PACIFIC NORTHWEST POPLARS: A RESILIENT ARTHROPOD COMMUNITY AND THE DISTRIBUTION OF INSECT-CAUSED MORTALITY IN CUTTINGS

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Hybrid poplars are a long-rotation (12-15 yr) woody crop grown to meet today's fiber demands. To meet the recent push toward environmentally friendly management, several poplar plantations in the Pacific Northwest have been certified by the Forest Stewardship Council (FSC), which encourages environmentally responsible management of forest resources. A two-part project was conducted to investigate how terrestrial arthropod communities in FSC-certified poplar plantations respond to the planned catastrophe of harvest and how cutting mortalities were distributed within a planting unit. Terrestrial arthropod communities were surveyed using unbaited pitfall traps in pre- and post-harvest habitats. A Shannon-Weiner diversity index was used to evaluate community composition of the pre- and post-harvest community. Cuttings were surveyed on foot, with failed cuttings being marked by a surveyor's flag and recorded on a map of the planting unit. Using Spatial Analysis and Decision Assistance (SADA) we discerned patterns of insect-caused cutting failure within individual units.

Results show that arthropod communities recover to preharvest levels in less than 2 years, indicating resilience to the disturbance. Despite the environmental catastrophe of harvest, the most common species in the system was found across all communities. The monospecific dominance of *Calathus ruficollis* (Coleoptera: Carabidae) was most noticeable in the fall, with spring and summer communities showing greater evenness. We found that patterns of cutting failure were consistent for a given pest across all units. These findings suggest that insect-caused cutting failures occur in discernable patterns linked to specific pests. Our illustration of insect-caused cutting failure through SADA allows the growers to identify problem areas within the farms and address pest problems within individual units based on failure patterns.

KEY WORDS: hybrid poplar, community resilience, pest distribution, *Calathus ruficollis*

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