

 UI Extension Forestry Information Series

Species Diversity: A Management Tool for Woodland Owners

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Forest landowners are constantly given the bad news “something is killing your trees...again.” Most forest owners know that forests can be risky investments. Still, we accept the risk and look beyond the pure economics of forestland ownership to the intrinsic beauty of the forest and pride in owning healthy forest environments. Many adventurous landowners have even made a profit from their forestland investments!

Just as a financial portfolio gains security from diverse investments, a forest finds strength in diverse species. Forest landowners should view diversity of forest species as natural protection against insect and disease attacks. Generally, insects and diseases attack specific tree species. For instance, the larch casebearer only attacks the western larch and mountain larch; the western white pine blister rust usually only infects the western white pine (and other 5-needle pines). Some diseases attack a wide variety of tree species. *Armillaria* root rot can infect every conifer species in our region, but most commonly attacks Douglas-fir and grand fir, and rarely infects ponderosa pine or western larch.

What can we do as forest stewards? The best form of defence against these pathogens is species diversity. A forest of five to seven different species of trees has more resilience than a mono-culture (single species). For example, the pine engraver beetle (*Ips pini*) thrives on forest stands of pure, overcrowded ponderosa pine. This beetle is slowed substantially however, if the stand also includes Douglas-fir, grand fir, western hemlock, and western red cedar.

Species diversity can be best achieved during thinnings and partial harvests. A thinning harvest should remove defective, diseased, insect infected, overcrowded, and smaller trees as well as some large, slow growing

mature trees to give the residual trees room to grow to their potential. Be sure to leave healthy representatives of as many species as possible, to provide a resilient stand against insects and disease.

Uneven-aged harvest techniques, such as single tree or group selection, should use a like approach. At harvest, trees from all age classes and species are left on the site. Trees that are defective, have insects, disease, are mature, or overcrowded should be targeted for removal. In this type of stand management, species diversity is more difficult to achieve. Because regeneration is produced under shade, more shade tolerant (climax) species will result in a low degree of diversity. All is not lost however; there are many ways to encourage diversity in uneven-aged management including cautious residual tree selection, conscientious site preparation for regeneration, and tree planting. By selecting small groups rather than individual trees for removal, sufficient space can be made to encourage natural regeneration of seral (non-climax) shade-intolerant tree species such as western larch and ponderosa pine. These species, and others can also be planted in small openings to diversify a selectively managed forest.

Forestland investment may be risky, but the benefits can be great. Attention to management details can reap profits for you and your family for centuries to come. Remember, a diverse forest is a healthy forest.

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