

Branching out

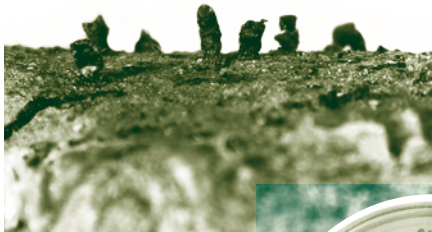
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Can we still save the butternut from extinction?

Butternut is a tree species that is rapidly disappearing from our forests. Conditions favouring the growth and establishment of butternut trees are becoming increasingly rare. Furthermore, a fungal disease called butternut canker is spreading and endangering the species' survival.

Owing to this threat, butternut has been protected under the *Species at Risk Act* since 2003¹. Harvesting of uninfected trees may accelerate the disappearance of this species and significantly reduce the existing genetic pool of resistant butternut. Important conservation efforts are therefore needed to locate and protect uninfected butternut trees.



Canker stromatic columns.
Photo: J. Thibault (CFS)

Canadian Forest Service researchers recommend various measures for controlling butternut canker. Once a tree has become infected, it is difficult to halt the spread of the



Healthy butternut.
Photo: J. Thibault (CFS)



Butternut fruits.
Photo: J. Thibault (CFS)



Canker culture.
Photo: K. Savard (CFS)

disease. Control measures therefore focus on protecting healthy trees by promoting vigorous growth and seed production. One recommendation for promoting butternut health is to increase the amount of

sunlight available to these trees by removing some of the competing species around them. Reproduction can be supported through the following measures: maintaining a density of at least ten butternut trees per hectare and creating stand openings of a size equal to at least twice the height of the surrounding trees to promote seed germination.

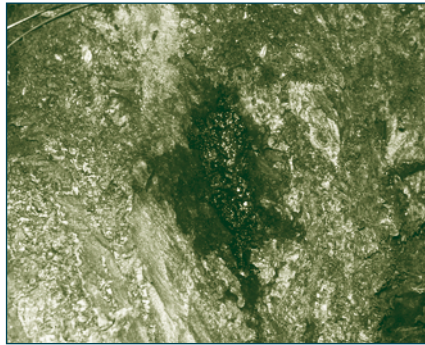
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¹ Butternut is designated as an endangered species under the *Species at Risk Act*.





In a forest stand or managed woodlot, infected trees should be removed as quickly as possible to limit the spread of the disease. All the trees with at least 25% of crown dieback and at least 20% of the circumference of the main stem affected by cankers should be removed, as should trees with more than 50% of crown dieback, even if the stems are not cankered. High value trees that are severely infected can be conserved by pruning the affected branches and excising trunk cankers.



Cankers on stem.
Photo: J. Thibault (CFS)



Cankers on stem.
Photo: J. Thibault (CFS)

A lethal fungus

The fungus that causes butternut canker, *Sirococcus clavigignenti-juglandacearum*, is carried from tree to tree by the wind and by a variety of insects. Cankers that form in the lower crown of a tree are indicative of infection. The infection spreads downward as fungal spores from the cankers are washed by rain along the branches and down the main stem. Over time, multiple cankers form, expand and coalesce, killing the affected branches. When the cankers girdle the stem, the tree dies.



Crown dieback.
Photo: J. Thibault (CFS)

A lethal disease whose origin is unknown

Butternut canker has been found across the entire geographic range of butternut. In Quebec, the presence of the disease was first reported in 1990. It is not known how long the causal agent has been present in the deciduous forests of North America. However, the low genetic variability and the high level of virulence characterizing this fungus indicate that it is probably an exotic pest.

Keeping or removing?

	Cut the trees if		Conserve the trees if	
Crown dieback	> 25%	> 50%	< 50%	< 20%
	and		and	
Stem affected	> 20%	—	0%	< 25%

Another way to promote this species' survival is to take advantage of the genetic resistance to canker that is believed to exist in some butternut trees. To achieve this goal, it is important to conserve all butternut trees with a canker-free stem and less than 50% of crown dieback, together with trees that have less than 20% of crown dieback and less than 25% of the circumference of the main stem affected by cankers.

Protecting butternut will require considerable attention. This noble deciduous species, which is prized for its wood and nuts and for being an integral part of the biodiversity of our forests, deserves all the efforts that are marshalled to save it.

FOR MORE INFORMATION, PLEASE CONTACT:

Pierre DesRochers
Natural Resources Canada
Canadian Forest Service
Laurentian Forestry Centre
1055 du P.E.P.S.
P.O. Box 10380, Sainte-Foy Stn.
Québec, Quebec G1V 4C7
Phone: 418-648-3922
Fax: 418-648-5849
E-mail: pierre.desrochers@nrca.gc.ca
Website: cfs.nrca.gc.ca

