



United States Department of Agriculture

Assisted Migration:

*Intentionally moving species or populations
to mitigate changes in climate*



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Summary

- AM provides another option in our climate mitigation toolbox
- Move populations of a species, expand a species range, or long-distance as a last resort
- Pros and cons depend on the context

Plant-Climate Relationships

By the end of this century, most landscapes will have climates incompatible with current vegetation.



Plants will need to adapt or
move to avoid maladaptation

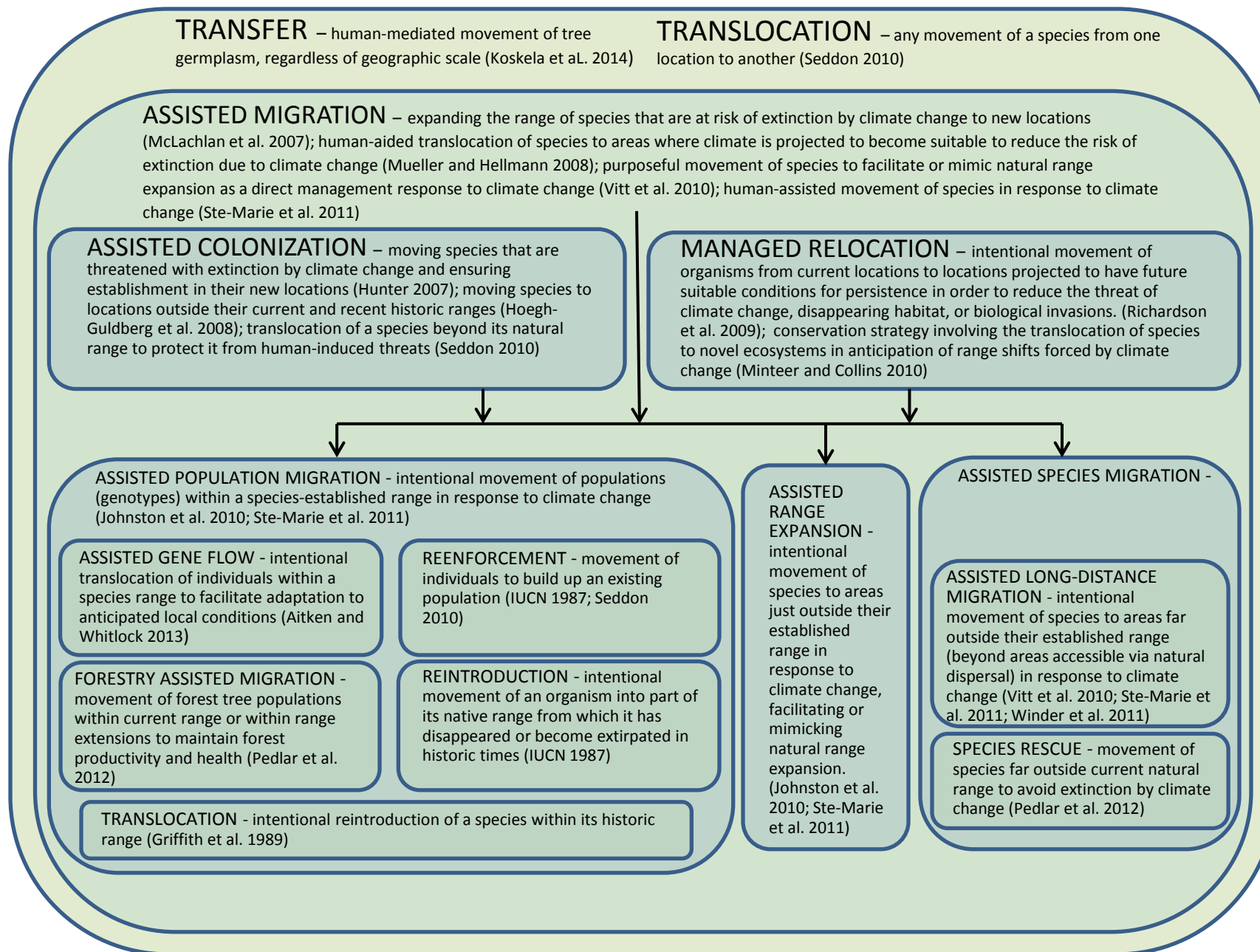
Observed rates: 10 to 50 m/year

Expected rates: 300 to 500 m/year

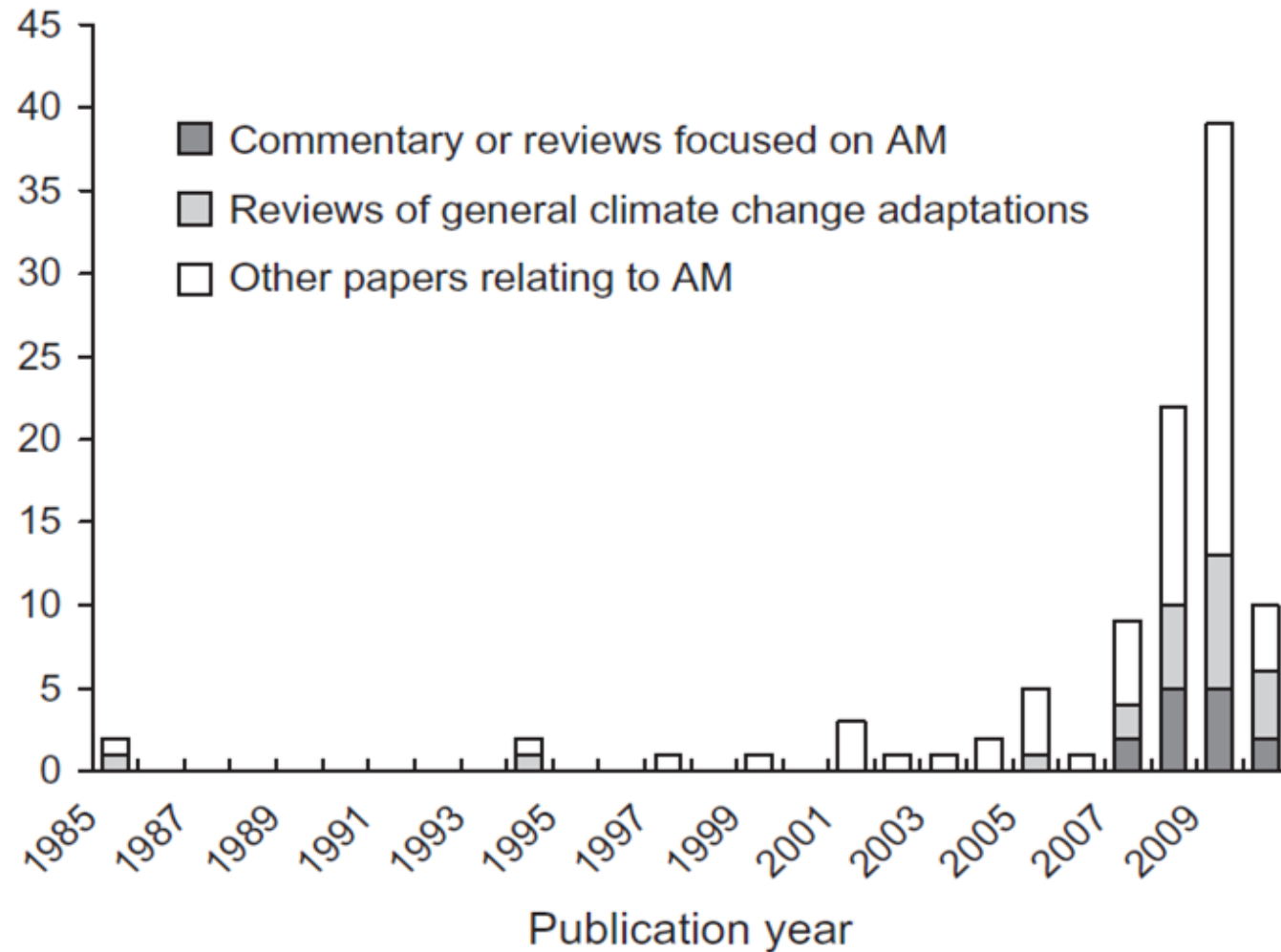
Assisted Migration

Human-assisted movement of species in response to climate change

Ste-Marie et al. 2011. Assisted migration: Introduction to a multifaceted concept. Forestry Chronicle 87:724 –730.

