbrella-like crown made white elm easily identifiable and much admired.

The rapid spread of Dutch Elm Disease (DED) led many to believe that all of the elms would die. While few in number, some individual trees have resisted the disease and are still found growing in rural and urban landscapes. However, they are often too isolated to breed with each other. These elms have trunks as large as 478 cm (15.7 ft) in circumference. Individuals of this size have been found as far ranging as Hamilton to Sault St. Marie, Ontario. With your financial help, The Arboretum will collect cuttings and graft new trees from many of these potentially resistant individuals. Genetic resistance traits will be verified by the University of Toronto's Faculty of Forestry forest pathology researchers. Candidate trees will then be selected to be maintained in a seed-producing orchard as part of the Gene Bank at The Arboretum. In 12 to 14 years, the seed orchard will begin to produce genetically diverse DED

resistant seeds that can be distributed to growers.

Twenty-five years after being planted, the fast growing and sturdy white elm can reach trunk circumferences of 145 cm (4.8 ft) and be 15.2 m (50 ft) high with a crown spread of 12.2 m (40 ft). So in a relatively short period of time these trees could make a significant contribution to the urban and rural landscape again.

Dutch Elm Disease (DED)

Dutch Elm Disease was first identified in 1918 in Belgium by a Dutch pathologist who observed the fungus disease spreading through northern Europe. The disease likely arrived on logs from eastern Europe that were used to rebuild bridges. The disease as well as its carriers, the large and small European elm bark beetles, were inadvertently exported to North America on elm burls for the furniture industry. Three distinct entry points are known: Ohio in 1930, New Jersey in 1933 and Quebec around 1940. Despite efforts to halt it, the disease spread rapidly and virtually eliminated elm as an urban tree and reduced its status as a forest species in Ontario by the early 1970's.

Non-resistant elms that are too young to be killed by DED but old enough to flower are very common in the Ontario landscape. Airborne pollen from these non-resistant trees is the common pollinator of isolated, resistant survivors thereby reducing the opportunity to produce seeds that carry the genetic traits for resistance to the disease.



A survivor of the Dutch Elm Disease, this 408 cm circumference White Elm is growing in Wellington County, Ontario. Photograph by Henry Kock.

Resistant Elms

DED likely originated in Asia, where occasional branch death is its most notable damage. This observation indicates that resistance to the disease is a long term natural tendency, and holds great promise for the closely related elms of North America.

White elm, slippery elm and rock elm (*Ulmus americana*, *U. rubra* and *U. thomasi*) are the target of the elm bark beetle which carries DED. Fortunately, a number of white elms show resistance to or tolerance of the disease. These survivors, however, are so far apart that they can not easily pollinate each other to pass on their resistant traits. The goal of the Elm Recovery Project is to set up a seed orchard of proven resistant trees to produce large amounts of resistant seeds.

Although horticultural releases of DED resistant elms ("Liberty" and "Valley Forge") have taken place in the United States, they represent a small gene pool of clones from a climate significantly different than Ontario. Liberty Elm is now being sold in Ontario.

Unfortunately, DED has been reported in Liberty Elm and so all of its clones are susceptible. This emphasizes the urgent need to initiate a recovery program that utilizes non-clonal seed production from Ontario's own climate-adapted, resistant elms.

The Elm Recovery Project is based at The Arboretum, University of Guelph with co-operation from the Forest Gene Conservation Association of Ontario and the Faculty of Forestry, Forest Pathology, University of Toronto.

How you can help

- 1) Contribute to the project's capital fund and endowment fund.
- 2) Request a survey form from The Arboretum to provide detailed information on large elms (trunk at least 213 cm or 7 ft in circumference).
- 3) Inform friends and local media of this project.

Be a Donor

Your donation will support surveying and sampling of potentially resistant elms across Ontario. A part of the sampling work will include the genetic testing for resistance. Your donation will also help with communications and publicity.

Be A Sponsor

*If you plan for a year, plant a flower
If you plan for ten years, plant a tree
If you plan for a hundred years ...*

Sponsor the long term work to breed genetically resistant native elms by making a tax deductible contribution of \$2500.

With your sponsorship of the work on a specific resistant tree, you will receive a framed photograph and a grafted specimen of the tree. You will also receive an annual report of the elm recovery project.

\$500 of your donation will go to the acquisition, grafting, nursery work and genetic testing for disease resistant white elms.

The remaining \$2,000 will go into an inflation protected, endowment fund. Our goal is to raise a minimum of \$100,000. Interest from this endowment, held at the University of Guelph, will generate funds needed to establish, upgrade, maintain and monitor resistance of an elm seed orchard for at least four decades at The Arboretum. Once the goal of elm recovery has been achieved, the endowment fund will be applied to other tree species that may require recovery assistance.

The Elm Recovery Project will accomplish the long term work of nature in a relatively short period of time, resulting in a "new generation" of disease resistant elms in Ontario for future generations.

Year Estimated Project Timeline

1998-2004	publicity, inventory, evaluation and field collection of large elms reported in Ontario.
1999	first grafts planted into the nursery
2002	start testing immune system strength in nursery
2003	first grafts are moved into The Arboretum Gene Bank Seed Orchard
2018	first Arboretum crop of genetically resistant seeds are distributed to commercial nurseries
2020	resistant elms are available from commercial nurseries
2035	first seed crops from the initially distributed elms
2040	continued seed collection from The Arboretum Gene Bank Seed Orchard for nurseries
2060	widespread, natural dispersal of resistant elm seeds from the planted resistant elms.

We invite you to join The Arboretum and its collaborators in this innovative project.

For more information, contact Project Coordinator, Sean Fox, 519-766-0718.

8th ed.Oct. 2002 hk

Donation Form - The Elm Recovery Project at The Arboretum

Name _____

Address _____

City _____ Prov. _____

Postal Code _____

Phone # (home) _____
(work) _____

Donor
My tax deductible donation of \$ 50 \$100 \$200 other () is enclosed.

Sponsor
I wish to join the Elm Recovery Project with my full sponsorship of \$2,500 OR an initial \$1000 and instalments of _____ over _____ months.

Cheque/Visa or MC# _____

Expiry date _____

Signature _____

Cheques are made payable to the University of Guelph. Mail to The Arboretum, University of Guelph, Guelph, Ontario, N1G 2W1.

