

Managing Forests for Climate Change

2022

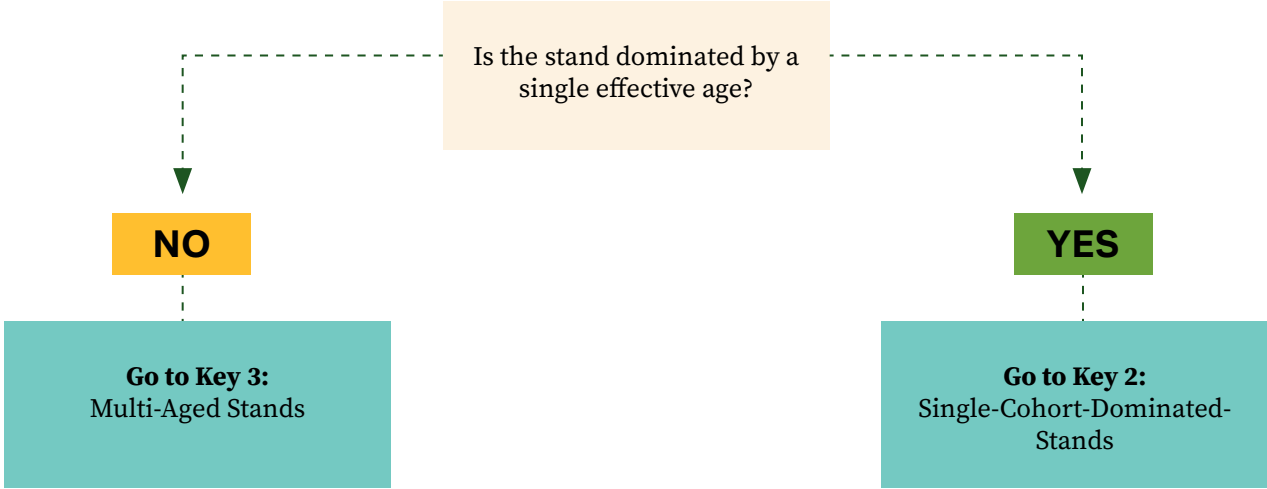
Climate Change Resilience
and Carbon Storage
Silvicultural Prescriptions
for the Wabanaki-Acadian
Forest Region

