EXECUTIVE SUMMARY – Recovery strategy for the American Chestnut (*Castanea dentata)* in Ontario

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American Chestnut (*Castanea dentata)* was a dominant forest tree species in northeastern North America before populations were devastated by the introduction in 1904 of the fungal pathogen, *Cryphonectria parasitica*, which causes chestnut blight. By the 1950s, American Chestnut had been devastated throughout its native range. In southwestern Ontario, populations of American Chestnut were reduced to far less than one percent of the original 1.5 to 2.0 million trees estimated to have been present. Recent surveys in 2001 to 2003 confirmed that Ontario has at least 601 mature and immature individuals of American Chestnut, but this estimate likely represents 30 to 70 percent of the total number in Canada. The native range in Ontario accounts for 3.9 percent of the native range of American Chestnut in North America. In 1987, American Chestnut was designated as a threatened species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and in 2004 was re-designated as endangered. American Chestnut is listed as endangered on the Species at Risk in Ontario (SARO) List and receives protection under the *Endangered Species Act, 2007* (ESA).

American Chestnut's native range extends from southern New England to the southern Appalachian mountains. It still survives as remnant populations and individuals throughout this range, mainly by resprouting from collars of surviving root systems. During a survey conducted from 1994 to 1997, American Chestnut was identified at 135 sites in southwestern Ontario. Approximately 58 percent of the sites contained only one tree or regenerating clump. Between 2001 and 2003, 601 individuals were located at 94 sites (average of 6.5 per site); nearly 50 percent of these were less than 10 m tall and greater than 10 cm in diameter at breast height. At least 60 of the 601 individuals showed evidence of flowering or producing burs, however, these trees produced no detectable seed. Approximately one half of the sites containing surviving chestnut were located in Elgin, Haldimand and Norfolk counties.

The goal of this recovery strategy is to restore American Chestnut populations in Ontario to a self-sustaining state, whereby natural recruitment results in the maintenance or an increase of current population size throughout the species' native range. The objectives of this recovery strategy are to:

1. survey suitable habitat and/or formerly occupied habitat for American Chestnut, and protect and monitor known populations within the species' native range in Ontario;
2. promote protection and public awareness of American Chestnut;
3. develop and evaluate management measures to control threats; and
4. secure Ontario sources of germplasm originating from blight-free trees.

Initiation and/or completion of these objectives will contribute to increased knowledge and conservation of remnant populations of American Chestnut in Canada and assess strategies for improved management of chestnut blight.

Chestnut blight continues to have the greatest negative impact on populations of American Chestnut. Other factors such as loss and degradation of habitat, possible hybridization with other *Castanea* species, and the possible introduction of oriental gall wasp (*Dryocosmus kuriphilus* Yasumatsu) from the United States are also of concern.

Until the impact of chestnut blight can be reduced, restoring American Chestnut to a more secure position in the Carolinian forest is unlikely. Therefore, approaches to control chestnut blight are critical. Potential approaches include hypovirulence (a viral infection that weakens the blight fungus), natural resistance to disease and breeding for disease resistance. Although hypovirulence has been successful in controlling blight in Europe, there has been less success using this approach in North America. Further research may identify factors that contribute to increased efficacy. Qualitative or complete resistance to blight has not been observed in surviving populations of American Chestnut, but concerted attempts have been and continue to be made to identify and select quantitative or incomplete resistance. Finally, breeding programs using resistance genes from Asian chestnut species are underway in the United States and more recently in Canada. Here emphasis has been placed on incorporating this resistance into germplasm adapted to environmental conditions within the native range of American Chestnut in southwestern Ontario.

It is recommended that the Ecological Land Classification (ELC) ecosite types where one or more American Chestnut trees currently occur or where one or more individuals were previously documented in written reports or surveys (for example, Ambrose and Aboud 1987, Melzer et al. 2004, Tindall et al. 2004, Natural Heritage Resource Centre database, etc.) be prescribed as habitat within a habitat regulation under the ESA. It is recommended that trees planted for horticulture, landscaping or research be exempt from the habitat regulation but should be individually assessed for genetic conservation value.