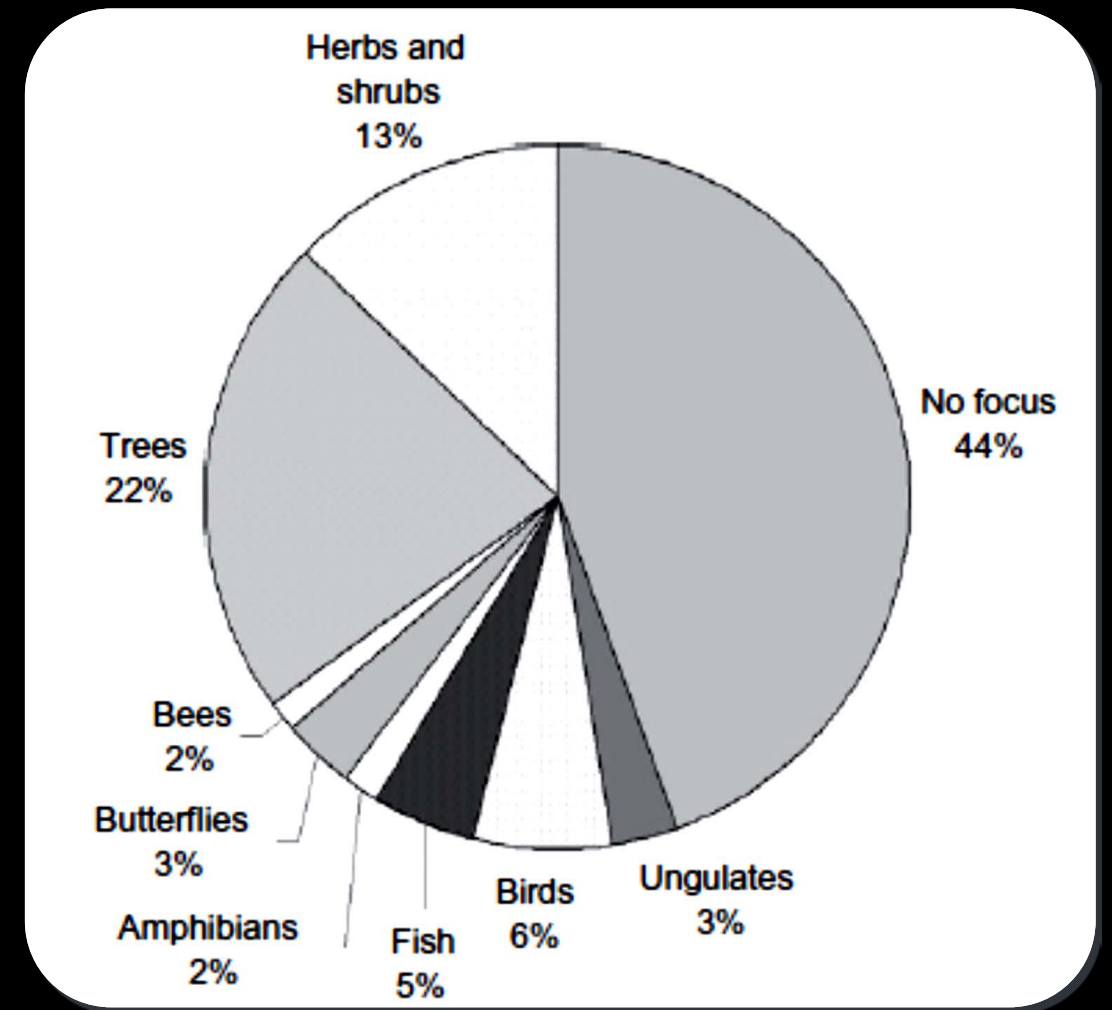
