

Assisted Migration: Collaboration and Communication are Key

By: Kayla Seaforth

The work of restoring ecosystems is increasingly taking place in the context of extreme weather events and prolonged drought, and with uncertainty around future conditions. As restoration practitioners and those who support their work adapt and respond to rapid climatic changes more are considering whether and how to incorporate assisted migration into the equation.

Assisted migration can refer to a number of actions, from moving seeds from one climatic zone within their current range to another, to shifting a species to a new range altogether based on anticipated future conditions. Dumroese, et al. provide a more detailed discussion of the different facets of assisted migration, as well as consideration for its place in ecosystem restoration in [this paper](#). The diagram below, also by Williams and Dumroese, outlines a more simplified

representation of the spectrum of actions that fall under the category of assisted migration.

Treeline partners and invited researchers recently presented a webinar that focused on both the mechanics and the ethics of assisted migration. Participants and presenters shared case studies and technical expertise, and engaged in thoughtful dialogue about the philosophy of assisted migration. One action item that emerged from the discussion was a desire for a set of principles around assisted migration that could generate a shared framework for restoration practitioners and others to work within when considering climate-adapted planting and propagation strategies.

Professional standards show up in many forms, and range in structure, formality

and breadth. With a topic like assisted migration, where humans have moved species around for millenia, it seems impractical to believe that a single set of recommendations could inform the whole practice, and even less likely that they would be adhered to in all circumstances. What may be more effective is the intentional creation of a shared community of professionals whose expertise sits at the intersection of the many fields that have a stake in how assisted migration takes place. This community, once assembled, could collectively decide what form their guidance takes. It could be the creation of a formal professional society, the generation of a set of widely available, voluntary best management practices, an informal network for sharing information, or so many other things.

Williams & Dumroese (2014)

ASSISTED MIGRATION:



Seed Migration

Seed sources are moved climatically or geographically within their current ranges



Range Expansion

Seed sources or plant materials are moved to suitable areas just outside of ranges



Species Migration

Species moved outside current ranges to prevent extinction or to be a surrogate for another species in decline

The following draft of assisted migration principles was created by Dr. David Shaw, a Forest Health Specialist and professor in the Department of Forestry and Natural Resources at Oregon State University and Dr. Patricia Maloney, a professor in the Department of Plant Pathology and Tahoe Environmental Research Center at The University of California, Davis. While they are still being refined, these principles may serve as a framework to consider how greater coordination and collaboration across fields could lead to a more integrated strategy around assisted migration.

Many institutions, organizations and individuals are already pursuing assisted

migration in research and in practice. There are many ways to implement and think about this topic, with different strategies and philosophies emerging across the field. It is important to keep in mind that the work of adapting to a changing climate requires participation from diverse stakeholder groups, and should remain iterative, collaborative and adaptable as conditions change and new information becomes available. Creating consistent forums for sharing information and continuing this conversation will be crucial for our collective ability to manage ecosystems as the climate warms and our baseline conditions change.

In determining the scope of such a group it may be helpful to consider the following:

- What are the geographical boundaries?
- Who gets a seat at the table?
- How “in the weeds” do we get?
- Are recommendations presented as voluntary?
- *Should* there be standards around assisted migration?
- Who can hold center?

Assisted Migration Principles

Principle	Reason	How
Protect native biodiversity	Our planet depends on biodiversity	Do not move pests and pathogens, change forest composition and structure without full knowledge of consequences
Do not transport soil, debris, and plant materials across ecological boundaries	To prevent introduction of non-native invasive insects and pathogens	Use local material and grow as local as possible
Interpret species distribution models with extreme caution, do not make major management decisions based solely on models	Models are predictive and explanatory tools. They are not adequate to consider site-specific outcomes.	Use models to inform, but use on-the-ground testing (common gardens, progeny trials) before deployment/ investments
Look locally and regionally for adaptive traits	Local populations are most resistant/ tolerant of local pathogens and pests.	Focus on survivors of events Use progeny and common garden studies to understand local pest pressures
Use only regionally tested and collected plant material for outplanting	Do not risk planting maladapted trees	Test and collect trees locally
Control pests in plant materials by growing locally and inspecting nurseries	Move to a more dispersed and localized nursery infrastructure. Inspect nurseries and monitor for invasive pests	Support development of local nursery infrastructure, train nursery inspectors, work with BMP nurseries.
Limit the movement of species to that which is required for survival and persistence	Risk is great, weather is fickle	Seek to understand the forest ecosystem in the context of geography, ecology, and evolutionary history

Credit: Shaw & Maloney

The following sectors have an important role to play in shaping strategies around assisted migration, and they are comprised of people from tribal nations, NGOs, government agencies, universities, businesses and other communities:

1. Nurseries (native and ornamental)
2. Forestry
3. Scientific and extension research
4. Ecological restoration
5. Environmental ethics and philosophy

Assisted migration touches upon a range of fields, issues and concerns including:

- Climate data and modeling
- Species specific research and recommendations
- Pests, pathogens and invasive species
- Communications/outreach
- Policy and regulations related to movement of species
- Seed collection and propagation
- Monitoring protocols and tracking
- Action network: Seed exchange, workshops, etc.

If you are interested in continuing this conversation please reach out to Kayla Seaforth at kseaforth@b-e-f.org



*Coeur d'Alene Tribe's Willow Nursery.
Photo credit: Thomas Biladeau*