

## Clip #1 Transcript: Background Information

My name is Beth Roskilly, I joined CoAdapTree and Doctor Sally Aitkin's lab in 2018. I'm a PhD student and I'm studying climate adaptation in one of the species that's part of CoAdapTree—western larch—which is a deciduous conifer, so it sheds its leaves unlike many of the other native conifer species.

So my research broadly is looking at the **range-wide patterns** of **climate adaptation** in this particular species, in western larch. The hypotheses are looking at how the **patterns of adaptations** in both the **phenotypic** and the **genomic patterns** of **local adaptation**, how those are shaped throughout the **range**: if there are differences in distribution based on whether it's in the **core** of the range, or the **margins**, whether populations in the south are adapted differently to climate than populations in the north. And this is related to implications for how we might need to change our forest management strategies for climate change.

My research is combining new novel approaches with genomic tools with some sort of older school methods of doing **common garden experiments**. That has a long tradition in forestry, sometimes they're called across many common gardens that are planted at different sites; **provenance trials** is another term for that. But the idea is that you're just planting sources from different locations in the same environment so you can look for the genetically-based differences. So the old-school method is the common gardens where we're measuring traits—phenotypic traits—like height and other growth metrics along with **physiological traits** sometimes too. So those old-school methods combined with genomic tools; so we've gone out—for my research in particular—and sampled a provenance trial that was planted in the early 90s in south-east BC (for this species, western larch), populations from across its range all planted in the same location and sampled tissues for genomic analyses. And so we're looking for variation in the genome that relates to the climates of the sources of those populations.

My common garden experiments will be done on seedlings that I just planted out (there's about almost 4,000 of them) at UBC at one of the research fields there and they were grown in **greenhouses** there.

The seed was collected from British Columbia and from the United States, so we have seeds from across the range of the species. And then the provenance trial that was sampled for the genomic data is located near Cranbrook, BC.

I gathered the seed in the first year (gathered all my sources, planted them out last year). They needed just a full year to grow in the greenhouse before planting them outside and being ready to measure them. So I actually don't have much in terms of data yet from that side. And then for the provenance trial, the genomics sampling was done before I entered the lab but we are in the process of working through the analyses.