Prepared by Gareth Davies FT, CLP,
Forest Ecologist, Silviculturalist

with input from Megan de Graaf, MScF,
Community Forests International



Stand Age Structure

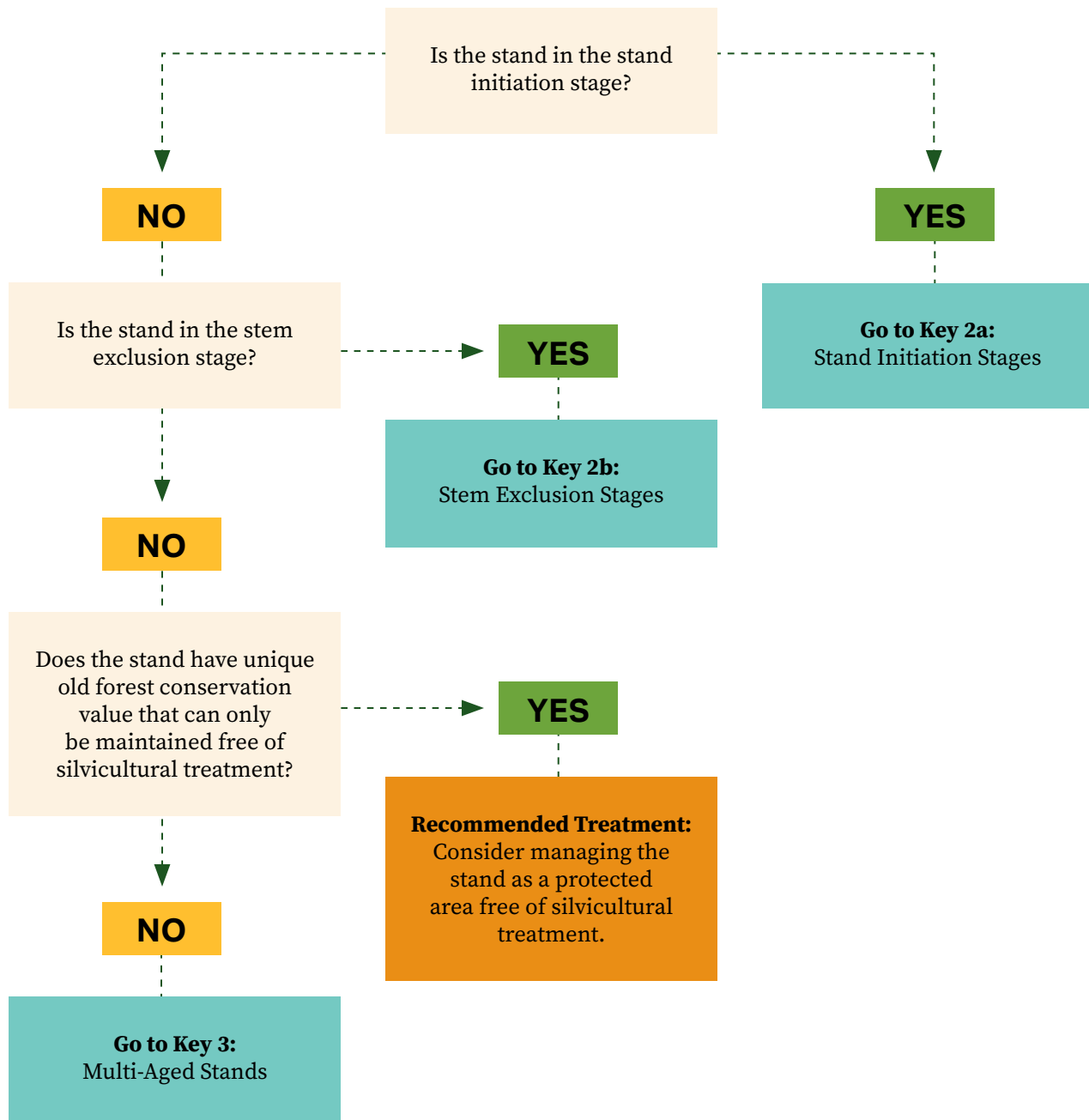


Multi-aged forest stand.

