Point Blue Publication Brief

Avian response to mechanical aspen restoration in Sierra Nevada coniferous forest

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Ecological disturbances are essential for maintaining biodiversity. In historically fire-prone forest ecosystems, using mechanical treatments to mimic natural disturbances is becoming a standard management and restoration strategy.

Quaking aspen (*Populus tremuloides*) is a disturbance-dependent component of western North American forests, where its presence is associated with increased water yields, higher quality soils, and increased diversity of plants, birds, and other wildlife, relative to adjacent forest types.

Restoration to reverse aspen decline has become a management priority in the region because of aspen's high ecological value, limited extent on the landscape, and poor health throughout much of its range. Treatments are designed to improve aspen habitat by mechanically harvesting competing conifers.

To evaluate the effects of this aspen restoration strategy in the Sierra Nevada, we compared vegetation characteristics and the abundance of two suites of focal bird species in treated and untreated aspen stands on the Lassen National Forest, before and up to 13 years after mechanical conifer removal.

Treatments increased herbaceous plant cover and the number of understory aspen stems, while shrub and overstory aspen covers were unchanged. Of the 10 aspen focal bird species we monitored, seven increased in abundance, including all species associated with young aspen habitat and cavity nesting species; none declined. Of the six conifer focal bird species we monitored, the four associated with denser conifer habitat declined.

These results suggest the treatments approximated natural post-disturbance aspen habitat. Our results support the use of mechanical conifer removal as an effective tool for restoring ecological values of degraded aspen habitat for birds in the Sierra Nevada.

Main Points

Mechanical conifer removal is an effective tool for restoring aspen habitat for birds.

Restoration practitioners should consider using aggressive mechanical thinning to restore disturbance-dependent habitats.

Monitoring well-understood focal species can be valuable for evaluating restoration.

Retaining large trees and dead trees in restored areas may increase wildlife diversity.

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