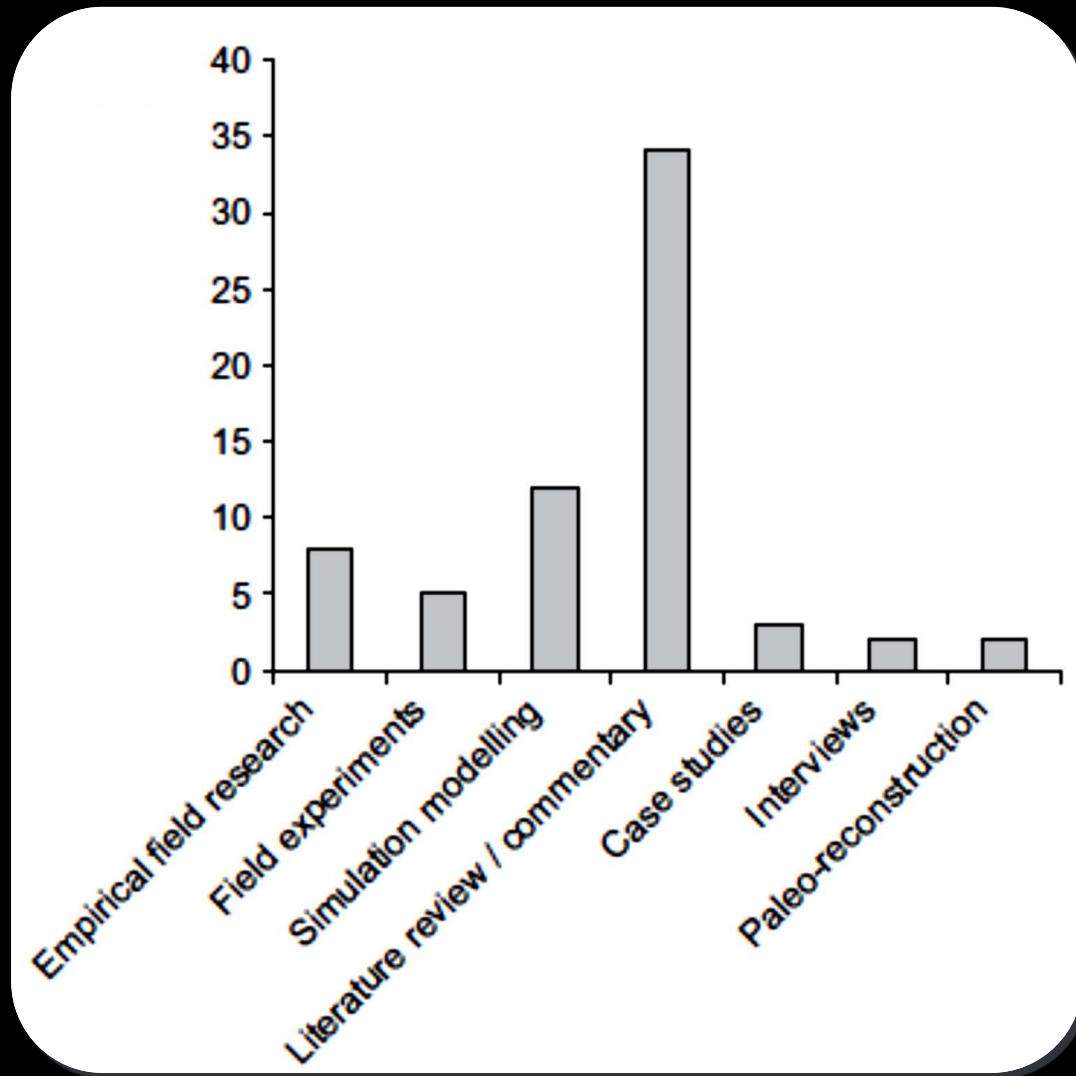