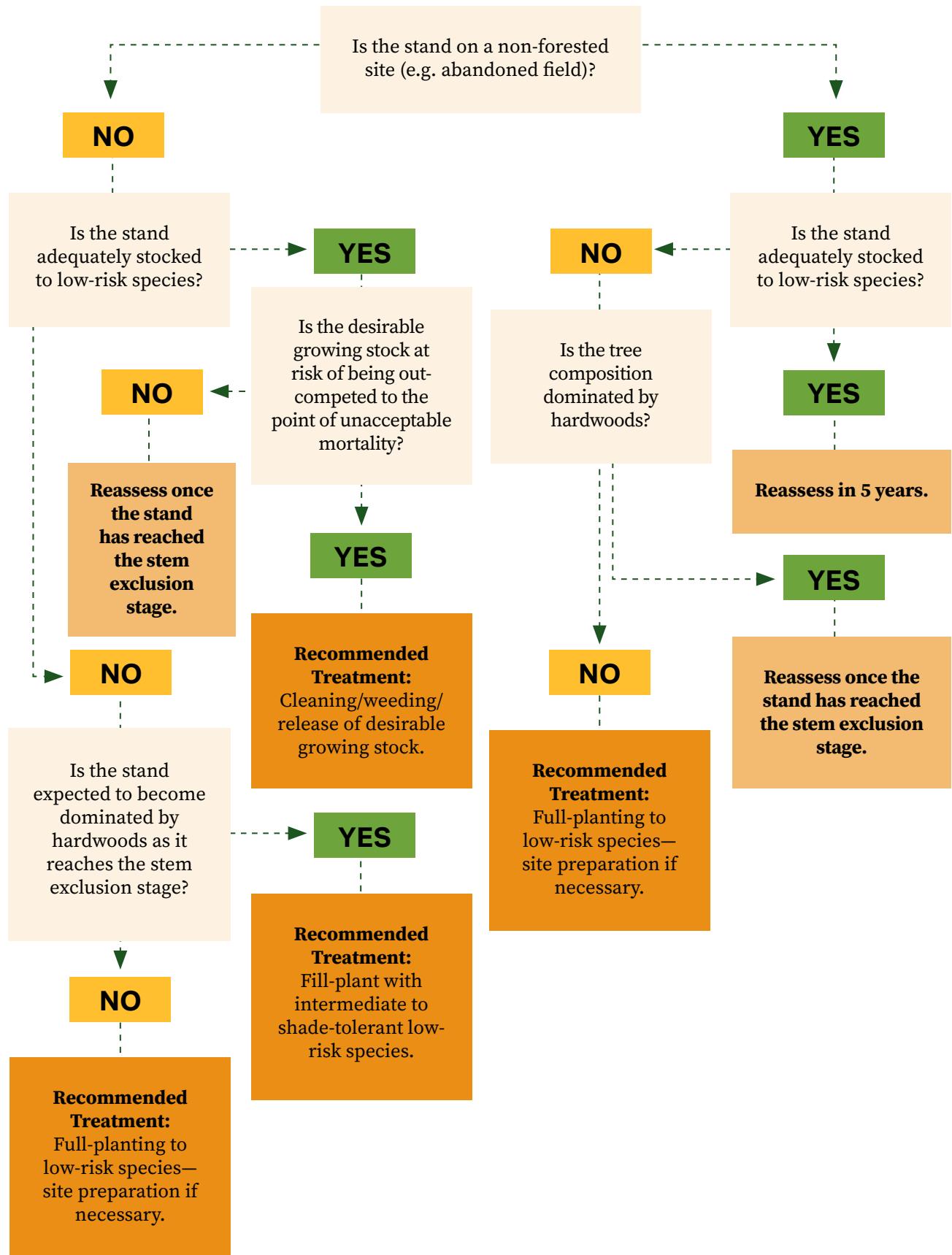


A young forest stand.

