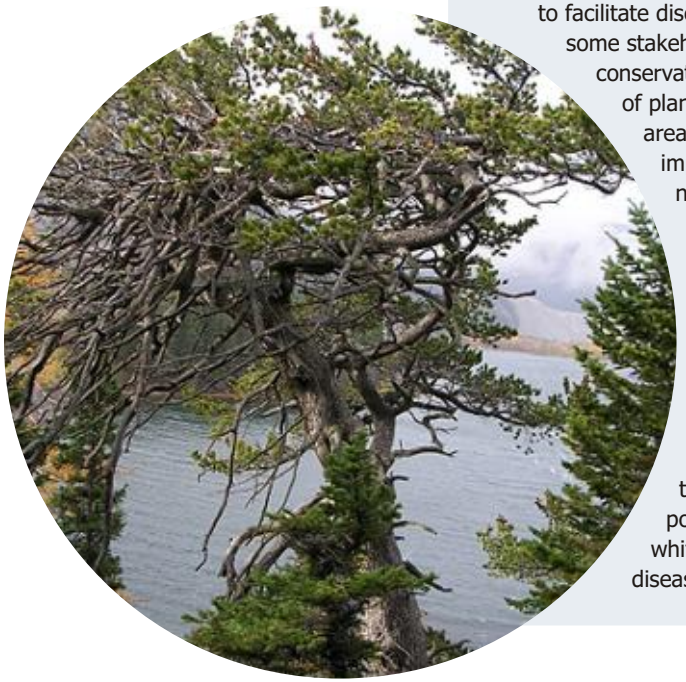
# ALBERTA FOREST GENETIC RESOURCES COUNCIL

*Forest genetic resources:*
*Conserving diversity, enhancing productivity*

## Biodiversity Conservation

## The Role of Council



The Council brings together a spectrum of partners to facilitate discussions, review policy and coordinate some stakeholder activities related to biodiversity conservation. It is also engaged in development of plans for specific genetic conservation areas on the landscape, for species in tree improvement programs as well as those not being bred commercially, and in liaising with other leading forest genetic resources organizations across the country.

Special attention is being paid to rare forest tree species with limited distribution and small population sizes in Alberta (e.g. western red cedar and western larch) and species that may be vulnerable to serious population losses (e.g. limber and whitebark pine) because of insects, diseases, and other disturbance factors.

## The Council

The Alberta Forest Genetic Resources Council advises the Alberta government, provides input on standards and policies, and helps set directions for research on any matter to do with the conservation, diversity and productivity of forest genetic resources.

Members of the Council represent the research, policy and industrial sectors. This fact sheet provides an overview of why and how these sectors are engaged in biodiversity conservation.

## Who is Involved

The Alberta government is responsible for the public forest. It sets out the rules, policies and expectations governing land uses that directly or indirectly affect biodiversity conservation within tree populations. The government is represented on the Council, along with federal, academic and industrial participants.

## Biodiversity Conservation

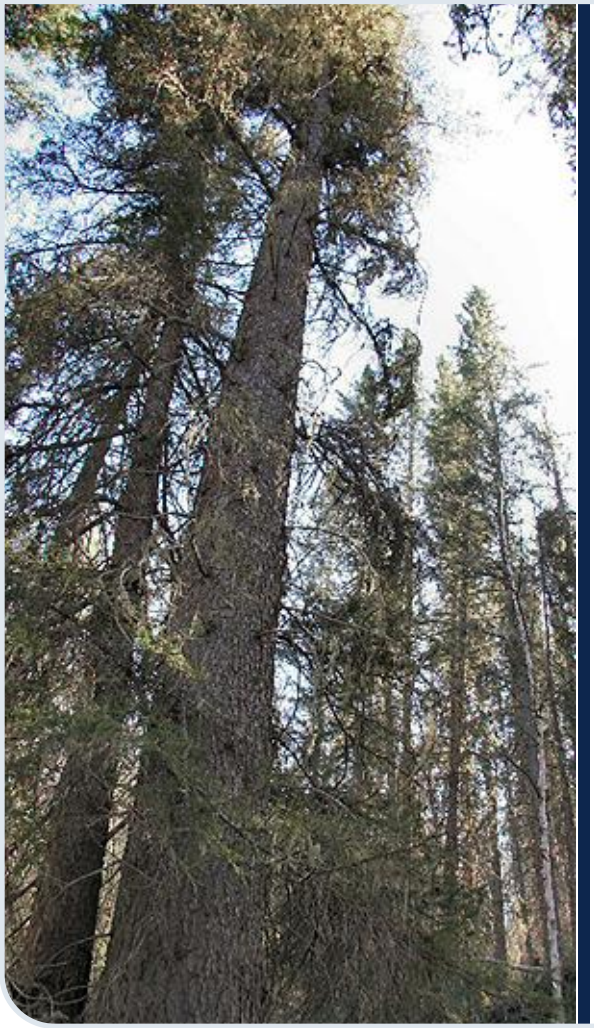
Biodiversity is the variety of life at the individual, the species and the ecosystem levels. One of the Alberta Forest Genetic Resources Council's primary roles is to conserve biodiversity. This can be accomplished by ensuring the genetic variability of Alberta's forest trees remains intact.

# The Importance of Genetic Diversity

Genes are sections of DNA found on chromosomes in every living thing. They carry the blueprint for how an organism will develop and respond to its environment. Different forms of a gene, or set of genes, may result in the expression of different end products. For instance, the variety of human eye color is caused by different forms of a small set of genes. "Genetic diversity" or "genetic variability" is defined by the number of different forms of every gene found in a population.

Genetic variability is fundamental in allowing populations to adapt to changing environmental conditions. The more diversity there is, the more capability the population has to meet challenges, such as climate change. Populations with little variability may perform well under current conditions, but may be less able to adapt and thus be more vulnerable to extinction in a changed future.

Wild populations are our reservoir of genetic variability. While we take certain attributes from these trees and selectively breed them for desirable characteristics in a tree improvement program, we must also maintain that reservoir of diversity to ensure adaptability to future conditions. The genetic variability of wild tree populations is considered a "heritage resource" because of the vital role it plays in sustaining vibrant and productive ecosystems.



# Ensuring Future Genetic Diversity

In Alberta, about 77 million conifer seedlings are used in reforestation each year, and an increasing proportion of these are "improved" varieties that grow faster while resisting disease, insects and drought. Unless effective steps in genetic conservation are taken, the forest could become more genetically uniform.

The Council is working towards implementation of several measures to ensure biodiversity conservation at the genetic level. First, any species in a tree improvement program has to meet standards regarding conservation areas; second, areas are being identified for protection of genetic variability in wild populations (in situ conservation) of all remaining species based on the science of population genetics; third, genetic material representative of wild populations is preserved in provincial and national seed banks (ex situ conservation). And finally, the Council has developed guidelines to ensure that reforestation from wild sources is undertaken using only local seed genetically adapted to local conditions.

Alberta does not allow the commercial planting of genetically-modified (GM) trees. The only improved trees that may be planted in Alberta are those developed through traditional plant-breeding techniques under the auspices of an approved plan.

# For more information

You can learn more about these topics by checking the Council's annual report and other documents available via the website, www.abtreegene.com.

If you have any further questions, please contact Cliff Smith, Chair of the Council,
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