Dumroese et al. 2015. Considerations for restoring temperate forests of tomorrow: forest restoration, assisted migration, and bioengineering. *New Forests* 46: 947–964.

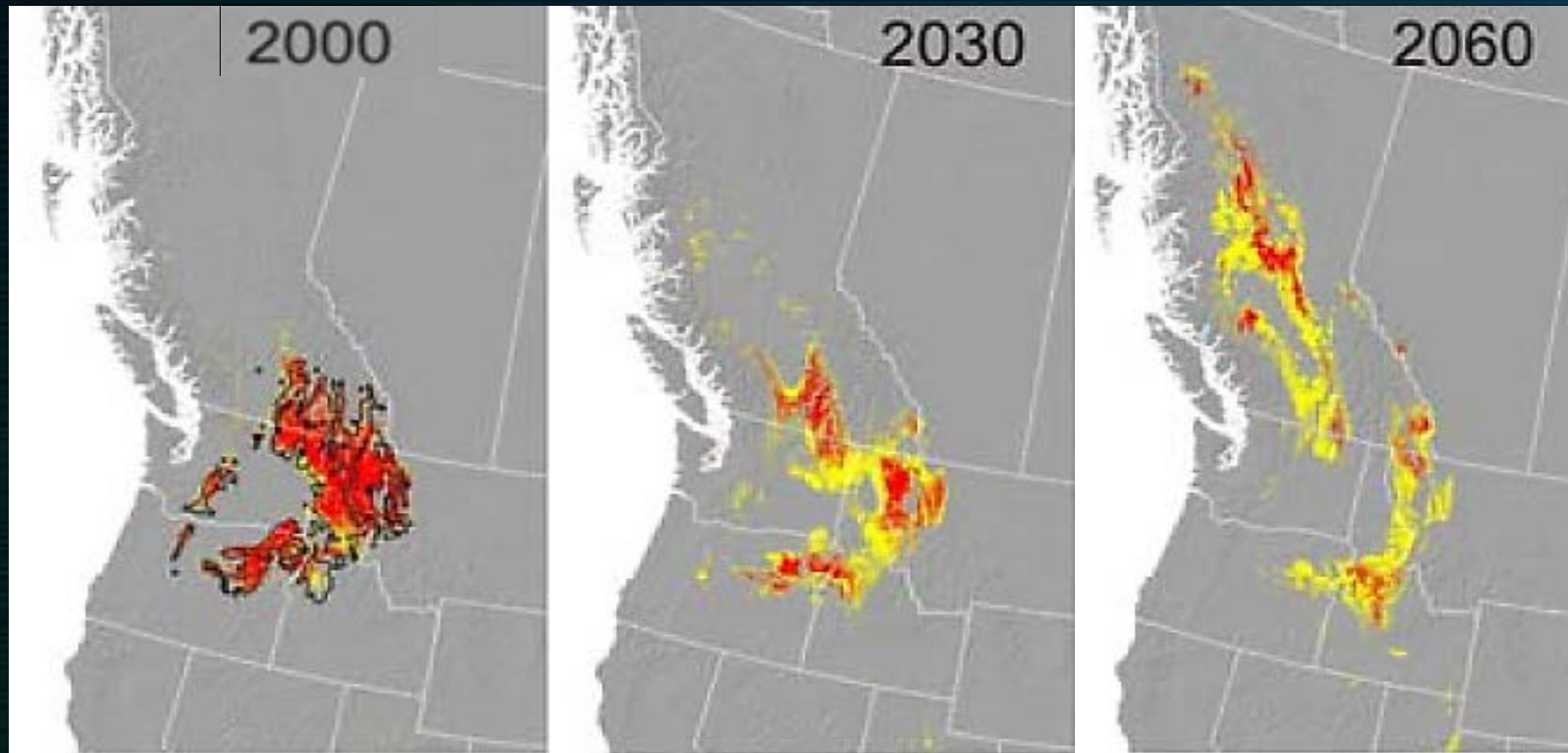


AM Plants
2010 – 2015

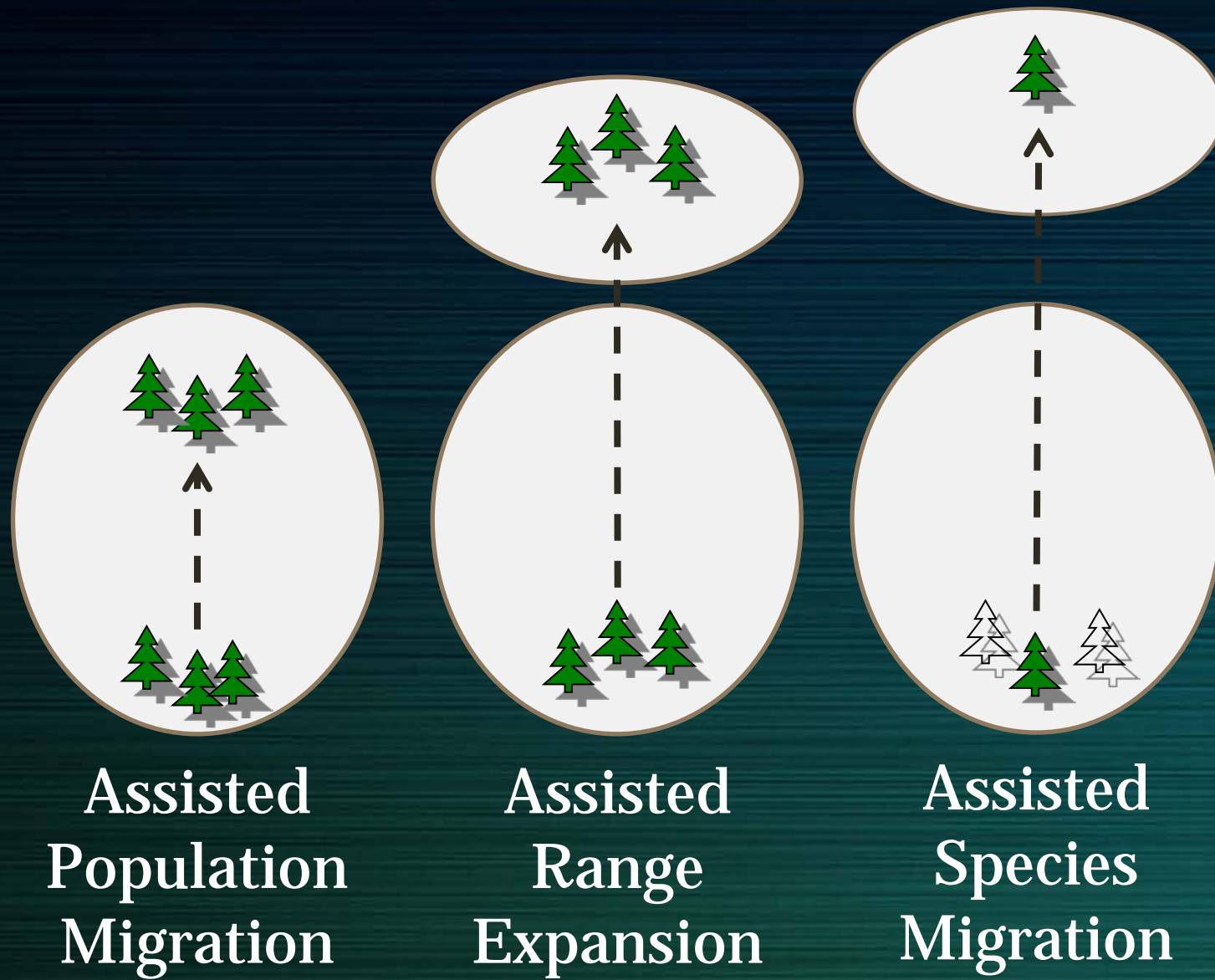
> 72 papers



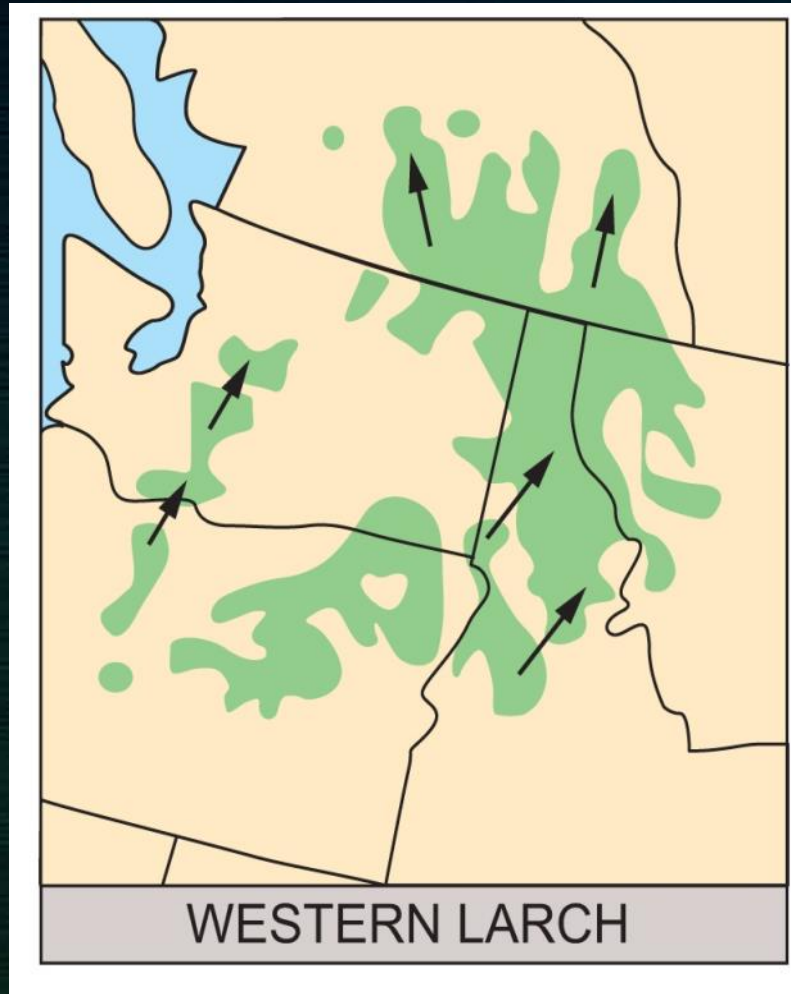
Current and Projected Distribution of *Larix occidentalis*