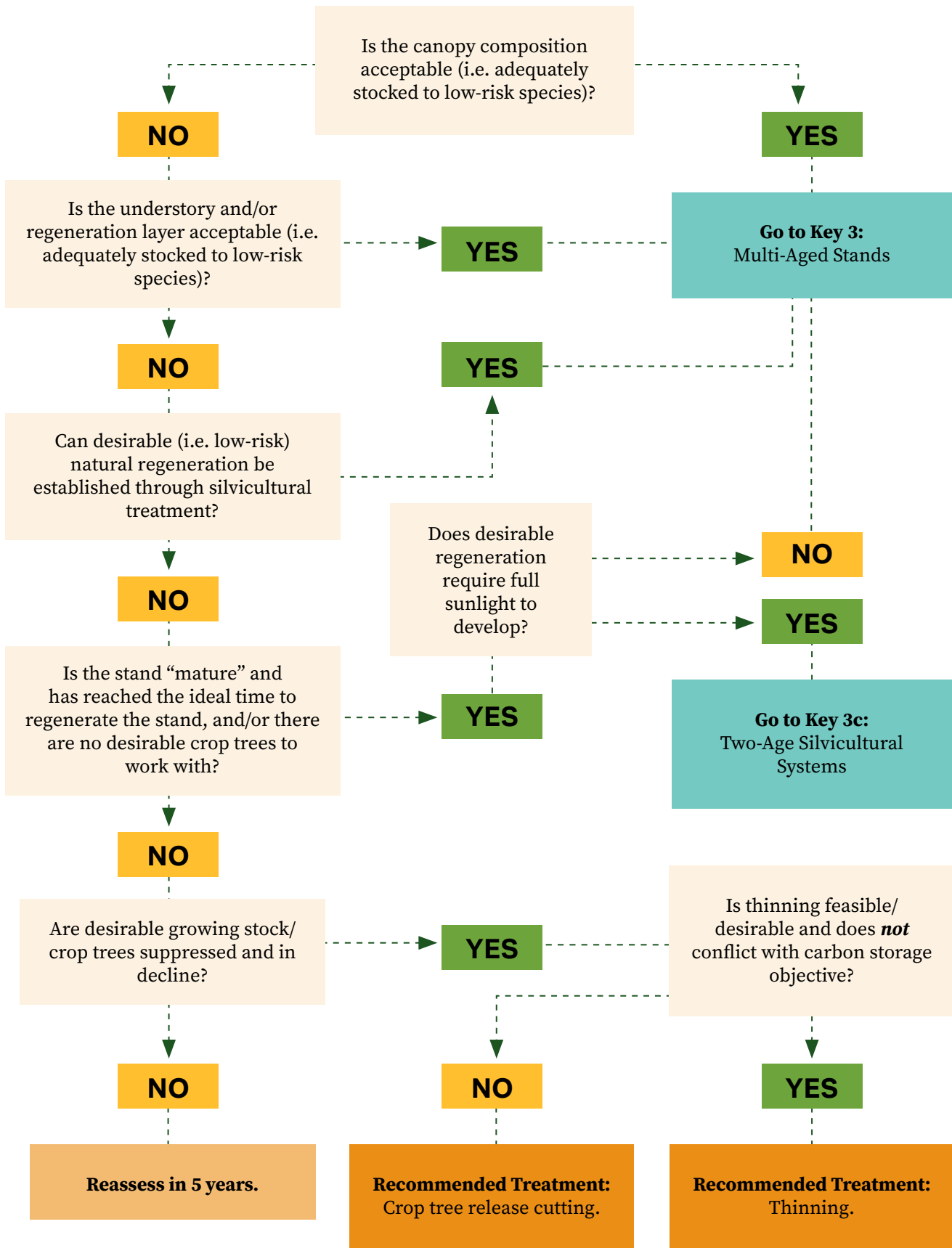
Single-Cohort-Dominated Stands



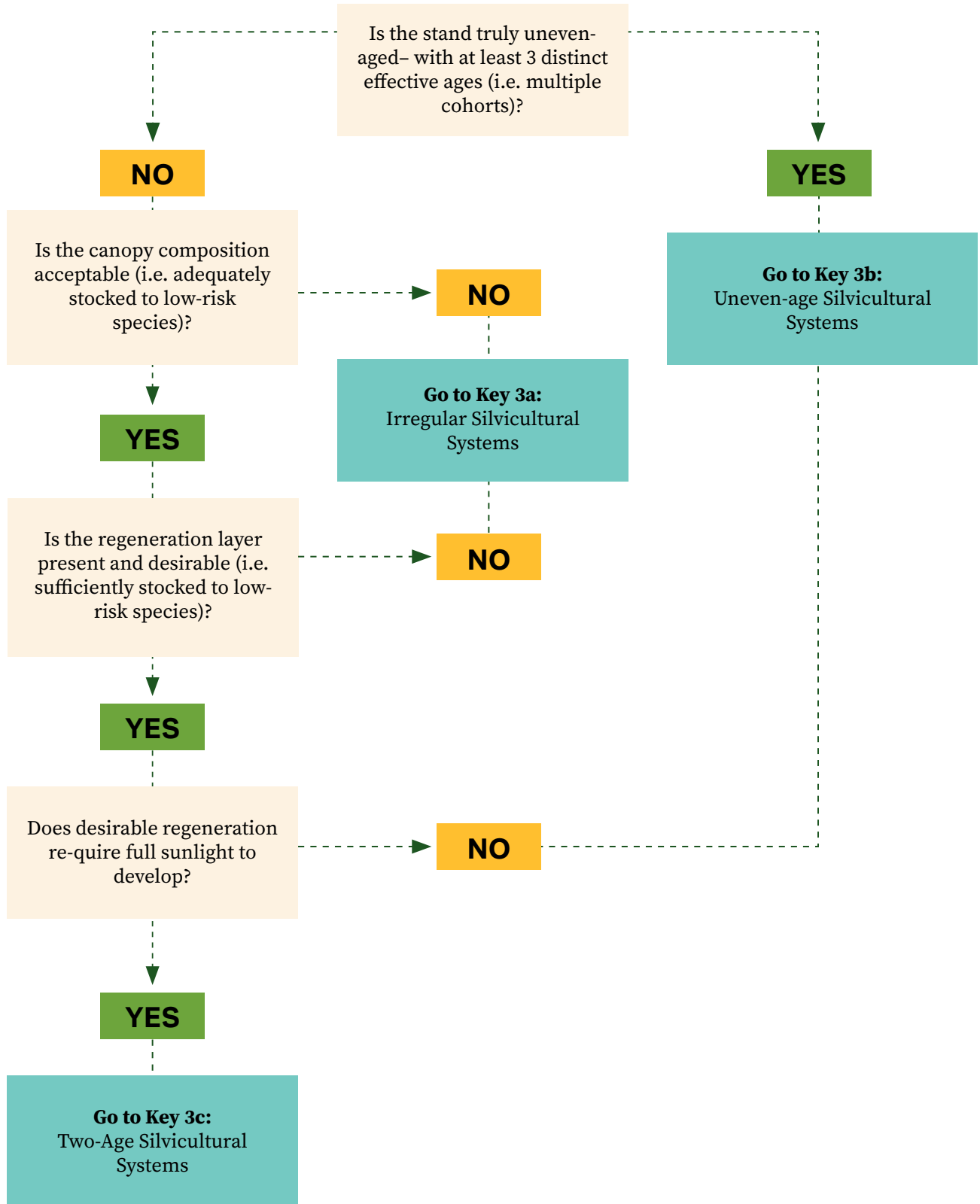
