

Climate Based Seed Transfer¹ Project

Ministry of Forests, Lands and Natural Resource Operations

GLOSSARY

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The terms described in this document support the Climate Based Seed Transfer project led by the Tree Improvement Branch, Ministry of Forests, Lands and Natural Resource Operations. Updates to this document are anticipated as the project evolves through each of its four phases: Science Foundation, Policy Development, Implementation, and Monitoring and Revision.

ADAPTATION LAG: The mismatch of genotypes and the environments in which they evolved. Tree species ranges can be described in terms of a “realized NICHE” where trees are currently present (their NATURAL RANGE); and a “fundamental NICHE”, where trees could grow, but are not necessarily present due to the evolutionary ADAPTATION LAG.

ASSISTED MIGRATION: Assisted migration generally refers to the movement of species (plants or animals) within or beyond their historic or natural range. It is implemented to conserve species and facilitate adaptation to predicted climate change. In public and scientific debate, this term is often used interchangeably with assisted range expansion, assisted colonization, or managed relocation.

ASSISTED MIGRATION (in a forestry context): A climate change adaptation strategy that involves the intentional movement of tree seed², from areas they grow naturally, to planting sites that are climatically suitable for their growth at the present time, and into the future. See MIGRATION DISTANCE.

ASSISTED POPULATION MIGRATION is a climate change adaptation strategy aimed at moving tree seed to areas within the species natural range (also referred to as ASSISTED POPULATION EXPANSION or ASSISTED GENE FLOW).

ASSISTED RANGE MIGRATION is a climate change adaptation strategy aimed at moving tree seed to areas outside their species natural range (also referred to as ASSISTED SPECIES EXPANSION or ASSISTED RANGE EXPANSION). This strategy is seen as facilitating or mimicking

¹ Climate Based Seed Transfer is a climate action initiative and project led by the Ministry of Forests, Lands and Natural Resource Operations, Tree Improvement Branch. CBST is a project identified under the broader ‘Climate Based Forest Regeneration’ theme in the ministry’s Resource [Forest] Stewardship Climate Action Plan

² tree seed - includes seed, seedlings, cuttings or other reproductive material

NATURAL RANGE EXPANSION; and, in the case of a changing climate, seed is matched to planting sites that are, or are projected to be, climatically suitable.

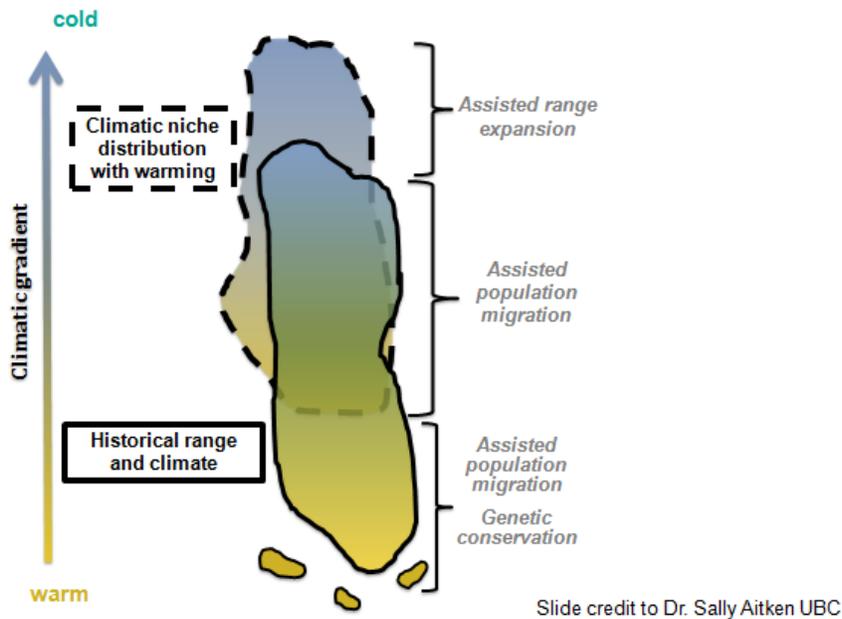


Figure 1. Assisted Migration

CLIMATE-BASED SEED TRANSFER SYSTEM (in a forestry context): A system for managing the selection of tree seed for reforestation that is based on limiting the movement of seed to areas that are considered climatically similar to the site of their seed source (or PROVENANCE). A CLIMATE BASED SEED TRANSFER SYSTEM may or may not be combined with ASSISTED MIGRATION.

CLIMATE CHANGE ADAPTATION STRATEGY (in a forestry context): Climate change adaptation strategies such as assisted migration are employed for the purposes of mitigating the risks and impacts of climate change, and to ensure reforestation practices enhance forest and ecosystem resilience, health and productivity. Alternate strategies could include using broader species and seedlot mixes at the stand, or landscape level, or planting a higher density, knowing that there will be mortality due to climate.

CRITICAL SEED TRANSFER DISTANCE: The maximum distance seed can be moved without incurring unacceptable levels of maladaptation and loss of productivity as represented by height growth (also known as MIGRATION DISTANCE in the CBST system).

EXOTIC SPECIES: An exotic species is an introduced species not native to an area. Its presence may have resulted from **intentional** (ASSISTED LONG DISTANCE MIGRATION), or **non-intentional** (INVASIVE), movement of species to areas **far outside** their established range.

INVASIVE SPECIES: An EXOTIC SPECIES that becomes established and disperses, generating a negative impact on the local ecosystems and species, causing economic or environmental harm (and often spreading quickly to new areas).

NATURAL RANGE (in a forestry context): The naturally occurring range of a (tree) species.

NATURAL RANGE EXPANSION is movement of a (tree) species outside its established range through means of natural dispersal.

NATURAL POPULATION EXPANSION is the movement of a (tree) population within its established range through means of natural dispersal.

NICHE (in a forestry context): A **niche** refers to the way in which a (tree) species fits into an ecological community or ecosystem. Through the process of natural selection, a **niche** is the evolutionary result of a species' morphological (morphology refers to an organism's physical structure), physiological, and behavioral adaptations to its surroundings.

REALIZED NICHE is where a (tree) species is currently present (their NATURAL RANGE).

FUNDAMENTAL NICHE is where a (tree) species could live (grow), but is not necessarily present due to ADAPTATION LAG.

PROVENANCE: The geographic origin of a population.

SEED DEPLOYMENT AREA: An area in which tree seed may be deployed (planted) for the purposes of reforestation.

SEED PROCUREMENT AREA: An area in which a seed may be procured (collected) for the purposes of reforestation.