Rehfeldt and Jaquish. 2010. Ecological impacts and management strategies for western larch in the face of climate-change. *Mitig. Adapt. Strat. Global Change* 15:283–306.

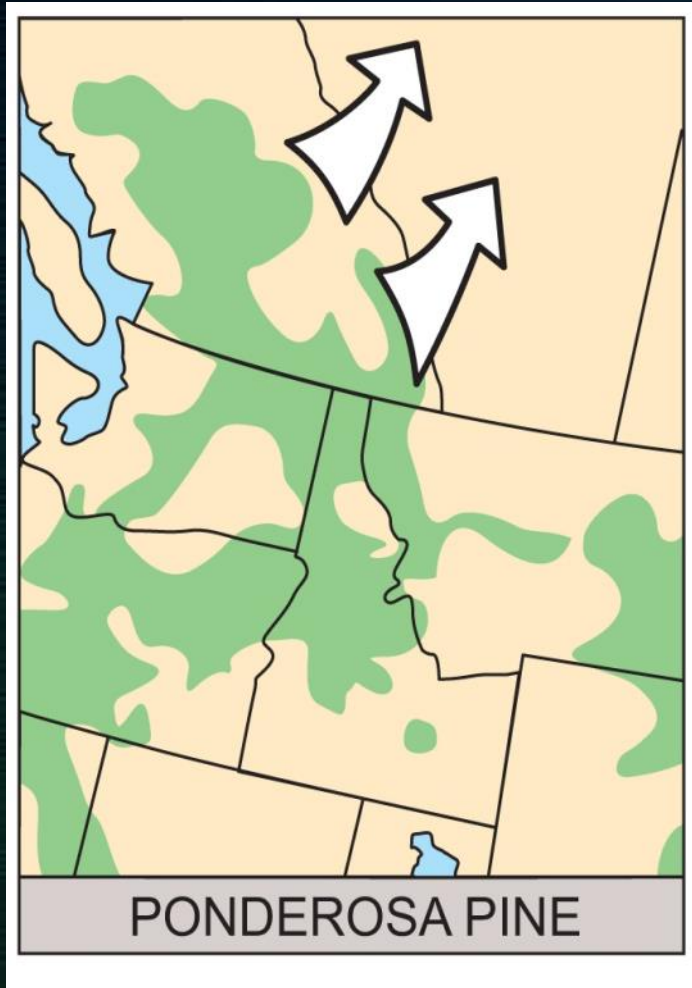


Assisted Population Migration



Move seed sources
within existing ranges
and to leading edges

Assisted Range Expansion



Move seed sources into
anticipated ranges

Risks – Ecological and Economic

- Costs
- Effects on receiving ecosystem
- Effects on donor ecosystem
- Establishment failures

Context!

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Thank you!



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The views expressed were strictly those of the author and do not necessarily represent the positions or policy of the U.S. Department of Agriculture.