Stand Initiation Stages



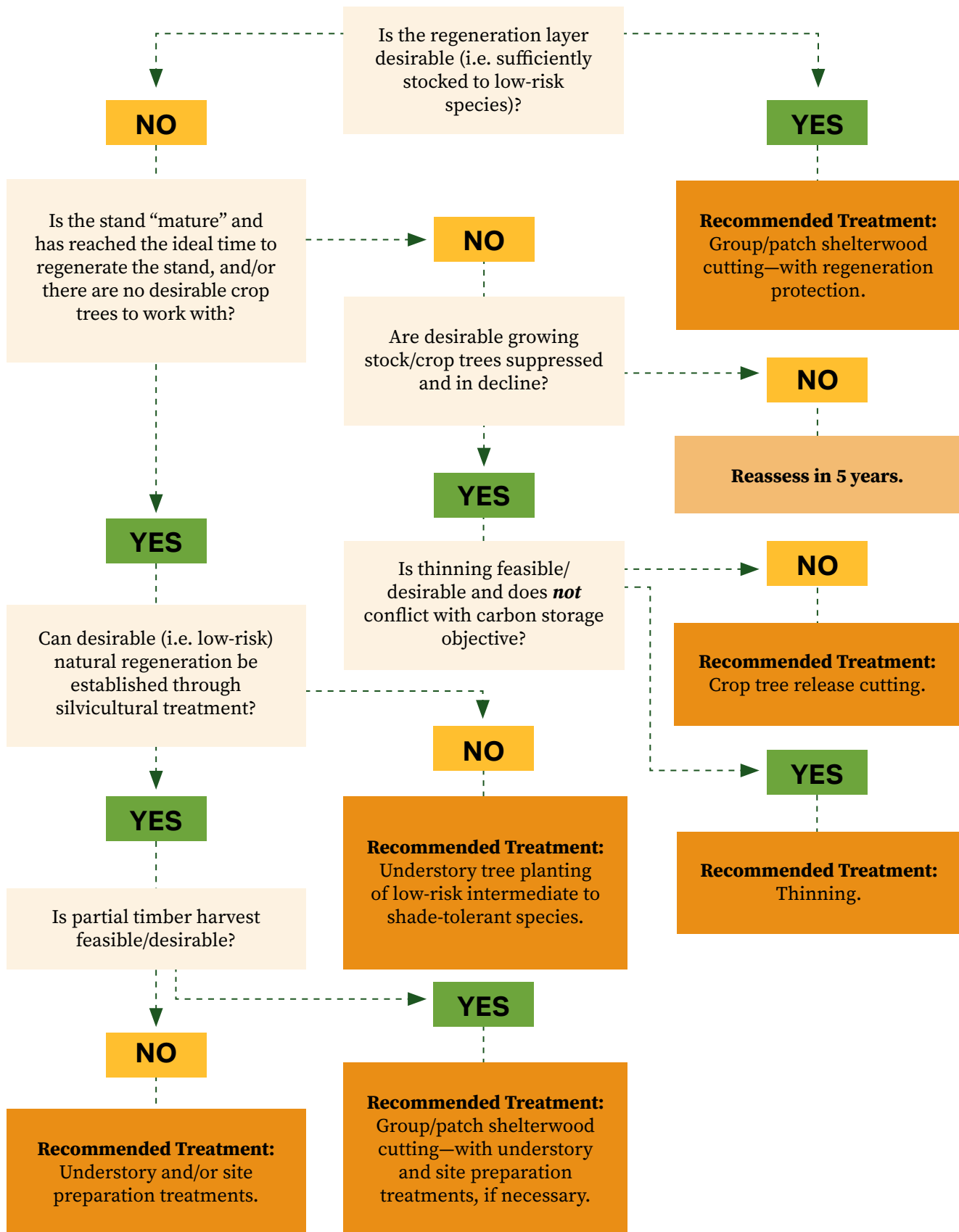
Stem Exclusion Stages



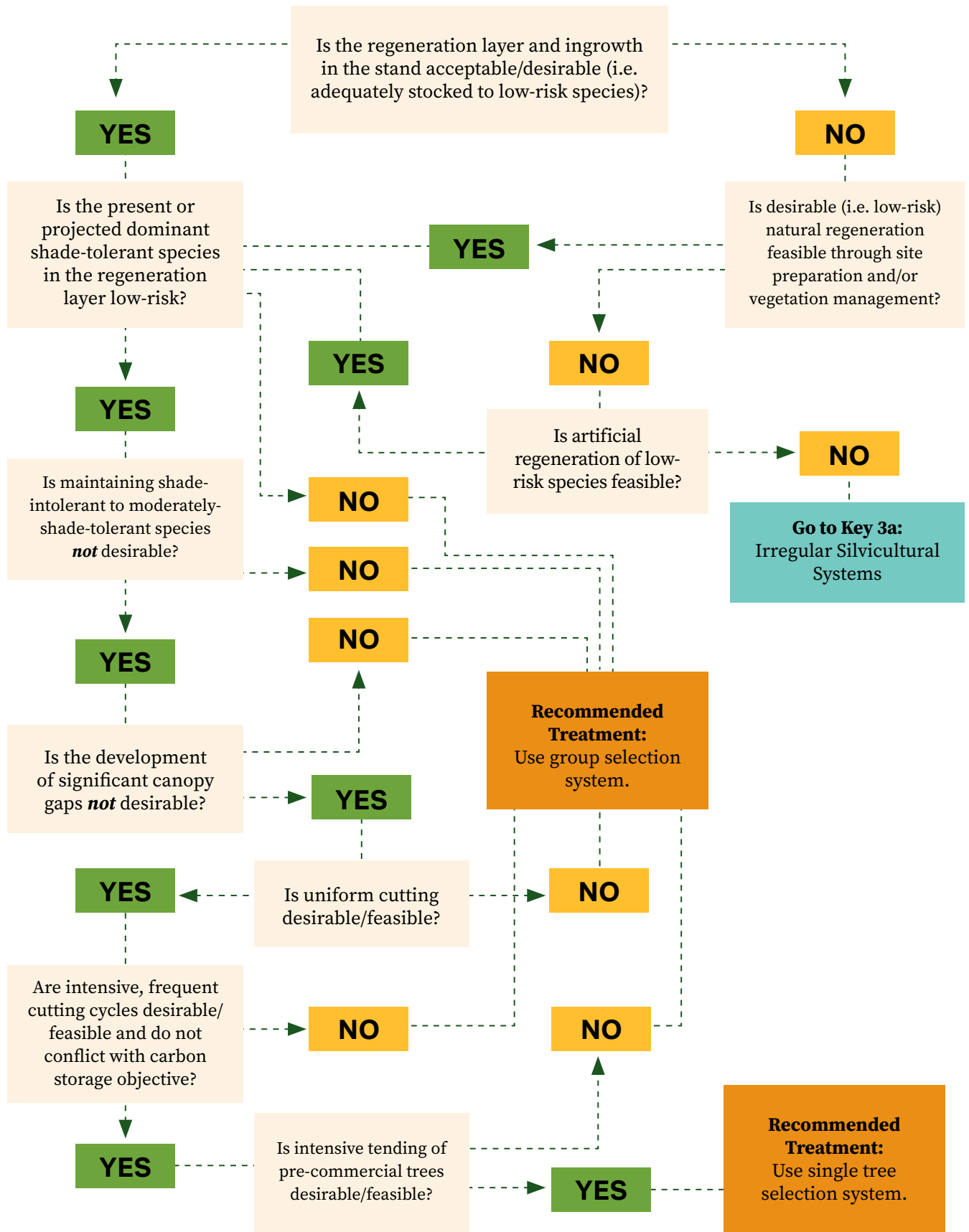
