MANAGING ASPEN IN THE SOUTHWESTERN US: DEVELOPING RESILIENCE THROUGH REGENERATION

A McIntire-Stennis supported project

NAU NORTHERN ARIZONA UNIVERSITY School of Forestry

Quaking aspen (Populus tremuloides) is in decline in the western US, which is concerning because aspen is considered a keystone species in this region. Aspen decline is particularly pronounced in Arizona, where there is a lack of regeneration and recruitment beneath declining overstory trees. Previous research on aspen decline has focused on factors that contribute to overstory mortality, while few studies have assessed which factors affect regeneration and recruitment. Drought, ungulate browse, conifer encroachment, and insects and diseases are all hypothesized to contribute to aspen decline. The emergence of an invasive insect, oystershell scale (Lepidosaphes ulmi), threatens to further escalate decline by causing acute aspen mortality. The objective of this project is to determine which biotic and abiotic factors are limiting aspen regeneration and recruitment in Arizona, with a particular focus on quantifying the extent and impacts of oystershell scale. This information is critical for informing future management of aspen.

COLLABORATION

The USDA Forest Service Forest Health Protection Arizona Zone and the Coconino, Kaibab, Prescott, Apache-Sitgreaves, and Coronado National Forests. Additional funding has been provided by the USDA Forest Service Forest Health Protection Emerging Pests program.

163

aspen monitoring plots established across 5 national forests in Arizona using a standard protocol

About McIntire-Stennis

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.

USDA

IMPACT

The data collected are providing forest managers with an understanding of the current distribution of oystershell scale and the overall health of aspen regeneration across the Arizona landscape.

10,047

aspen stems measured between 2019 and 2021

50.3%

of plots are infested by the invasive insect, oystershell scale

6 +1

6 presentations and 1 publication to date