Multi-Aged Stands



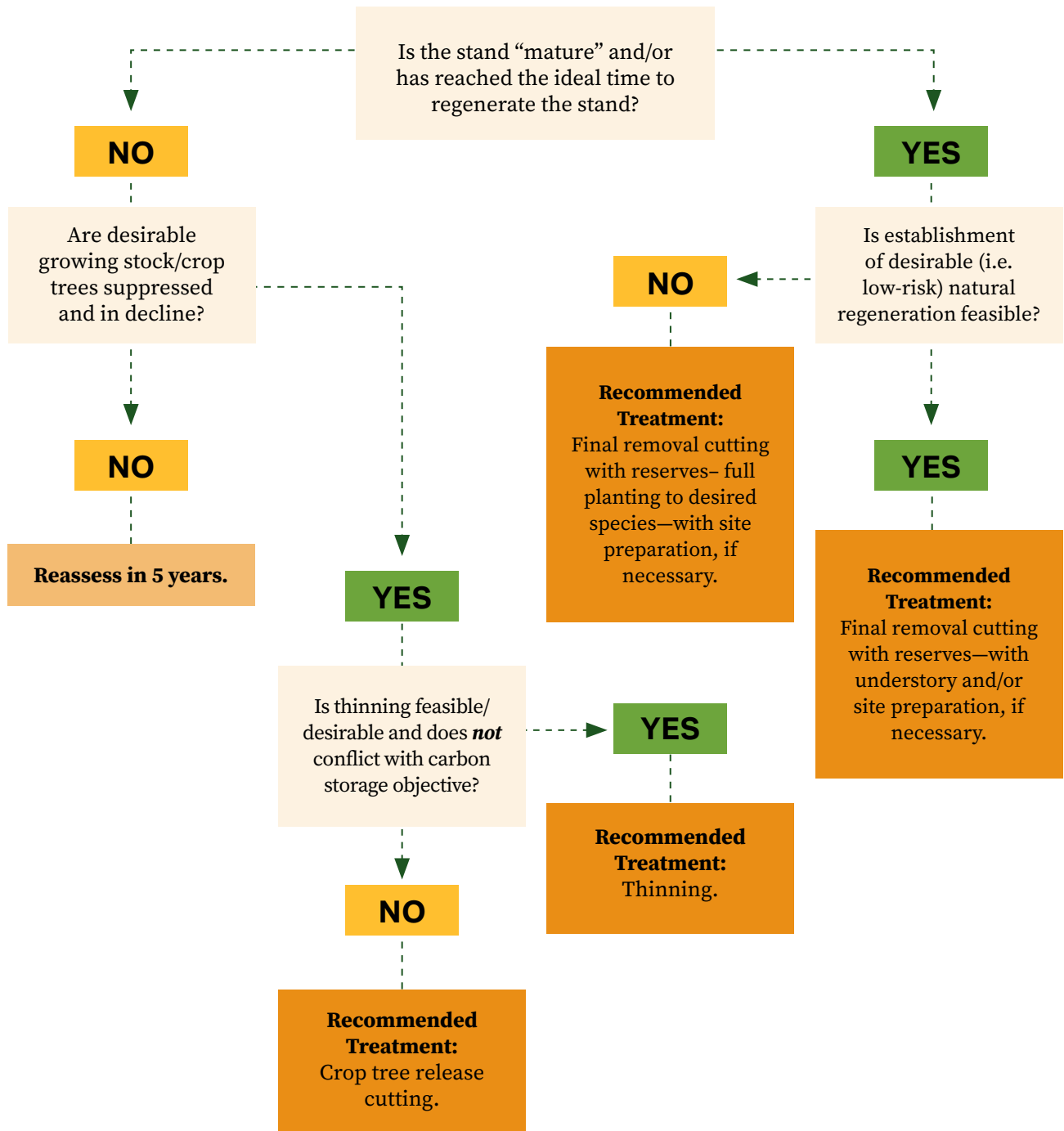
Irregular Silvicultural Systems



Uneven-age Silvicultural Systems



Two-age Silvicultural Systems



Climate Change Resiliency Projections

Table 1.

Comparison of climate change resiliency projections from three research projects, for thirteen tree species, for 2011-2100. This estimate (*) likely underestimates the effects of beech bark disease in the region and (**) likely underestimates the overall abundance of sugar maple (see article for details).

Native Tree Species	Fundy Biosphere Reserve 2013-16	Taylor et al. 2017	Bourque & Hassan 2010	Conclusion
American Basswood (<i>Tilia americana</i>)	Decline	-	-	
American Beech (<i>Fagus grandifolia</i>)	Prosper	Increase*	-	
American Mountain Ash (<i>Sorbus americana</i>)	Persevere	-	-	
Balsam Fir (<i>Abies balsamea</i>)	Decline	Decrease	Decline	Decline
Balsam Poplar (<i>Populus balsamifera</i>)	Persevere	-	-	
Black Ash (<i>Fraxinus nigra</i>)	Decline	-	-	
Black Cherry (<i>Prunus serotina</i>)	Prosper	-	-	
Black spruce (<i>Picea mariana</i>)	Decline	Decrease	-	Likely to decline
Black Willow (<i>Salix nigra</i>)	Decline	-	-	
Bur Oak (<i>Quercus macrocarpa</i>)	Persevere	-	-	
Butternut (<i>Juglans cinerea</i>)	Persevere	-	-	
Eastern Hemlock (<i>Tsuga canadensis</i>)	Persevere	Unclear	Persevere	Persevere¹
Eastern Larch (<i>Larix laricina</i>)	Persevere	Decrease	-	Unclear
Eastern White Cedar (<i>Thuja occidentalis</i>)	Persevere	Unclear	Decline	Likely to persist in isolated patches
Grey Birch (<i>Betula populifolia</i>)	Decline	-	-	
Ironwood (<i>Ostrya virginiana</i>)	Proliferate	-	-	
Jack pine (<i>Pinus banksiana</i>)	Disappear	Decrease	-	Likely to decline
Large Toothed Aspen (<i>Populus grandidentata</i>)	Decline	-	-	
Mountain Maple (<i>Acer spicatum</i>)	Persevere	-	-	
Mountain paper Birch (<i>Betula cordifolia</i>)	Prosper	-	-	
Pin Cherry (<i>Prunus pensylvanica</i>)	Persevere	-	-	
Red Maple (<i>Acer rubrum</i>)	Proliferate	Increase	Proliferate	Proliferate
Red Oak (<i>Quercus rubra</i>)	Prosper	Increase	Proliferate	Proliferate
Red pine (<i>Pinus resinosa</i>)	Persevere	Decrease	Decline	Decline
Red spruce (<i>Picea rubens</i>)	Decline	Decrease	Persevere	Likely to persist in isolated patches
Serviceberry (<i>Amelanchier canadensis</i>)	Persevere	-	-	

Native Tree Species	Fundy Biosphere Reserve 2013-16	Taylor et al. 2017	Bourque & Hassan 2010	Conclusion
Silver Maple (<i>Acer saccharinum</i>)	Persevere	-	-	
Striped Maple (<i>Acer pensylvanicum</i>)	Persevere	-	-	
Sugar Maple (<i>Acer saccharum</i>)	Persevere	Decrease**	Persevere	Persevere
Trembling Aspen (<i>Populus tremuloides</i>)	Persevere	Decrease	-	Unclear
White Ash (<i>Fraxinus americana</i>)	Persevere	Increase	Proliferate	Prosper²
White Birch (<i>Betula papyrifera</i>)	Decline	Decrease	Decline	Decline
White (American) Elm (<i>Ulmus americana</i>)	Prosper	-	-	
White pine (<i>Pinus strobus</i>)	Prosper	Increase	Prosper	Prosper
White spruce (<i>Picea glauca</i>)	Decline	Decrease	Decline	Decline
Yellow Birch (<i>Betula allenghaniensis</i>)	Decline	Unclear	Persevere	Likely to persist in isolated patches



A red oak seedling.

¹ Research was completed before Hemlock Woolly Adelgid reached NS.

² Research was completed before Emerald Ash Borer reached the Maritimes.

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